



# CORAF/WECARD Reforms and the Transformation of Agriculture in West and Central Africa

West and Central African Council for Agricultural Research and Development

Conseil Ouest et Centre Africain pour la Recherche et le Développement Agricoles





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# Foreword

By adopting a new Strategic Plan (SP) 2007-2016 matched with its 1st 5-year Operational Plan (OP), at the end of its extraordinary General Assembly (GA) held in May 2007 in Abidjan, Côte d'Ivoire, CORAF/WECARD thus laid the foundations for sustainable transformation of agriculture in West and Central Africa (WCA). The results of a very participatory development process and remarkably supported by its stakeholders, these plans outline the strategy and mechanisms by which CORAF/WECARD intends to provide an appropriate response to the various interlinked challenges facing agriculture in the sub-region.

The persistence of these challenges generated an unprecedented food crisis by 2008 – a crisis that was an indication of the poor performance of African agriculture and, more particularly, that of the WCA region. These, among others, are the slow growth of agricultural Gross Domestic Product (GDP), a high proportion of poor people, a large percentage of imported consumer goods, and a marked gap between production and demand for food products, amongst others. This situation in our sub-region calls for an acceleration of agricultural transformation on which depends the income of 70% of the 325 million inhabitants and inspires me to applaud CORAF/WECARD for adapting its plans to the context of the Comprehensive Africa Agriculture Development Programme (CAADP).

One of the major objectives of CAADP being to achieve an average annual agricultural growth of 6% by 2015, this adaptation seems to me a promising way to ensure the long-awaited transformation of agriculture in our sub-region.

It is encouraging to note that during the 2008-2013 period CORAF/WECARD was able to mobilise the different actors in agricultural Research and Development (R&D), and the necessary resources to finance its 1st 5-year plan to produce the results needed to contribute to the sustainable growth of the agricultural sectors in West and Central Africa through the equitable involvement of its stakeholders.

I expected no less of this regional organization that I had the privilege to discover in the line of my previous duty as Executive Secretary of the Economic Communities of West African States (ECOWAS).

Its identification in December 2005 as the technical arm of ECOWAS for agricultural R&D, followed by its responsibility to prepare the West Africa Agricultural Productivity

Programme (WAAPP) was an opportunity for me to appreciate, for its true value, the important role and advantages of this sub-regional organization (SRO). My benchmark for this appreciation was the swiftness with which it prepared the WAAPP, enabling its effective implementation in 2008 in Ghana, Mali and Senegal.

By extending its partnership to other Regional Economic Communities (RECs) and Inter-Governmental Organizations (IGOs) in WCA and by establishing many other strategic partnerships, it has created the conditions for a better understanding of its role and strengthened its credibility.

This publication has the merit of highlighting the many achievements of the 1st Operational Plan designed on the concept of Integrated Agricultural Research for Development (IAR4D) advocated by Framework for African Agricultural Productivity (FAAP), a new paradigm for agricultural research that includes a wide range of stakeholders in all aspects of planning, implementation, monitoring and ownership of programmes.

It is quite remarkable that despite questions about proof of concept, CORAF/WECARD's proof of application has been translated by these significant achievements in relation to its main functions and covering the mobilisation of partnerships for the transformation of agriculture, strengthening capacity for agricultural innovation, Knowledge Management (KM) for innovation, as well as advocacy.

Also, I express the wish that this book, also rich in various lessons on CORAF/WECARD's contribution to the transformation of agriculture in WCA, could further consolidate it in its role and inspire other institutions working for the same agricultural transformation.

**Dr Mohamed Ibn Chambas**  
**Former Executive Secretary of ECOWAS**



## Prologue: The Context of this Book



This book presents the key achievements in the implementation of CORAF/WECARD's 1<sup>st</sup> Operational Plan. Using specific case studies, we describe the outputs from agricultural research in the WCA sub-region that comprises the CORAF/WECARD's mandate zone. We also draw attention to how these achievements have enhanced the livelihoods of smallholder producers and end users of agricultural research in the region.

Following extensive engagement and consultations with stakeholders in the agricultural research system in WCA and in collaboration with RECs, namely , ECOWAS, The West African Economic and Monetary Union (UEMOA), Communauté Économique et Monétaire de l'Afrique Centrale (CEMAC), Economic Community of Central African States (ECCAS), the African Union Commission (AUC), Forum for Agricultural Research in Africa (FARA), as well as international donors and DPs, CORAF/WECARD developed a Strategic Plan, SP, for the period 2007-2016. To implement this SP, the 1<sup>st</sup> Operational Plan, OP, 2008–2013 was designed in the framework of the CAADP and consistent with the principles of FAAP. The development process for the OP involved a common strategy that provided the framework for the development of an implementation protocol for WAAPP and the Central African Agricultural Productivity Programme (CAAPP) within the context of CAADP.

CORAF/WECARD stakeholders agreed that implementation of this 1<sup>st</sup> Operational Plan will adopt the IAR4D paradigm that is built on the principle of an inter-sectoral and multi-stakeholder approach in priority setting, engaging a wide range of relevant stakeholders including policy makers, researchers, producers and end users of

agricultural research in the agriculture value chain. Subsequently, CORAF/WECARD management established an organizational and programme structure to facilitate support for the delivery of the expected results.

Through effective implementation of the Operational Plan, CORAF/WECARD expects to contribute significantly towards achievement of the anticipated 6% target in agricultural growth in the WCA sub-region.

## CORAF/WECARD's mission and vision

Through implementation of the its Operational Plan, CORAF/WECARD, is committed to delivering a series of results that encompass conventional agricultural science research, and the use of Innovation Platforms (IPs), policy, and capacity strengthening as well as KM with the involvement of broad-based stakeholders in the context of IAR4D.

CORAF/WECARD's strategic intentions are articulated in its vision and mission statements as follows:

- **CORAF/WECARD's vision** is for a sustainable reduction in poverty and food insecurity in WCA through an increase in agricultural-led economic growth and sustainable improvement of key aspects of the agricultural research system.
- **CORAF/WECARD's mission** is to establish sustainable improvements to the productivity, competitiveness, and markets of the agricultural system in WCA by meeting the key demands of the sub-regional research system as expressed by target groups.

## Why this book?

At the end of the implementation period of the 1<sup>st</sup> CORAF/WECARD Operational Plan, it was desirable to consolidate, in one volume, the major achievements made in the implementation of the Operational Plan.

The contents of this book therefore present the key achievements aimed at demonstrating the scientific credibility and high agricultural research coordination capacity of CORAF/WECARD.

Hopefully, this book will serve as an operational framework to guide coordination of agricultural research for development as well as a valuable contribution to agricultural and rural community development in WCA.

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# Chapter One: Introduction



In July 2003, African Heads of State and Government made the commitment to devote at least 10% of national budgets to agriculture, in order to achieve a minimum increase of 6% annual growth in agriculture. This commitment was intended to make the agriculture sector the engine of economic development of Africa. In this regard, the CAADP, an initiative of the New Partnership for Africa's Development of the African Union (AU-NEPAD), was developed to guide the actions of countries to stimulate broad-based economic growth, poverty reduction and food and nutrition security.

The CAADP programme is based on four complementary pillars of which Pillar IV is specific to improving agricultural research, dissemination and transfer of technologies. The FAAP developed by FARA and its SROs and adopted in 2006 by African Heads of State serves as a tool for the comprehensive orientation of agricultural productivity interventions to increase agricultural growth and complement the other three pillars.

The adoption of CAADP was followed by the development and/or revision of agricultural development policies and strategies of the RECs and those of their operational agencies to align them with the CAADP objectives. Thus, in 2005, ECOWAS as a regional focal agency for the implementation of CAADP in West Africa, adopted the agricultural policy known as ECOWAP supported in 2010 with the Regional Agricultural Investment Programmes (PRIA). The RECs with the support of technical institutions, have supported member countries in the design and implementation of National Agricultural Investment Programmes (NAIP).



*Figure 1: Participants at the extraordinary CORAF/WECARD General Assembly in Abidjan (May 2007) on the adoption of the SP 2007-2016.*

Following its identification as a specialised agency of RECs in WCA for the implementation of CAADP Pillar IV, CORAF/WECARD revised its strategy, by integrating the principles of FAAP into the Strategy. The process for this review commenced in February 2006 with the organization of the first CORAF/WECARD General Assembly (figure 1) of its DPs to diversify its funding sources, to develop relationships of trust with its financial partners and, above all, to put in place a strategy for consistent and sustainable investments in agricultural research in WCA.

To achieve these objectives, the conference agreed on the need for a revision of the CORAF/WECARD 1999-2014 SP in line with the agricultural policies in the sub-region. CORAF/WECARD rolled out a participatory approach that involved different stakeholders and led to the adoption of a new SP 2007-2016 along with an initial 5-year OP for 2008-2013. The plans derive legitimacy from this process and serve as reference documents for strategic contribution of agricultural research to the development of agriculture in the WCA sub-region.

During the implementation of the 1st OP, external and internal reviews were organized by partners of CORAF/WECARD and its Executive Secretariat (ES) to evaluate all or part of the performance of the institution, highlighting the progress of implementation and the challenges encountered. They focused on the Change Management Plan for a successful implementation of the OP, strengthening the institutional capacity of CORAF/WECARD for the coordination of research programmes and projects, progress in the mid-term implementation of the OP, and the quality of CORAF/WECARD's partnerships.

The final evaluation of the OP completed in 2013 noted, with satisfaction, significant progress in the achievement of the specific objective of CORAF/WECARD, namely, 'Sustainable growth in productivity, competitiveness and agricultural markets induced

by the involvement of all stakeholders is enhanced in WCA'. Furthermore, the independent evaluations reviewed achievements in strengthening the organizational structure of CORAF/WECARD, its contributions to achieving the objectives of Pillar IV, the effective implementation of the IAR4D approach, and its goal to promote gender in R&D. These successes resulted from the efficient execution of CORAF/WECARD's functions of coordination, capacity strengthening, advocacy and knowledge management.

In this book, we highlight the key achievements by CORAF/WECARD in the implementation of far-reaching reforms elaborated in its SP 2007-2016, (figure 2) and the OP 2008-2013. Hopefully, this book will serve as an advocacy tool to solicit support from policy makers, Development Partners, national partners, investors and the variety of CORAF/WECARD stakeholders.

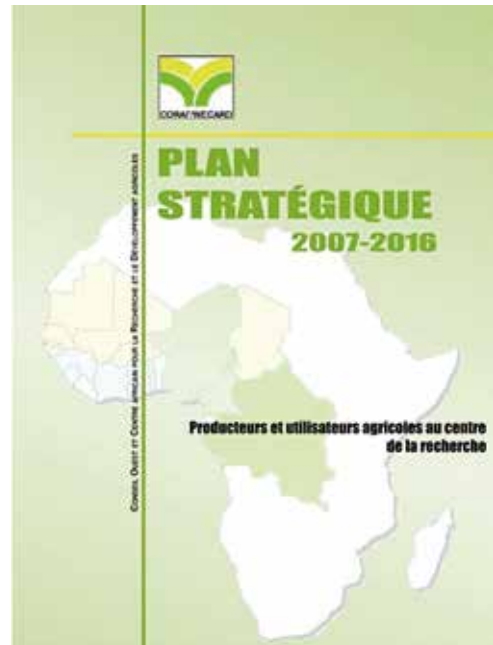


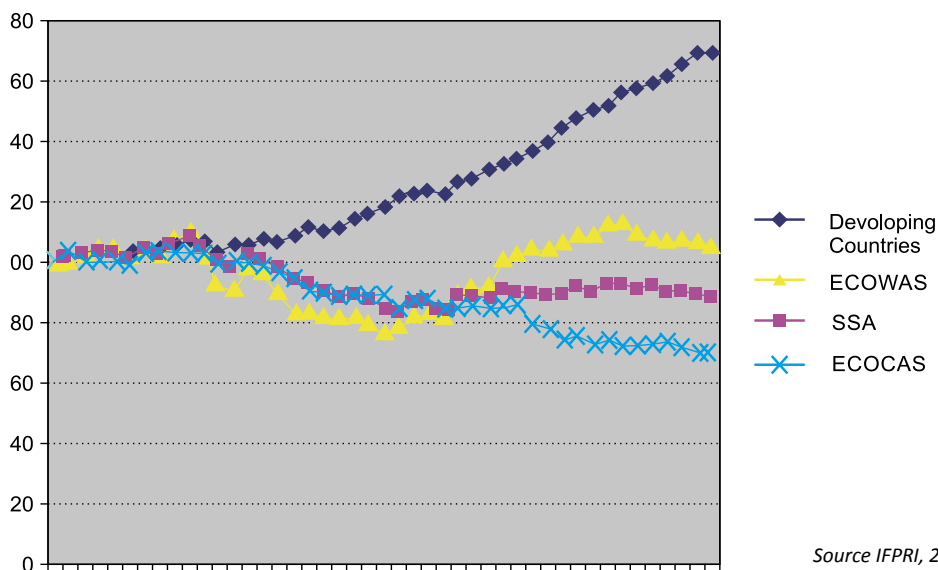
Figure 2: The CORAF/WECARD Strategic Plan Document 2007-2016.

The AU-NEPAD initiative as a response to the crisis in African agriculture. Although the agricultural sector is identified as the engine for economic and social development in most African countries in Sub-Saharan Africa, the region is characterised by its low agricultural productivity and competitiveness, as well as poor access to markets for its agricultural products. With the predominance of smallholder farmers (SHFs), rapid population pressure, growing food insecurity, declining agricultural productivity, and degradation of natural resources, further worsened by a more variable and changing climate, African agriculture has continued to witness poor performances compared to other regions of the world (see Figure 3).

CAADP adequately responds to the diverse problems that characterise African agriculture. African states have therefore determined to move away from the shackles and restrictions of structural adjustment with strong commitment to devote at least 10% of national budgets to agriculture. CAAP thus offers African countries and sub-regions a framework for setting priorities (Box 1) for agriculture, based on well-established principles (NEPAD, 2013).

The priority areas of intervention of CAADP are based on four complementary pillars as follows:

**Pillar 1:** Extending the area under sustainable land management and served by reliable water control systems.



Source IFPRI, 2006.

Figure 3: Net agricultural production per inhabitant.

### Box 1: NEPAD's basic principles for establishing agricultural priorities

- The dialogue between national stakeholders including agricultural organizations.
- Alignment with the major macroeconomic balances.
- Subsidiarity, leaving the countries to define their priorities, by entrusting to RECs the alignment and actions of regional influence, by asking the NEPAD Planning and Coordination Agency (NPCA) and the AUC to provide technical support and strategic management.
- Partnership and dialogue with donors.
- Accountability
- The search for alliances with the business sector, beyond the farmers.

**Pillar 2:** Improving rural infrastructure and trade-related capacities for improved market access.

**Pillar 3:** Increasing food supply and reducing hunger.

**Pillar 4:** Agricultural research, technology dissemination and adoption.

Appraisal of agricultural performance in Africa helps to establish that through the adoption of CAADP between in 2003 and 2010, average agricultural growth has been around 3.8%, which is a remarkable improvement compared to the 1980s but far less than the 6% target advocated by the CAADP (IFPRI, 2014). By registering an average growth of 3.2% of the gross agricultural production during the 2001-2011 decade, WCA presents a very different picture from the rest of the continent (Table 1).

Failure to follow through on the Maputo Declaration, by African Heads of State and Government to allocate at least 10% each of their national budgets to the CAADP, implementation for 5 years has been the major factor for this poor performance. After

**Table 1: Average real annual growth of gross value added of agricultural production, 1961-2011**

	1991-95	1996-00	2001-05	2006-11	2001-11
<b>Total CORAF</b>	5.3	3.7	4.4	2.3	3.2
<b>Best performers (&gt;6%)</b>	3.3	2.7	8.4	5.5	6.8
<b>Good performers (3%&gt;x&lt;6%)</b>	9.2	3.9	5.8	3.3	4.5
<b>Poor performers (&lt;3%)</b>	4.9	3.8	3.3	1.3	2.2

Source: IFPRI discussion paper, 2013.

Notes:

\* Countries in each of the groupings are as follows (also ranked by performance in each group)

a) Best performers: Sierra Leone, Niger, Mali and Cameroon

b) Good performers: Burkina Faso, Ghana, Guinea-Bissau, Congo, Togo, Cape Verde and Chad

c) Poor performers: Guinea, Gabon, Senegal, Benin, Nigeria, Central African Republic, Mauritania, The Gambia, Democratic Republic of the Congo, Côte d'Ivoire and Liberia

five years of the 2013, target date, only 13 out of the 55 African countries, including six of the CORAF/WECARD zone, had honoured their commitment. These countries are Burkina Faso, Burundi, Ethiopia, Ghana, Guinea, Madagascar, Malawi, Mali, Niger, Republic of Congo, Senegal, Zambia and Zimbabwe.

## The FAAP: A response to improving African agriculture

Following its mandate as the lead institution for implementation of CAADP Pillar IV, FARA and its constituent SRO were requested by NEPAD to develop a framework for agricultural productivity in Africa, FAAP, to enable effective implementation of the objectives of this Pillar IV. In 2006, FAAP, (Box 2) was approved by the African Heads of State and Governments in Banjul, The Gambia. FAAP helped to formulate and analyse three main elements necessary for the improvement of agricultural productivity, its profitability and sustainability; these are

- (i) The development and reform of agricultural institutions and services, including efficient use of resources for activities that are likely to ensure agricultural productivity.
- (ii) Strengthening the level of total investment.
- (iii) Harmonisation of funding.

Analysis of these three elements also shows that agricultural research can play a highly significant role in holistically addressing the needs and opportunities for innovation in the agricultural sector. FAAP provides guidelines and principles for policies, programmes and institutions of knowledge that are needed to increase agricultural productivity and improve rural livelihoods.

Beyond improving the performance of individual initiatives through the application of best practices, FAAP also highlights the need to replicate and expand programmes through increased resource allocation and investments. It stresses that increased funding should be available through mechanisms that are much less fragmented. Harmonisation of Africa's public and private sector resources with those of DPs must be a priority of the agenda. FAAP is also a tool designed to help stakeholders to put together political, financial and technical resources to strengthen Africa's capacity for agricultural innovation. With FAAP, it is easier to track the progress made in recent years

### Box 2: FAAP principles to achieve the African vision of 6% growth in annual agricultural production

1. **Strengthening the capacity** of end-users to ensure their significant participation in the relevant implementation of priorities and work programmes for research, extension and training.
2. **Planned subsidiarity** to give responsibility and control of research resources, agricultural extension and training at the lowest appropriate level (local, national and regional).
3. **Pluralism in the production of research, extension, and agricultural training service** so that the skills and strengths of a broad range of service providers (such as universities, Non-Governmental Organizations (NGOs), and public and private sectors) can contribute to publicly support agricultural productivity operations.
4. **Evidence-based approaches**, particularly as regards data analysis (including economic factors and market orientation in policy development), priority setting and strategic planning for research, agricultural extension and training.
5. **Integration of agricultural research** with extension services, the private sector, training, capacity building, and education programmes to respond holistically to the needs and opportunities for innovation in the sector.
6. **Explicit incorporation of sustainability** criteria in evaluation of public investments in programmes (fiscal, economic, environmental, social) of agricultural productivity and innovation.
7. **Automatic use of improved management information systems**, especially in the field of planning, financial management, reporting, M&E.
8. **Introduction of cost sharing** with end users according to their ability to pay, to increase their interest in effective service delivery and to improve financial sustainability.
9. **Integration of gender considerations at all levels**, including farmers and farmer organizations, the private sector, public institutions, researchers and extension staff.

in terms of investments for agricultural R&D in Africa that has achieved a rate of 0.6% of GDP which is far lower than the target of at least 1% set by NEPAD (FARA, 2013).

### The alignment of CORAF/WECARD with agricultural priorities in WCA

To address the problems of agriculture in WCA, major changes listed in the 2007-2016 SP of CORAF/WECARD are envisaged (Box 3).

In view of these envisaged changes, CORAF/WECARD needed to review and update its 1999-2014 SP – a process of strategic orientation review initiated in 2006 based on the FAAP. By analysing the main issues, having previously identified and classified priority research areas through the results of the International Food Policy Research Institute (IFPRI) study commissioned in 2006, the SP 2007-2016 resulting from this new schedule differed from the previous one that was not only very ambitious, but was not supported by an OP.

Results of consultations with various stakeholders representing the national agricultural research systems in WCA, the SP 2007-2016 and its 1<sup>st</sup> OP 2008-2013 of CORAF/WECARD present the main research areas of the institution, its priorities for research interventions, its logical framework and the institutional reforms necessary for successful implementation of the plan.



### **Box 3: Major changes expected during the implementation of the SP**

Changes in the implementation of the new SP 2007-2016

1. Intra-African trade will be increasingly important.
2. The prevalence and impact of animal and zoonotic diseases such as trypanosomiasis, Highly Pathogenic Avian Influenza (HPAI), and Rift Valley Fever will rise.
3. The increased influence of climate change and more frequent adverse weather conditions will increase the vulnerability of local producers, making their traditional knowledge more quickly obsolete.
4. The need to feed a growing population will lead to increased pressure on land and water resources and accelerate land degradation.
5. Water will become an increasingly rare commodity.
6. Increased oil shortage will result in increased fuel prices and oil by-products, affecting food production costs and international trade.
7. The production of bio fuels will modify market parameters to which producers will need to adapt.
8. The need to develop new varieties and practices for crop and livestock must meet the market challenges, changing climate and emerging diseases.
9. Conservation and sustainable use of water sources and biodiversity will become more and more critical, drawing more attention to livestock that uses the largest proportion of land in Africa.
10. Africa will have to take more responsibility to improve and protect its main crops.
11. The growth of the African diaspora will expand the export market for African food and, consequently, domestic investment in Africa.

### **Box 4: Key issues of the SP and OP**

1. The fragmented support enjoyed by agricultural research in Africa should be coordinated and harmonised by including the different stakeholders, in particular, producers.
2. The SP of CORAF/WECARD should take into account the links between the different pillars of CAADP (and not focus solely on Pillar IV).
3. FAAP provides the framework for the activities of CORAF/WECARD. The latter has a role to play in the strengthening of national programmes, since the existence of strong National Agricultural Research Systems (NARS) will increase its capacity to respond to regional problems.
4. Several members of CORAF/WECARD are involved in plans and organizations that overlap. It is therefore necessary to rationalise these policy instruments to effectively support the sub-region.
5. Conflict and post-conflict scenarios are a feature in many member states. They create a particular situation for agricultural R&D, requiring specific and targeted responses.
6. CORAF/WECARD should encourage DPs to provide substantial support and funding to activities that address issues related to the strategy and priorities of the sub-region that have been approved by stakeholders in the agricultural sector. There is also a need to reduce the number of programmes that are highly dependent on the support of DPs.
7. The partnerships between regional economic communities (ECOWAS, ECCAS, CEMAC, UEMOA) and CORAF/WECARD should be taken advantage of in view of the influence that these RECs exert.

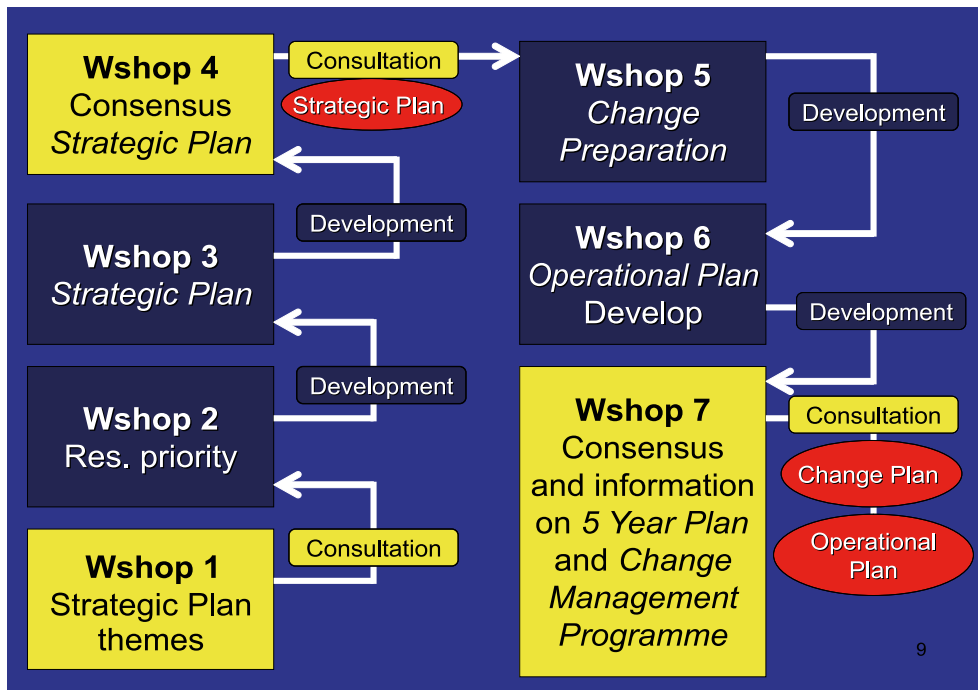
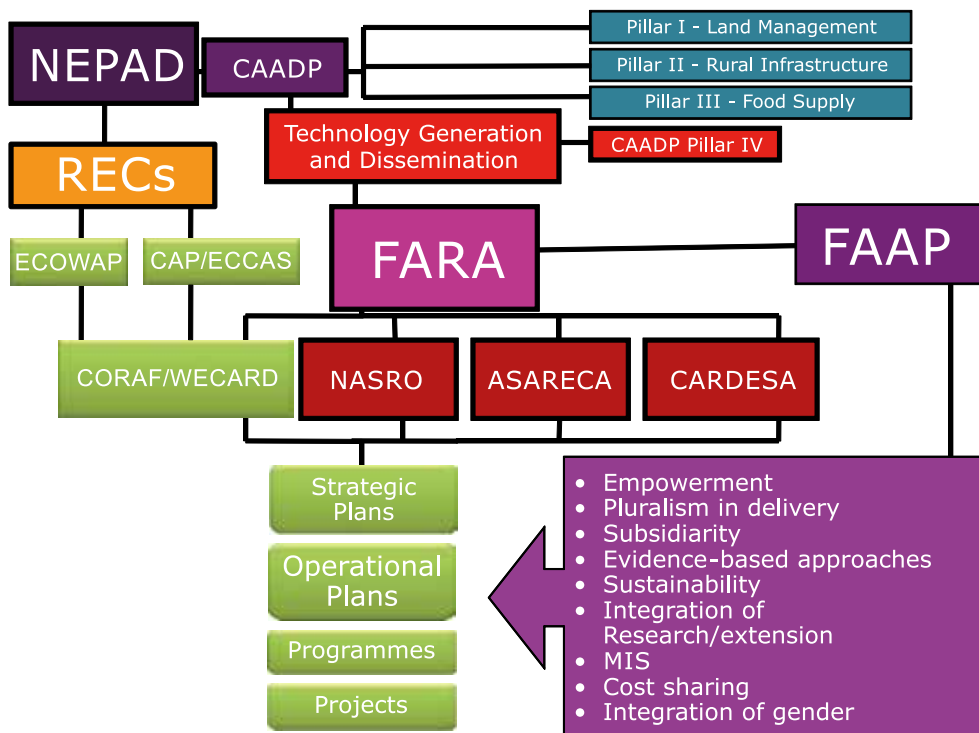


Figure 4: The preparation stages of the SPs and OPs

Figure 5: Relations between the plans of CORAF/WECARD, CAADP, FAAP and FARA



## Strategic orientations of CORAF/WECARD

The mandate of CORAF/WECARD is to coordinate regional agricultural research and facilitate the effective use of technologies developed by public and private sector institutions. Research coordination is carried out by awarding grants to major public and private sector organizations that have specialised skills in agricultural productivity in WCA.

CORAF/WECARD's mission is to achieve sustainable improvements in competitiveness, productivity and markets of the agricultural system in WCA and by meeting the essential needs of the sub-regional research system expressed by target groups. This is achieved through its four core functions which are: coordination of the NARS, strengthening the capacity of NARS and their partners, advocacy and knowledge management.

The OP 2008-2013 makes a clear commitment to delivering the following four results using the IAR4D approach built on the Innovation Systems and value chains:

- Result 1: Appropriate technologies and innovations developed.
- Result 2: Strategic decision-making options for policies, institutions and markets developed.
- Result 3: Sub-regional agricultural research system is strengthened and coordinated.
- Result 4: Demand for agricultural knowledge from target groups is facilitated and met.

These results are delivered through the following 8 programs which are centrally coordinated on the basis of technical and policy research.

1. Livestock, fisheries and aquaculture
2. Food crops
3. Non-food crops
4. Natural resource management
5. Biotechnology and biosafety
6. Trade and policy markets
7. Knowledge Management
8. Capacity-building and coordination

To identify strategic priority research domains in WCA, CORAF/WECARD conducted scoping studies for each of the 8 programmes to guide interventions. These studies essentially focussed on the following aspects:

- A review and validation of constraints and opportunities.
- A review, validation and prioritisation of themes, sub-themes and ideas of programmes.
- A determination of strategic partnerships and related capacity-building needs.
- The framework and efficient tools for programme coordination.

Through multi-stakeholder consultative processes, the studies prioritised the themes and sub-themes and developed key strategic thematic areas for intervention in each of the eight programmes. Following the studies, calls were advertised for competitive and commissioned projects for each of the programmes to be supported through the competitive fund mechanism under the 1st OP. Implementation of these programmes and projects are conducted by the Centres of Specialisation/Centres of Excellence, Centres of the Consultative Group on International Agricultural Research (CGIAR) and the advanced institutions of the North, Civil Society Organizations, and NARS supported by appropriate management bodies. The outputs of the implementation of 56 projects that won grant awards are described in Chapter two.

## **The theory and management of change**

The change management system adopted by CORAF/WECARD ensured that regional agricultural research would enhance food availability, farmers' incomes, improve the economic status of actors of the value chain, and provide development dividends to investors and DPs. To achieve these outcomes, CORAF/WECARD needed to adopt a new paradigm which emphasises a shift to networking; a shift from project concentration to programmes that have roots in NARS; shift from decentralised coordination of regional research to centralised programme management. Developing and implementing a system where actors in the value chain are involved in technology development and use in a holistic manner, and to ensure that IPs encourage and create entrepreneurships in the context of IAR4D.

This theory of change management and the system adopted entailed restructuring of the CORAF/WECARD Executive Secretariat, the Governing Board and the operations of the General Assembly, the Scientific and Technical Committee (STC), and the modus operandi of the regional projects.

The change management process was considered necessary and an integral part of the OP, therefore the change management process was implemented during the period 2009-2010 to deliver results related to the development and strengthening of the IAR4D paradigm at the sub-regional level. Through organization of workshops to sensitise stakeholders on the key aspects of the approach, development of skills of actors to implement and manage change, and planning and development of the practical aspects of implementing change, this process generated the expected results including sustainable establishment of the functional paradigm of CORAF/WECARD.

During this change management process, the stakeholders of CORAF/WECARD were strongly committed to implement change that has been institutionalised in many cases. Thus, at the Executive Secretariat, the change process helped to review, revise and strengthen its governance frameworks. There is a general consensus among stakeholders that there has been an irreversible momentum of the IAR4D paradigm towards implementing the programme, which has helped CORAF/WECARD to generate significant goodwill with its actors.

With the NARIs, the direct consequence of the change management awareness workshops was the decision of some of them (Nigeria, Sierra Leone) to revise their SPs to align them with CAADP using the FAAP principles to make them consistent with that of CORAF/WECARD.

The changes introduced during 18 months had limited impact on the NARS, but this situation would be corrected through a mentoring system linked with sensitisation workshops; which was identified as the best approach for implementation of the OP 2008-2013.

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## Chapter Two: CORAF/WECARD's strategic responses to agricultural productivity challenges



### Mobilising partnerships for transformational agriculture

*The genesis:* The food crisis of the 1980s, partly caused by the droughts in the Sahel of West Africa, the wide-spread dry spells in the Guinea Savannah of the WCA region<sup>1</sup>, and declining public investments in technology generation from agricultural research<sup>2</sup>, constituted a threat to the socio-political security of the region. The Food and Agriculture Organization of the United Nations (FAO) reports for that decade indicated that the region was faced with a dire food security challenge, and called for urgent measures. This constituted one of the galvanizing factors for actors and partners of the agricultural research in Africa to create CORAF<sup>3</sup> in 1987. Therefore, the founding partners of CORAF/WECARD<sup>4</sup>, then comprising managers of research institutes of Franco-phone Africa and France, resolved to pool together their material, human and financial resources in an effort aimed at ensuring food security in the region. This was the beginning of the mobilization of both scientific and DPs towards a more concerted and logical approach to resolving the recurrent food crises in the region. This act of CORAF/WECARD in forging and fostering regional collaboration and international partnerships

1. Climate change and variability in the Sahel <http://www.unep.org/Themes/Freshwater/Documents/pdf/ClimateChangeSahelCombine.pdf>
2. Investing in Sub-Saharan Africa agricultural research <http://www.ifpri.org/sites/default/files/publications/ib24.pdf>
3. At its inception, CORAF was known as « Conference des Responsables de la Recherche Agronomique de l'Afrique et de France ».
4. CORAF/WECARD emerged following a series of reformations and the adhesion of Anglo- and Luso-phone countries.

geared towards improving food availability through development and deployment of improved technologies was the first on the African continent. The founding and the modus operandi of CORAF/WECARD was therefore predicated on the conviction of its stakeholders that increasing agricultural productivity, nutritious food security and wealth creation will require the use of new and effective technologies generated from R&D institutions based in the region.

Again, during the period of 2006-2008, a new food crisis swept through the globe. The availability of the main staples – cereals, grain legumes, root and tubers –of WCA was dramatically reduced. Bad harvests and rising food prices were caused by a combination of factors such as crop failures resulting from diseases and the vagaries of weather (particularly the growing variability in climate), low crop, labour and land productivity, inappropriate post harvest handling and food distribution systems, and policy neglect on the need for appropriate investments in the agricultural sector as stipulated in the Maputo Declaration<sup>5</sup> requiring African governments to invest at least a 10% of their annual budget in agriculture. This crisis adversely affected most of WCA and led to widespread civil unrests (the food riots of 2007-08) in Burkina Faso, Côte d'Ivoire, Cameroon, Chad, Congo, Mauritania, Guinea Bissau, Guinea Conakry, Ghana and Senegal. Incidentally, this period coincided with the development of CORAF/WECARD's SP (2007-2016) and OP (2008-2013). The events of this period strengthened CORAF/WECARD's resolve towards significantly contributing to finding a sustainable solution to the region's food insecurity. CORAF/WECARD mobilised and helmed-in both technical and DPs with a resolve to deploying appropriate knowledge in the region's agricultural production-consumption continuum.

***Formidable linkages to continental food security policies:*** Following this widespread and recurrent food insecurity situation in WCA, and the entire African continent, NEPAD<sup>6</sup> developed the CAADP<sup>7</sup> to promote interventions that best respond to the widely recognised crisis situation of African agriculture and food – focusing on the regional and national pooling of resources and investments in this strategic sector. CORAF/WECARD played a significant role through the newly created FARA<sup>8</sup> in the development of CAADP.

The formal launch of CAADP in 2003 by the AU heads of state was a clarion call to action by all partners and institutions of the AU and NEPAD agency. The newly launched FARA again proved its relevance by mobilising the SROs<sup>9</sup> in developing the FAAP<sup>10</sup> which was shaped to facilitate a logical mobilisation and deployment of best practices in partnerships and resources in developing, disseminating and use of

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5. <http://www.nepad.org/nepad/knowledge/doc/1787/maputo-declaration>

6. NEPAD was created in 2001 by the African heads of state.

7. CAADP's ambitious goal was to achieve a 6% annual growth rate in the agricultural sector.

8. FARA had its permanent secretariat established in Accra in 2002 to act as the African voice in agricultural research and knowledge use in production.

9. The then SROs were Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA), Southern African Development Community (SADC) - The Food, Agriculture and Natural Resources (FANR) and CORAF/WECARD.

10. FAAP launched in 2006 by African Union and NEPAD Agency. Retrieved March 2014 from [http://www.fara-africa.org/media/uploads/File/FARA%20Publications/FAAP\\_English.pdf](http://www.fara-africa.org/media/uploads/File/FARA%20Publications/FAAP_English.pdf)

agricultural technologies. This constituted a significant step towards the transformation of WCA agriculture specifically (and of Africa generally). The CORAF/WECARD's new paradigm in mobilising partners and deployment of technologies has been yielding tremendous dividends in agricultural productivity in the WCA regions as can be seen from descriptions in the later sections of this chapter.

The FAAP, on which CORAF/WECARD's 10-year vision was hinged, posited that agricultural growth at pre-1990s rate at an average of 3.2% must be revised in order to comprehensively resolve food insecurity. It opted that "sustained agricultural growth at a much higher rate than in the past is crucial" for reducing widespread hunger and creating wealth amongst the producing communities. That agriculture contributed most significantly to the GDPs of the countries of the region has never been in doubt. However, why appropriate steps in positioning this strategic sector had hitherto been neglected by policy remained an issue. The CAADP, FAAP and the new Science Agenda for African Agriculture (S3A) have all contributed to re-positioning agriculture in order to play its role in growth and development. They have brought the vision of transforming the region's agriculture from levels which hardly provided subsistence to the farming communities to new entrepreneurial levels with better focus on wealth creation. The CAADP, FAAP and S3A frameworks charted the path to development and mobilisation of inclusive partnerships which formed the basis of the IPs on which CORAF/WECARD regional projects operated during the period 2007-2013. They gave meaning to the 'subsidiarity' terminology which stressed appropriation of responsibilities, authority and resources geared towards ensuring that partnerships in the generation and use of technologies was equitable; and that the views of producers, research scientists, entrepreneurs, policy, extension, and other actors of the value chain weighed-in. And they ensured that there was measured accountability by all actors in the agricultural development process.

The CAADP, FAAP and S3A frameworks were developed to address the institutional issues that bordered around capacity weaknesses, insufficient end-user and private sector involvement in technology generation and use systems, and ineffective farmer support systems persistent in productivity programmes that continued to hamper the growth of the agricultural sector.

*Dividends from the bold steps in partnerships and strategising:* Following the development of its new strategy on tackling the region's food insecurity, CORAF/WECARD's OP (2008-2013) strove to address the challenges constraining smallholder agricultural productivity and production. CORAF/WECARD took bold steps, mobilised regional and international partners, and focused on achieving a broader-based productivity driven by markets and entrepreneurship. The steps included the commissioning, during the period of 2008-2013, of over 70 region-wide broad-spectrum actor-inclusive projects directly beamed at those challenges. Essentially, the projects acted as self-advocates for taking pockets of technology and innovation successes to wider scales. Similarly, CORAF/WECARD galvanised a massive multi-faceted policy advocacy campaign for both technical and investment support to knowledge generation, and coordinated deployment of the technologies. These have continued to transform smallholder production systems. The

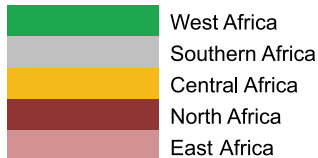




1980 = \$78 billion



2010 = \$196 billion



FAO independent reports indicate that food production in Africa expanded most in the West Africa region, from its base of 26% in 1980 to 33% in 2010. This amounted to over US\$ 64 billion in 2010, up from US\$ 20 billion in 1980.

Less progress was reported for the Central Africa region during the period 1980-2010. CORAF/WECARD is currently addressing this situation.

**Figure 6: Changes in food crop and animal production in WCA compared to other regions.<sup>11</sup>**

11. Reconstructed from FAO data sources.

## Changes in food crops production

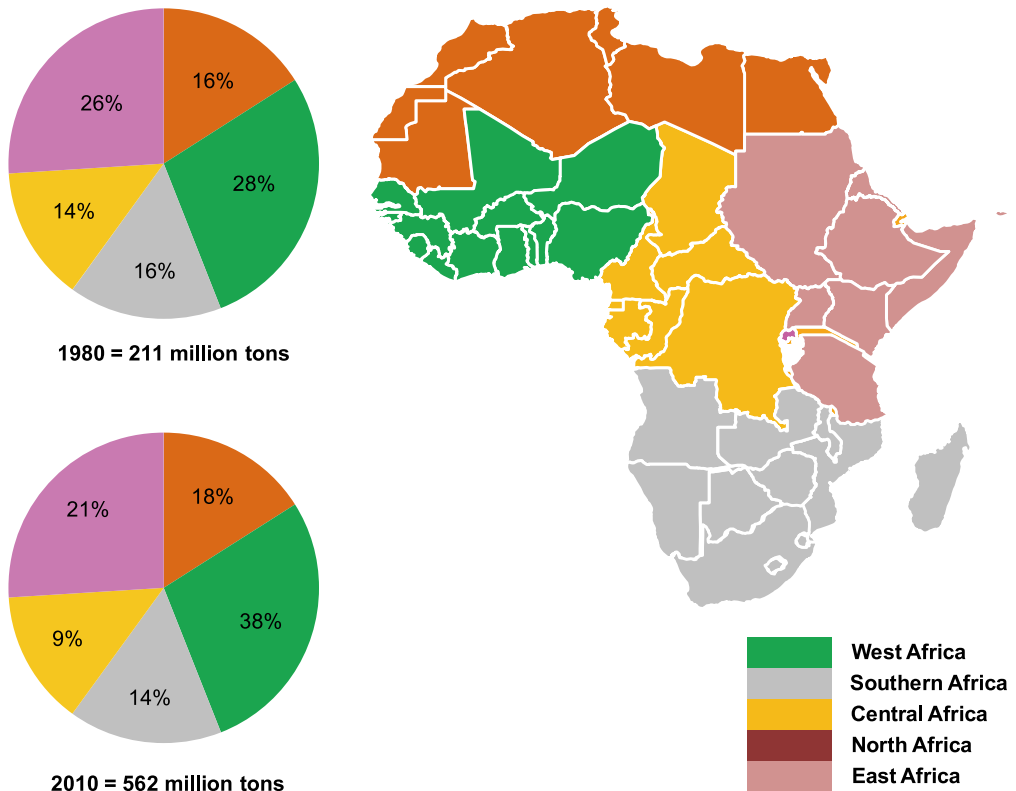


Figure 7: Changes in food crop production between 1980-2010.

FAO independently presented proof of positive signs in food production in the region, compared to other regions in the African continent (see Figures 6 and 7).

West Africa's food production significantly expanded during the period 1980-2010<sup>12</sup>. Food crop production (cereals, fruits and vegetables, and roots, tubers and pulses) increased significantly. While food crop production in West Africa was 59 million tons in 1980, it rose to 213 million tons in 2010. However, relevant policies on population growth need to be on par with food production in order to avoid a deficit. On the other hand Central Africa's share in production on the continent declined.

*Proof of CORAF/WECARD's contribution to productivity changes:* The increasing food production in the region has been attributed to increased productivity of staples, the improved management of the natural resource base, and increases in use of inputs. The rates of productivity increases were estimated via the use of Total Factor Productivity (TFP) – which provided overall productivity growth that in turn provided information on efficiency (in the reallocation of inputs) and technical change (changes

12. Reconstructed from FAO data sources.

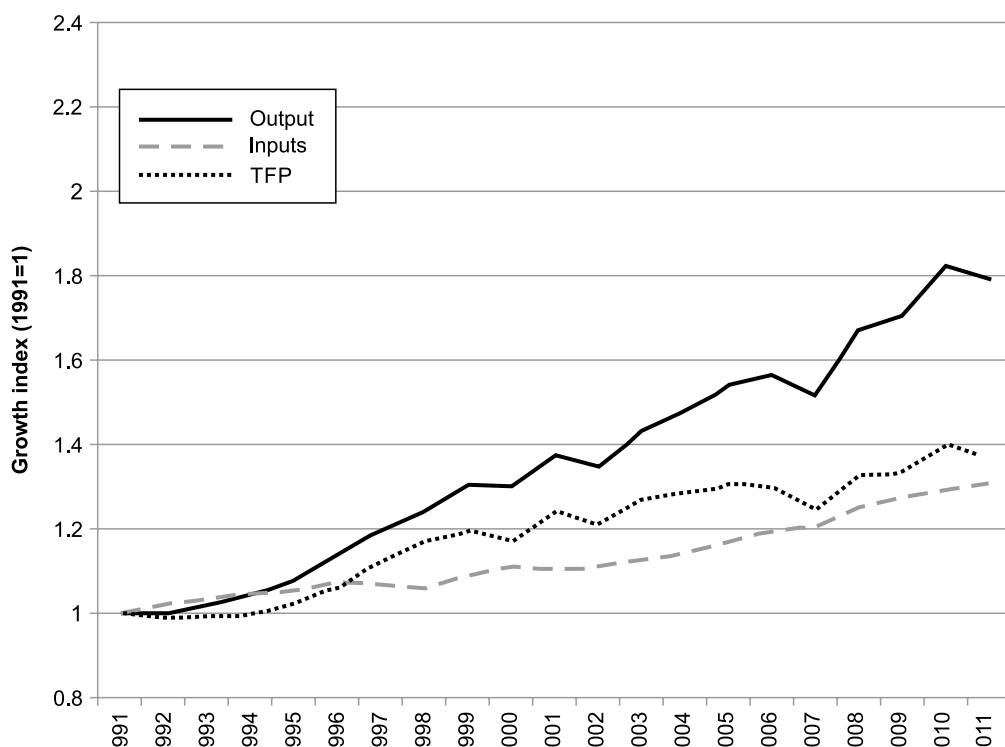


Figure 8: Growth indices of agricultural inputs, TFP and output in the CORAF/WECARD region<sup>13</sup>.

in output). (figure 8) It has been demonstrated that R&D led by CORAF/WECARD and its various national and international partners contributed significantly to the region's overall productivity growth.

A recent 2012 study<sup>14</sup>, in which agricultural growth rate was conducted also to include price effects in addition to the changes in TFP and input use, found that 45% in real GDP growth for most sampled countries from the CORAF/WECARD was attributable to price increases, while productivity growth was significantly accountable for 30% of this growth. Productivity enhancing interventions, which stand at over 53%, constitute most of the technical interventions by CORAF/WECARD programmes and projects, whereas technology dissemination constitutes 17%; resilience and sustainability, 16%; and capacity strengthening, 14%. These constitute clear indications that CORAF/WECARD technical actions geared towards improving the productivity of staples in the region are on the right track. These actions by CORAF/WECARD need greater support in taking these achievements to scale in the WCA region. The potential of technological changes in contributing significantly to production could be realised where appropriate policies

13. IFPRI 2013 discussion paper.

14. Nin-Pratt, A., M. Johnson and B. Yu. (2012). Improved performance of agriculture in sub-Saharan Africa: Taking off or bouncing back? IFPRI discussion paper 1224, Washington, D.C.: International Food Policy Research Institute

are deliberately put in place to address technology use productivity. Such policies must address significantly changes in funding levels needed to generate and use requisite knowledge in food production and wealth creation.

Although challenges in sustainable food production still remain in the WCA region, it is clear that regional and international collaboration led by CORAF/WECARD strengthened the focus of all regional actors in improving food production and availability through development and use of improved technologies.

*Purpose of this chapter:* This section of this book, therefore, highlights some of the major steps taken by CORAF/WECARD in partnership with governments, research institutions and development agencies towards a continuous striving for sustainable positive reversal of food insecurity and the capitalisation of agricultural technology for opportunities towards wealth creation in the region. It provides some overview on the continuing steps being taken by CORAF/WECARD through its innovative partnerships and technology deployment that have been changing the livelihood of its producers. It highlights how IPs are contributing in scaling-up and –out of technologies and in agri-preneurships (i.e. agri-businesses) creation. CORAF/WECARD's contribution to expanding food production in the region is attributable to its institutional modus operandi that puts producers and users of technology in the centre of agricultural research. Sustaining this trend is essential to adequately ensure the food needs of the population of the region that has surpassed 420 million by 2013, up from 350 million in 2006.

## **The innovative modus operandi that is transforming regional food production**

*The paradigm shift and its effect on productivity change:* The continuing food production increase in West Africa has been influenced by CORAF/WECARD's regional technical contributions (see Figure 8) facilitated by its innovative institutional arrangements. At the early stages of CORAF/WECARD's founding in 1987, it was an association of French-speaking countries of Africa and France. The important results delivered by CORAF/WECARD through the federation of regional priorities and pooling of research resources created rationalisation of resources towards regional integration and cooperation on common cross-boundary agricultural production challenges. It created an increased opportunity for germplasm exchange, and encouraged the regional exchange of scientists and mentorships of evolving research systems by relatively more advanced research systems. This regional collaboration also sowed the early seeds of international collaboration with CGIAR and advanced research institutions from the north.

At the initial stages, CORAF/WECARD operated 12 regional, mostly commodity-based, research networks: namely maize, sorghum, millet, groundnut, cassava, yam, rice, vegetables, cowpea, cotton, cocoa and banana/plantain; and five thematic networks: livestock, forestry, genetic resources, drought research, and fallow systems. Each of those research networks was led by a coordinator who was based in his home institution. Each network coordinator had two reporting lines – first to the NARS, and then to the

CORAF/WECARD Dakar-based ES. In order to encourage a more horizontal interaction and create an enabling environment for cross fertilisation of ideas and synergies between programmes/projects judged as most essential in a logical and productive implementation of CAADP and the agricultural policies of the RECs (ECOWAP, example), the CORAF/WECARD GA opted for a more centralised programme-oriented approach, as opposed to the network system. This constituted a major paradigm shift in the implementation of the CORAF/WECARD 1<sup>st</sup> 5-year OP 2008-2013. This 5-year OP was designed to implement CAADP<sup>15</sup>- and FAAP<sup>16</sup>-aligned CORAF/WECARD 10-year SP<sup>17</sup>. The strategy hinges on CAADP's highest-level objective that was aimed at '*sustainably improving broad-based agricultural productivity, competitiveness and markets*' through the delivery of four results. The delivery of the CORAF/WECARD's specific objective "...broad-base agricultural productivity, competitiveness and markets sustainably improved in WCA" was hinged on successfully achieving the following four results:

- 1) Appropriate technologies and innovations developed and used.
- 2) Strategic decision-making options for policy, institutions and markets developed and used.
- 3) Sub-regional agricultural research system strengthened and coordinated.
- 4) Demand for agricultural knowledge from target clients facilitated and met.

The following programmes based and managed centrally by the CORAF/WECARD secretariat were designed to deliver the four results: Livestock, fisheries and aquaculture; Staple crops; Non-staple crops; Natural resource management; Biotechnology and bio-safety; Policy, markets and trade; Knowledge Management ; Capacity strengthening and co-ordination; and WAAPP; and West Africa Seed Programme (WASP).

*Identifying with the challenges of producers:* In order to launch priority productivity influencing projects, each of the CORAF/WECARD secretariat based programmes conducted extensive scoping studies, which identified the most impact-oriented entry points and the key drivers of commodity value chains. These eventually constituted the centripetal force in the development and commissioning of regional projects, all of which were based on the IAR4D paradigm on which the IPs (described later) were created. The inclusive IAR4D approach and its accompanying IPs involved all actors of the value chain – i.e. research scientists, farmers, extension, Small and Medium-sized Enterprises (SMEs), policy, and other actors. Breaking the barrier that separated research from users of technology played a major role in the positive directional change in food production in the region. This trajectory, which was essentially regional by 2007, was largely institutionalised by national research systems by 2013.

CORAF/WECARD has continued to assist the NARS of the region in institutionalising this paradigm. By 2013, CORAF/WECARD regional projects based on the IAR4D

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15. CAADP produced and led by NEPAD.

16. FAAP produced and published by FARA.

17. CORAF/WECARD SP 2007-2016. Published by CORAF/WECARD.

18. The terminology 'emerging' NARS (preferred to the phrase 'weaker NARS') is used in a positive sense. Its connotation includes the fact that the emerging NARS itself recognises its needs for strengthening.

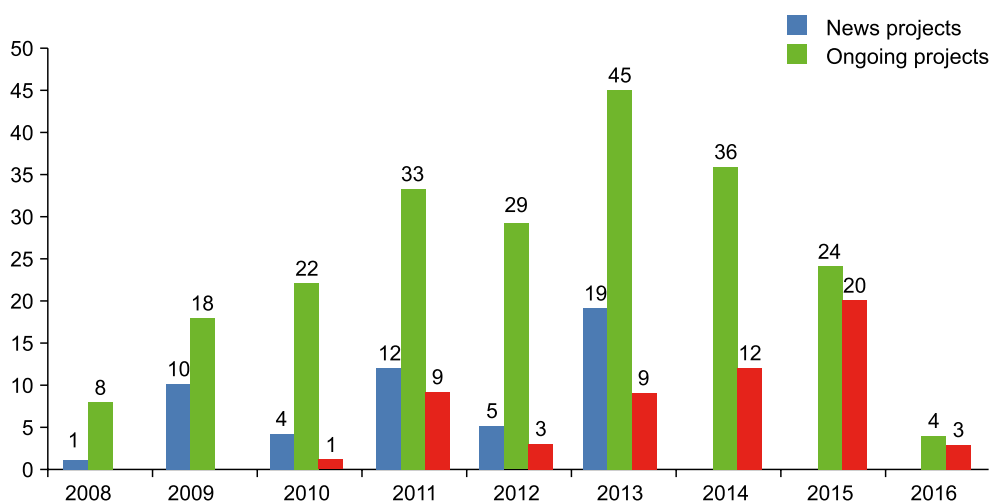
paradigm numbered over 70, with the involvement of all the 22 countries of the region. The projects' implementation arrangements have also been done in such a manner that in several cases, stronger NARS were deliberately brought to partner with emerging<sup>18</sup> NARS. These arrangements have continued to provide invaluable research capacity strengthening for the emerging NARS, and the mentoring of its younger scientists. They also provide first-hand opportunities for scientists to learn from producers and end-users of research outputs on the challenges faced in food production. The regional projects led by CORAF/WECARD constituted the major tool that has continued to positively change the region's food production.

## Regional projects as targeted responses to food production

***Productivity change catalysing projects:*** Regional flagship projects coordinated by programmes hosted at the CORAF/WECARD secretariat constituted some of the most significant hinges on which synergies were created between research institutions, and through which uptake of production innovations by actors of the value chain was facilitated. Distribution of these projects and their implementation period between 2008-2013 is shown in Figure 9 The distribution of CORAF/WECARD regional projects in the countries is shown in Figure 10.

***Stimulating agricultural entrepreneurship through IPs:*** Stabilising food production and profitability via an agri-preneurship's agenda constituted a major hub of the CORAF/WECARD's research for an inclusive development goal geared towards a significant transformation of the smallholders' production for wealth creation. The focus of most regional projects on livestock, fisheries, natural resources, cassava, yam, rice, maize, cowpea, plantain, sorghum, millet and spices value chains aimed at, and indeed shifted,

Figure 9: Distribution of projects from OP 2008-2013.



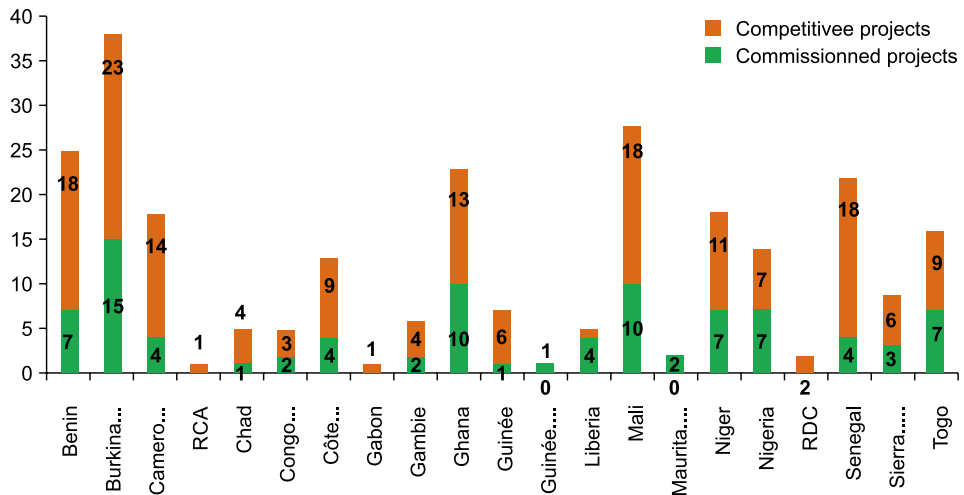


Figure 10: Projects implemented in the countries

smallholders' focus from subsistence production to revenue generation cum enterprise catalysing.

IPs of most of the regional projects formed a central core of the integrated agricultural research for the IAR4D development paradigm of the CORAF/WECARD OP. The IPs constituted the major impact infrastructure through which inclusive partnerships were fostered for technology incubation, uptake and agri-preneurships (or enterprise development). The IPs allowed key actors in a given agricultural production domain to be convened, to interact, and develop a common vision for a concerted action. Type-1 IPs were tools (or channels) to promote the utilisation of best practices among farmers. The Type-1 IP was often coupled with the provision of packages of high-yielding planting material, fertilisers and credit. Type-2 IPs encouraged the creation of enabling conditions for smallholder innovations to happen. In this case the platform's entry points were chosen based on scoping and diagnosis of conditions, opinions, experiences, constraints and opportunities available to the actors. Processes leading to Type-2 IPs essentially resulted in entry points: a) that were not necessarily technological but institutional – as in seed systems development; b) focus on higher levels than the field or farm to remove constraints or realise opportunities; and c) system innovation rather than product innovation. These IPs brought together service providers, finance and micro-finance organizations, traders, policymakers, research scientists and other actors, thus creating conditions for interesting things to happen unexpectedly, including the possibilities of creating trust among actors, a better understanding of their interdependence, and experimentation on types of collaboration that benefits all such as collective marketing and seed systems development<sup>19</sup>.

19. Sanyang, S, et al. 2014. Against the grain and to the roots. CORAF/WECARD and Royal Tropical Institute.

*Dividends from integrated production systems:* The recognition of the importance of healthy soils as fundamental in crop production constituted the pivot of CORAF/WECARD's emphases on integrated production systems being promoted via several regional projects. The integrated systems continued driving home the message of the need for the region's agriculture to return to its roots, and ensuring appropriate nutrient and moisture availability for the production systems, and effective and efficient disease control. These factors had for long constituted some of the major challenges leading to inadequate food production and availability in the region. Whereas the non-replenishment of soil nutrients exported with crops harvested from the region's farms continued leading to soil degradation, the various soil- and air-borne pests ravaged the little harvests that the farmer accrued. However, records of significant achievements by CORAF/WECARD-led projects are highlighted in this section of this book.

Striga, (figure 11) (also known as the witch-weed), for example, had for long remained a woe to farmers in the Sahel of WCA, causing massive cowpea, maize, sorghum and millet crop failures. This weed, which usually establishes itself on its host crop, from where it obtains most of its nutrients thereby starving and choking-out its host crop is being successfully checked in the region. Several producers were known to have

*Figure 11: Striga (notice the purple-coloured flowers) causing early senescence in sorghum before production of ears.*





hitherto abandoned their farms as a result of heavy infestation of their soils by the weed. The introduction by CORAF/WECARD of 12 Striga resistant varieties of sorghum began to restore the hope of such farmers of returning to hitherto abandoned farms in Burkina Faso, Mali and Senegal. In order to achieve this goal CORAF/WECARD also trained 121 private sector agripreneurs drawn from these countries in the art of producing and marketing these resistant varieties of sorghum. In addition to this, 2080 sorghum producers were trained in integrated Striga management. By training locals in the production and distribution of these varieties CORAF/WECARD aimed at ensuring a sustainable system led by actors in the various producing communities.

Preliminary results from Mali indicate that sorghum production started a gradual increase from an average of about 1.1 tons/ha in 2009 to an average of 1.4 tons/ha in 2010 as a result of increasing use of the integrated approach in Striga management. In a similar vein, abandoned farms were being reclaimed in Mali. For example, in Kolokani community, a sorghum producing area, the area farmed in sorghum was 31,048 ha in 2009. The area farmed to sorghum increased to 38,601 in 2010.

The uptake of Striga resistant varieties of sorghum and the reclamation of abandoned farmlands constitute important results that are being capitalised on, especially to enhance the production assets of the rural poor who have no alternatives livelihoods. The rising production of sorghum and the increasing use of the crop as a baby weaning food in the Sahel prompted CORAF/WECARD to introduce an improved protocol for the fortification of sorghum products, essentially to improve the nutritional values of the products, and reduce the widespread stunting of children weaned with the products. The new protocol provides concise information on the source and quantity of zinc, iron and folic acid additives to the products. The protocol is currently available in Burkina Faso, Mali, Niger and Senegal. The results are also being applied in millet, maize and cowpea fields infested with Striga in the Sahel. In the case of maize, for example, CORAF/WECARD deployed Quality Protein Maize (QPM), bred for its high content of the essential amino acids (lysine and tryptophan) as well as high protein bioavailability that rivals milk casein. The QPM maize used was also resistant to Striga, and to the persistent drought in the Sahel. Together with Striga resistant sorghum and the QPM maize, the potential of abandoned Striga infested farmlands in the Sahel are being tapped. These are being addressed in tandem with the urgent need to sustainably address malnutrition that is being brought to the forefront of the policy agenda via regional IPs.

*Need for high policy involvement in taking results to scale:* These successes should compel the states to assess and provide precise projections on infested and abandoned farmlands to facilitate eventual action by interested actors. Some of the future perspectives in the CORAF/WECARD integrated production systems include the development and implementation of robust policies bearing on massive production and inclusive distribution of the identified high potential varieties of staples for food and nutrition security. Such adjustments in the region's food security paradigm are expected to also reduce the large volume of school dropouts resulting from poor nutrition and its consequence on the ability of the child's brain to cope with and achieve appropriate

**Table 2: Production (1000 tons) and per capita consumption of plantain in the region<sup>20</sup>**

	Production (1000 tons)	Consumption (kg)
DR Congo	2,400	40
Ghana	1,800	92
Nigeria	1,700	15
Côte d'Ivoire	1,400	83
Cameroon	1,000	72
Guinea	400	49
<b>Gabon</b>	<b>300</b>	<b>153</b>

cognitive development. Both policy and civil society organizations have indisputably complementary roles to play in achieving this ideal in partnership with CORAF/WECARD.

*Improved technologies transforming production in the plantain belt:* The plantain belt, covering Cameroon, Nigeria, Benin, Ghana and Côte d'Ivoire, took advantage of new innovations in tissue culture being up-scaled by CORAF/WECARD. The

new techniques are being capitalised on in the production and distribution of clean planting materials free from contaminations with a wide range of soil-borne pathogens. An appreciable volume of the crop produced in the plantain belt is traded intra-regionally to major consumption points within the region (see Table 2).

Severe infestations of plantain farms by soil-borne pathogens cause a total crop failure, hence creating food insecurity and a challenge to social orders in major plantain consuming communities of the region. In order to appropriately respond to these challenges, seven IPs were established by CORAF/WECARD regional projects in the plantain value chain with special attention on strengthening the capacity of actors in the production and distribution of healthy planting materials. The 1,325 actors that benefited from the special trainings have been contributing to increasing the availability of clean planting materials in the plantain belt of the region, and are enhancing the survival and

*Figure 12: Pathogen-free plantain plantlets being acclimatised at CARBAP, a CORAF/WECARD research base centre.*



20. FAO statistics, 1997



**Figure 13: CARBAP (Banana and Plantain African Research Center), a CORAF/WECARD research base centre that holds a reference collection of bananas and plantains with more than 700 accessions,**

productivity of plantain plantations. Enormous agri-preneurship opportunities are thus being created by the CORAF/WECARD IPs in the production and marketing of plantain materials, hence increasing the prospects of continued expansion of production of the crop, and enhancing the region's food security and wealth creation. These opportunities could be taken to scale and present huge avenues for youth employment, and those venturing into professional agricultural activities. As stated in the preceding section, the creation of nodes mandated for upscaling these results are critical to achieving large-scale impacts across the region.

*Check-mating bovine pests and diseases:* Integrated management of bovine pests and diseases provide a most sustainable channel for the effective control of ticks and tick-borne diseases in the region. The two most common bovine tick species, *Rhipicephalus (Boophilus) microplus* and *Amblyomma variegatum*, had for long constituted threats to the quality and the quantity of bovine production in the region. In addition to their parasitic dependence on cattle, these ticks also constitute the vectors for such important diseases as babesiosis and anaplasmosis of cattle. And because *Rhipicephalus (Boophilus) microplus*, an exotic species, is resistant to the acaricides used in many countries of the region it has been spreading rapidly. The footbath technique being promoted by CORAF/WECARD and the gradual uptake of this otherwise simple technique in Burkina Faso, Benin and Côte d'Ivoire has been achieving significant results in the reduction of these pests and the diseases they vector.

Although economic data on the effects of ticks in WCA ruminant production is hard to come by, it remains a widely acclaimed fact that tick infestation impacts negatively on the revenues of the farmers. The footbath technique being popularised by CORAF/WECARD amongst producer organizations is resulting in increased productivity of the ruminants through decreased morbidity and mortality rates. The savings in ruminant mortality accrue directly to the farmer's assets appreciation, whereas in high mortality situations the value of the farmer's assets declined. The use of this technique in the control of ruminants' ticks' infestation (figure 14) in the region constitutes one of CORAF/WECARD's direct approaches in increasing livestock productivity and production;



**Figure 14:** Close-up of the tick-infested belly of cattle.

improvement of nutrition of the human population; and increasing nutritious food availability and affordability, *ceteris paribus*.

On account of the increasing productivity of cattle following the inclusion of integrated production systems in the region, the CORAF/WECARD programme on livestock fashioned a post-harvest theme aimed at improving the dairy sub-sector following huge losses incurred from poor processing and handling of dairy products. One of the major achievements in this sub-sector was the development and promotion of a better refined and safely packaged 'Wangash' cheese produced from fresh milk. This cheese has been noted to possess nutritional contents in protein and calcium comparable to the imported equivalents. By 2013 the CORAF/WECARD livestock programme had commenced a wide scale testing of the Wangash in Benin, Nigeria and Togo. Given that the cheese is being produced locally in the rural areas and at a relatively affordable price, this product is expected to contribute to improving nutrition in rural communities. In Togo, for example, a women's group called Taria has been formed specifically to up-scale the Wangash cheese product. This women's group, comprising 48 members, had their working capital rise from 4,500,000 FCFA in 2012 to 8,000,000 FCFA in 2013.

*Promoting nutritious fodder production:* The rearing of small ruminants in WCA also plays a significant role as a cash security asset for many rural households. Small ruminants are easily dispensed of in community markets to meet the immediate cash requirements of the household. However, providing appropriate fodder with high nutrient content for these ruminants had hitherto been challenging to several households who had been feeding the animals with low quality fodder. In recognition

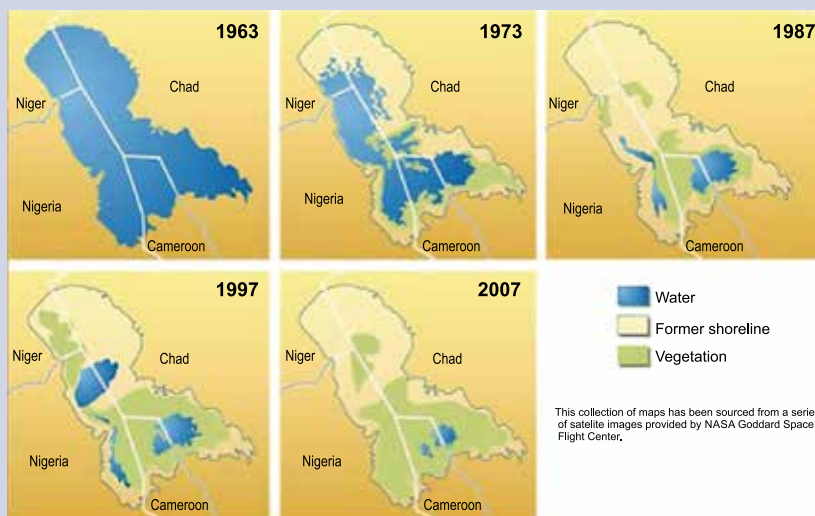
of the need to improve the productivity, production and good health of these assets of rural communities, CORAF/WECARD's Natural Resources Programme mobilised a multi-disciplinary team of experts who embarked on an extended 4-year study that screened and identified three varieties of cowpea [Padituya, Songitra and Asetenapa] which have perfect dual purposes – i.e. production of luxuriant fodder which yield as much as 20% higher than the usually grown varieties, and also produce high levels of grains for human consumption. These are highly attractive to both smallholders and large-scale producers of the food grain and fodder. The fodder from these varieties also store well for use during dry seasons when rangelands have sparse vegetation. These varieties are being mainstreamed into the region's farming system via 16 IPs in Benin, Ghana and The Gambia. The IPs are campaigning for surplus fodder production and storage so as to ensure an all-year round availability of feed – during the rainy season and the dry season. Preliminary observations indicate that the ruminants being kept by 250 members, the majority being women, of the IPs in Ghana had zero loss in their body weight – and that the market price of the animals appreciated during the rainy season. This was contrary to the usual situation where the market price of ruminants decline during the dry season when farmers seek to sell-off their animals resulting from lack of pasture.

*Promoting integrated aquaculture systems:* One of the new innovations being promoted by CORAF/WECARD in the region borders on the concurrent linking of aquaculture with rice and poultry production. This system is enhancing synergistic, rather than additive, effects in nutrients (nitrogen and phosphorus) recirculation for improved farm productivity. This Integrated Agriculture Aquaculture (IAA) farming system, including crops and livestock, was introduced as the region sought new ways to enhance food production and improve availability of nutrients to rice crops and poultry farms. This production system was introduced in 2010 and is being mainstreamed in Cameroon, Nigeria and Sierra Leone. The IAA-farming system promotes species diversification, nutrient recycling, and has potential to transform marginal lands into being more productive. While this system contributes to a diversified source of revenue for the farmer, it also improves the nutritional balance of the producing communities.

In order to ensure high productivity and sustainability of this integrated system a CORAF/WECARD-led programme locally adapted the floating fish feed technology, and had mobilised 1,800 farmers in Cameroon, Nigeria and Sierra Leone by 2013 who have adopted this technology. The floating feed remains on the surface of the water basin in which rice is also grown together with the fish. In this case the feed remains visible to the fish for consumption, rather than sinking out of its sight. Trials involving this new fish feed have proved very successful amongst the 1,800 farmers, and plans are currently underway to commercialise this product for wider use. When fully taken to scale, the CORAF/WECARD fisheries' economists project a 60% reduction in the costs of fish production, *ceteris paribus*, mostly as a result of a significant reduction in the cost of fish feed.

## Box 5 Strides in boosting the resilience of vulnerable populations to climate change

The prominence of climate change as the most significant challenge facing the farming communities cannot be over-emphasised. Food insecurity could worsen if appropriate steps are not taken to counter this threat to several fragile agro-ecosystems of the region. It was in the light of this, that in 2010 the CORAF/WECARD's Natural Resources Programme mobilised its regional Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA), ENDA<sup>21</sup> and COMIFAC<sup>22</sup>, continental (FARA and FANRPAN<sup>23</sup>) and development partners towards conceptualising and proposing strategic decision making options for policy related to climate change adaptation within the framework of the AfricaInteract initiative. This initiative led by CORAF/WECARD is contributing towards enhanced adaptation of vulnerable farming communities to climate change via its fostering of effective linkages between researcher scientists and policy makers as well as proposing policy options that should enhance adaptation to climate change. By 2013 a total of more than 300 key stakeholders including 88 researcher scientists and 58 policy makers comprising parliamentarians, senior government officials and key representatives of the RECs (ECOWAS, CAEC, IGAD, EAEC, SADCC) across the continent have been brought together to dialogue on climate change adaptation issues, and modalities for mainstreaming viable options in main public policies addressing agricultural development. The AfricaInteract initiative also launched its advocacy for support to applying robust science that should aid in informed policy decisions aimed at countering the adverse effects of a changing and more variable climate that threatens to wipe off the gains being achieved in the region's rising food production. Consistent policy support and investments in climate science should be a *sine qua non* for continued agricultural growth in the region. Although the human capital required to conduct climate research exists in the region, CORAF/WECARD and its partners are also advocating for appropriate financial investments required to make research outcomes available to policy makers. Hence the research-policy linkages need to be appropriately helmed-up so as to ensure a long-term sustainability of the systems.

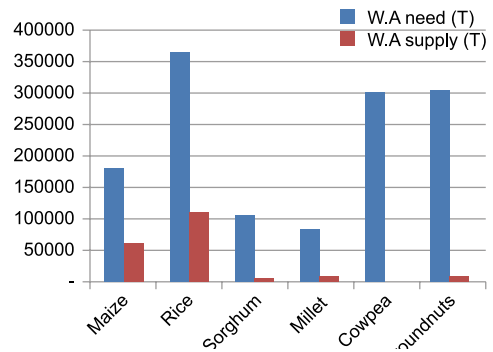


**Climate change effect on Lake Chad**

21. Environnement, Développement, Action dans le tiers monde
22. Commission des Forêts d'Afrique Centrale
23. Food, Agriculture and Natural Resources Policy Analysis Network

## Towards an increased use of improved seeds in staples production

**Seeding for productivity growth:** The seed constitutes the main propagule for plant growth. It is the carrier of new technologies needed for a secure food supply, it is the cheapest and most important input in crop production, and it is key to agricultural progress. One of the ways to increase agricultural productivity without much additional input is by planting improved quality seeds. It has been estimated that good quality seeds of improved varieties can contribute to more than 25% increase in yield. In recognition of this, CORAF/WECARD and its partners analysed the potential seed needs to increase and sustain food production of the main grain staples in 13 countries of the region (see Figure 15), as a major tool in the implementation of CAADP and the ECOWAP<sup>24</sup> under the ECOWAS seed regulation act.



**Figure 15: Potential seed needs and actual supply (tons) from 13 countries in West Africa**

CORAF/WECARD's target of expanding the availability and use of improved quality seeds from 12 to 25% in the region's food production is being achieved through the catalysing of an all seed-industry-stakeholder alliance; the promotion of seed trade; and through the production and distribution of improved seeds. In 2013 alone CORAF/WECARD's WASP project cultivated more than 41 ha of improved seeds which were projected to yield certified seeds at the following levels: 48,000 tons of maize; 72,000 tons of sorghum and 190,000 tons of rice. These represent a massive availability of a most essential input that had otherwise never been available to the resource-poor producer. The technical interventions leading to development of improved seeds and interjections of these technological inputs through the CORAF/WECARD-led regional IPs have been contributing to the drive in productivity and production increases. It is important to mention here that some DPs are currently seeking ways and means of enhancing the effectiveness of these IPs to become sustainable channels through which technologies for production and entrepreneurships could be promoted.

**Promoting regional seed trade:** Another exciting achievement of CORAF/WECARD during the short period following its launch of the WASP in 2012 was the promotion of dialogue between countries which hastened the implementation of the ECOWAS seed regulatory policy with the development of national quarantine pest lists for Togo, Benin and Ghana. These initiatives have opened the doors to regional seed trade in 2013. This trade which has been projected to spill over to the countries of the region within the next couple of years is expected to completely transform food production in the region by 2018. In order to achieve this, CORAF/WECARD networked a consortium of partners, including plant breeders, quality control and certification personnel, seed

24. ECOWAS agricultural policy.

producers and private seed entrepreneurs towards strengthened seeds production and distribution in the region. In order to sustain the production and trade in improved seeds, CORAF/WECARD implemented a capacity strengthening programme which continued to emphasise breeder seed production and maintenance techniques and seed business management with the conviction that the sustainability of the seed system should be led by the private sector, with public policy creating and maintaining an enabling environment. In this regard CORAF/WECARD in 2013 commissioned the training of 490 seed sector experts, including SMEs in Burkina Faso, Ghana, Niger and Nigeria; seed regulatory experts responsible for variety release, quality control, phytosanitary certification; and laboratory practices for technicians. More disaggregated trainings are scheduled within the ambit of the 2<sup>nd</sup> OP.

These important results have further boosted the confidence that RECs, especially ECOWAS, have reposed on CORAF/WECARD as their technical arm in agricultural development in the region. Similarly, these results have continued to put CORAF/WECARD on the investment radar of the DPs.

*Promoting application of high-end biosciences to agriculture:* The CORAF/WECARD region figures among the pacesetters in the application of high-end biosciences to agriculture in Africa. Following Burkina Faso's 2003 confined field trials that used state-of-the-art genetic engineering on cotton, the country's foremost cash crop, CORAF/WECARD capitalised on this bold step and produced in 2005 the 'Do's and Don'ts' of the application of this technology to the region's agriculture for development. By 2006 Burkina Faso was already commercialising Bt cotton. The sweeping policy support from ECOWAS heads of state, to the CORAF/WECARD's framework for the application of biotechnology to agriculture in the region, led CORAF/WECARD and its partners to embark on a pragmatic deployment of the advanced techniques that have continued to boost crop production. Following intense advocacy by CORAF/WECARD, by 2013 22 countries had ratified the Cartagena Protocol on biological diversity. Similarly, Burkina Faso, Nigeria, Ghana, Senegal, Cameroon, Togo, Mali, and Côte d'Ivoire had passed enabling biosafety legislations which created the 'freedom to innovate'<sup>25</sup> as recommended by the high-level African panel on modern biotechnology in 2007. These constitute encouraging signs of the readiness of policy makers to embrace high-end biosciences in improving agricultural productivity and production. These encouraging steps led to the conducting by Nigeria and Ghana of confined field trials on Bt cassava, cowpea and maize, most of which were being concluded by 2013.

*Deploying advances in biosciences to rice fields:* Rice is the most important strategic staple in the WCA region for over 350 million people. It has had a steady annual increase of 6% in its consumption since the early 1970s. Most of this growth in rice consumption has been as a result of crop substitution for traditional coarse grains, roots and tubers. Rice now provides more than a third<sup>26</sup> of the cereal calorie intake in the region. However, the production of the crop locally had hitherto been hampered by

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25. AU. C. Juma and I. Serageldin. (2007). Freedom to innovate: Biotechnology in Africa's development. Report of the high-level panel on modern biotechnology. African Union.

26. <http://www.unep.ch/etu/etp/events/Agriculture/warda.pdf>



the presence of Rice Yellow Mottle Virus (RYMV), the main pathogenic virus of rice in the region, which is capable of causing between 25-100% yield losses<sup>27</sup>. Thus huge importations of the grain remained a major source of drain on the foreign reserves of the countries. The strategic partnerships between CORAF/WECARD, AfricaRice and Institut de recherche pour le développement (IRD), aimed at putting the outcome of high-end biosciences research on the subject led to the introduction of RYMV resistant varieties of the crop to the producers. This RYMV resistant variety was developed via molecular marker assisted breeding conducted via CORAF/WECARD-led projects in partnerships with AfricaRice, IRD, and other partners. The increasing uptake of this technology by producers constitutes a positive signal on the profitability of the technology to producers. And this has begun to transform rice production since 2009, with less crop losses in Côte d'Ivoire, Liberia, Mali, Sierra Leone, Guinea, Guinea-Bissau and The Gambia. The availability of this variety of rice has been enhanced by the WASP, and the WAAPP National Centres of Specialization (NCoS) on rice based in Mali. In recognition of the importance of rice in the food security of the region, a set of five laboratories were equipped specifically for rice foundation seed production, and marker assisted breeding, coupled with specific and continual training of the relevant scientists in biosciences.

Promoting biosciences in production of clean planting materials: The commercial deployment of *in vitro* techniques also constitutes some dividends from the region's biotechnology programme led by CORAF/WECARD. Similar to the strategic importance of rice, cassava is the root crop par excellence in the region. However, the incidence of African Cassava Mosaic Virus (ACMV) had hitherto been devastating cassava fields. The use of advances in *in vitro* tissue culture system in the production of clean planting materials has been reducing the incidence of ACMV. The *in vitro* tissue techniques have been used in multiplying ACMV-free cassava cuttings distributed to farmers in WCA. In 2009 a CORAF/WECARD-led project started producing and distributing the virus free cassava planting materials to farmers in Benin, Côte d'Ivoire, Ghana, Niger, Liberia, Sierra Leone and Togo for further multiplication. Six laboratories were equally equipped and 50 staff trained in the art of conducting *in vitro* sanitisation and multiplication of cassava cuttings. The successful demonstration of the potential of this technique elicited a huge interest from both policy makers, scientists and farmers alike, hence leading to massive constitution of a locally preferred cassava variety germplasm, composed of 17 sanitised accessions. The cleaned cassava, extracted from the *in vitro* collection has been continually multiplied through micro-propagation in combination with efficient *in vivo* multiplication techniques. The effective eradication of ACMV requires continued application of the advanced biosciences and intense staking-up of the technology.

Tackling aflatoxin contamination for increased market access: Aflatoxins, toxic metabolites produced by *Aspergillus* fungi species, have for long posed a most significant threat to the competitiveness of WCA groundnuts in the international market. The occurrence of aflatoxins is influenced by certain environmental factors; hence

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27. AfricaRice. Retrieved March 20, 2014 from <http://www.africarice.org/warda/story-rice-diseases.asp>



*A rice variety sensitive to RYMV.*



*A farmer's field in Côte d'Ivoire.*

**Figure 16: Striving for improved rice harvest. (2013)**

the extent of contamination varies with geographic location, agronomic practices, and the susceptibility of the commodities to fungal invasion during pre- and post-harvest storage and processing. In recognition of this challenge, CORAF's WECARD Non Staple Crops Programme assembled a team of experts who eventually identified three groundnut varieties (ICGV 93305, ICGV 91317 and ICGV 91328) that are resistant to aflatoxin contamination. Studies on these varieties indicate that their aflatoxin levels of



**Figure 17: A cassava field with a mixture of healthy and infected plants.**

Photo source: IITA

less than 10 ppb were less than the levels of hitherto used varieties that were more than 20 ppb. Interestingly, the aflatoxin levels lower than 10 ppb are within internationally acceptable levels, and pose no health risks. This result, which is currently being verified, constitutes a significant break-through, and raises the hope of groundnut farmers in the region.



**Figure 18: Aflatoxin causing fungus. *Aspergillus flavus* growth on groundnuts. (Photo: Univ. of Greenwich)**

## **Innovations in technology uptake via regional productivity programme**

**Staking-up public policy change in support of production:** As described earlier, the food insecurity in the WCA and the entire African continent led the NEPAD Agency to develop the CAADP which is promoting interventions that best respond to the unusual crisis in agriculture and food systems. Special attention was to be given to the national and regional pooling of resources, alignment of productivity programmes and a more effective coordination in investments in agriculture for wealth creation and inclusive

development. Following the development of FAAP and FARA, the SROs and DPs conceptualised the Multicountry Agricultural Productivity Programme (MAPP) in 2006. MAPP's objective was to strengthen the capacities of African agricultural research and extension systems to effectively generate, disseminate and apply knowledge and technologies suitable and appropriate to the agricultural context and challenges. Based on the MAPP and the FAAP principles, the ECOWAS mandated CORAF/WECARD to develop the WAAPP. MAPP formed the basis for the development of WAAPP at the regional level.

The WAAPP led by CORAF/WECARD was one of the major responses of ECOWAS to the 2006-2008 food crises rocking the region. The CORAF/WECARD-led WAAPP became effective in 2007 following the extensive studies commissioned by the ECOWAS, CORAF/WECARD, and the World Bank. The result of one of the collaborative studies with the IFPRI enabled CORAF/WECARD to identify and designate nine NCoS with the mandate to strengthen and backstop NARS of the region. These NCoS were mandated to lead technology generation and use of the following priority staples: irrigated and rain-fed lowland and upland rice (Mali); mangrove rice (Sierra Leone); roots and tubers (Ghana); fruits and vegetables (Burkina Faso); banana and plantain (Cote d'Ivoire); maize (Benin); dry cereals (Senegal); livestock (Niger); and aquaculture (Nigeria) with a total financial resource mobilisation of over \$456 million by 2013. WAAPP is currently being implemented across the region in the following 13 countries: Benin, Burkina Faso, Côte d'Ivoire, The Gambia, Ghana, Guinea, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone and Togo. A total of 300 research scientists have been mobilised and are working on the nine staples in the NCoS.

WAAPP has since 2007 become CORAF/WECARD's innovative approach to bringing back to the region's public policy agenda the issue of appropriately funding the use of state-of-the-art technologies in agricultural productivity for wealth creation and food security. By 2013 heads of state and senior policy makers had embraced WAAPP. The following paragraphs highlight some achievements of the NCoS of WAAPP, and how these are contributing to the increasing food production.

***WAAPP's successes in roots and tubers productivity:*** The increasing production of cassava, the staple of choice in the coastal zone of the region, is being shored-up with the contributions from the four new varieties (CSIR-Ampong, CSIR-Otuhia, CSIR-Sika bankye and CSIR-Broni bankye) developed and released by the Kumasi, the Ghana-based WAAPP NCoS on roots and tubers in 2010. These varieties have demonstrated yields of 25-30 tons/ha as against the 12 tons/ha usually obtained. The high starch content of these new varieties should also be attractive to starch-based industries, as well as in local consumption such as fufu. The high productivity potential demonstrated by these varieties attracted additional investments from within the framework of Root and Tuber Improvement and Marketing Project (RTIMP) and CAVA projects which are demonstrating the potential of these technologies in over 1,800 ha of cassava fields run by farmers groups in Ghana. In 2012 the production and distribution of the planting materials from these new varieties commenced, targeting farmers in Mali and Senegal.

**Table 3: Summary of WAAPP's objectively verifiable achievements by 2013**

WAAPP objective indicators	Achievements	
	Project beneficiaries of which 40% are women	Target
<b>Achieved</b>		<b>1,477,662</b>
40 % of women		38 %
Number of technologies released by NCoS	Target	83
	<b>Achieved</b>	<b>98</b>
Area under new technology cultivation (ha)	Target	755,700
	<b>Achieved</b>	<b>508,882</b>
Number of producers who have adopted at least one technology	Target	699,600
	<b>Achieved</b>	<b>556,936</b>

**Table 4: Instances where WAAPP achieved over and above its targets by 2012**

PDO level results indicators	Baseline	Cumulative target values					
		YR3: 2010		YR 4: 2011		YR 5: 2012	
		Base at MTR	Target	Achievement	Target	Achievement	% Achieved
<b>Indicator 1</b> Project beneficiaries Direct/indirect (40% of whom are female)	Ghana	6 000	25 000	22 155	125 000	87 891 (38% female)	70.3%
	Mali	600	5 000	50 700	100 000	89 080	89.1%
	Senegal	1000	15 000	13 000	50 000	76 916 (24% female)	154%
<b>Indicator 2</b> Released technologies by NCoS (at least three over 5 years, cumulative)	Ghana	4	6	4	9	15	167%
	Mali	3	6	-	8	8	100%
	Senegal	3	6	7	8	14	175%
<b>Indicator 3</b> Released technologies by NCoS that show an Improvement in yield of at least 15% in farm level productivity over the control	Ghana	100	100	100	100	100	100
	Mali	100	100	100	100	100	100
	Senegal	100	100	100	100	100	100
<b>Indicator 4</b> Area under improved technologies disseminated under the project	Ghana	2 400	6 000	5 632	30 000	36 004	120%
	Mali	230	9 000	7 698	12 000	8 353	69%
	Senegal	700	6 300	4 630	21 000	47 404	
<b>Indicator 5</b> Producers who have adopted improved technologies made available under the project	Ghana	6 000	15 000	13 393	75 000	57 129	76%
	Mali	340	40 000	30 420	80 000	53 450	67%
	Senegal	1 000	9 000	-	30 000	Adoption survey on-going	



**CSRI-Ampong**



**CSIR-Otuhia**



**CSRI-Sika Bankye**

**Figure 19: High density of cassava tubers per strand of the new variety – an indication of high productivity.**

**WAAPP's diversification of cassava products:** In addition to the traditional ways of cassava consumption in the region, Ghana and Nigeria have introduced a new bread in which the new WAAPP cassava varieties have been found to be a good source for a proportionate replacement of the wheat required in bread baking. The creation of new market opportunities for cassava through these innovations should substantially boost production, reduce the price and availability of bread, and change consumption patterns in the region. Although research is still on-going relative to increasing the proportion of locally available staples that can effectively replace wheat in the region's daily culinary habits, progress so far indicates that such innovations are positioned to reduce the dependence on external sources for culinary purposes.

**WAAPP's new cassava harvester:** In 2012, the CORAF/WECARD WAAPP NCoS on root and tuber crops also focused its investments on the development of a cassava harvester which was aimed at reducing the drudgery of women whose role in producing communities includes harvesting and processing of the crop. Although this machine had not been commercialised, it had been tested in 90 farms in Ghana by 2013, and it shows great potential in changing the *status quo*



**Figure 20: A mechanical cassava harvester developed by WAAPP NCoS on roots and tubers.**

on cassava production. Test results indicate that this machine functions much better in drier than wet, less looser soils. The NCoS on cassava is currently fine-tuning the machine to respond appropriately to both soil conditions. However, Côte d'Ivoire WAAPP actors have expressed interest in adapting the machine to their cassava production.

**WAAPP's promotion of seed yam production:** The WAAPP NCoS on roots and tubers has also introduced new innovations in the production and distribution of seed yams, which has hitherto constituted the major constraint in yam production in the region. This technology, termed the 'vine technology', was developed and introduced in partnership with the Ibadan-based International Institute for Tropical Agriculture. The vine technology



*Figure 21: A cross-section of recipients of WAAPP seed yam production training.*

increased the potential of seed-yam production by a multiplication factor of six over and above the hitherto used mini-sett method. This has continued to create opportunities in agri-preneurship on seed yam production and marketing in Ghana and Nigeria.

*WAAPP's new innovations in e-extension:* Limited human resources had been a factor responsible for the reduced personal interactions between agricultural extension and advisory services, and farmers. WAAPP addressed this challenge by contracting Prep-Peez, a Ghanaian IT consulting firm, to set-up a voice-based SMART phone system that allows a two-way communication between the extension and advisory services and farmers and other rural stakeholders. A database on available technologies has been created and translated into six of Ghana's main languages and can be accessed by farmers. With a fee of US\$ 1 per week, farmers are able to obtain and exchange information on marketing and prices as well as production issues. The system also provides opportunities to farmers to communicate with any other member of the network and to participate in conference calls. This initiative is one of the first national e-extension systems in West Africa. Once fully operational, it will not only greatly enhance farmers' access to information on new technologies and farming practices, but also provide the extension/advisory services some opportunity to know its clients much better - where they live, what they produce and sell, and the production challenges and risks. The database also creates an excellent opportunity for extension services to better profile and better targets its clients with appropriate information on production and markets. The Ghanaian e-extension is a major WAAPP achievement. It is also a substantial departure from the first generation application of Information and Communications Technology (ICT) in agriculture, which most often only allowed for the delivery of simple text messages, with limited possibilities for users' feedback. This experience is being rapidly multiplied in West Africa with WAAPP's support, and will potentially serve as one of the comprehensive and cost-effective systems for sharing and collecting information to promote rural development, with also an application outside the agricultural sector (mostly health and marketing).



**Figure 22:** A field demonstration for new NERICA rice varieties – Bamako, Mali.



**Figure 23:** New varieties of NERICA with increased grain head size from 75-100 grains per head to more than 400 grains per head.

**WAAPP's significant strides in improving rice production:** The development and release of the New Rice for Africa (NERICA) programme by the AfricaRice Centre gave hope to many farmers and policy-makers on the calorie needs from rice for the over 240 people in the region. At the time of release of NERICA in the late 1990s, this rice had a capacity to yield 2.5 tons/ha as against 1 ton/ha without fertiliser application, and up to 5 tons/ha with fertiliser. The new rice also had 2% more protein, was resistant to pests and tolerant to drought, hence suitable for the Sahel zone of region. The Bamako, Mali-based WAAPP NCoS released five new varieties of the NERICA rice (Nerica L1, Nerica L2, Was62, Was42 and Was197) that have average yield potentials ranging from 8-10 ton/ha. These new varieties of NERICA rice are currently being commercially produced by 7,000 farmers in Mali, with over 7,700 ha under cultivation by 2013, with promising perspectives for scaling-up. The germplasm of these new NERICA varieties were being out-scaled to Senegal and Ghana by 2013 for use by research and producers. Securing further policy actions relative to extension and advisory services roles in expanding the access of regional rice producers to these new varieties would sustainably change production of the crop and strengthen food security.

**WAAPP's mechanised rice seeder:** A mechanised seeder for pre-germinated rice, which was originally designed in the Philippines, was introduced and adapted to rice production by the NCoS on rice. The NCoS modified the seeder, which was originally man-powered, and also made it motorised. The modified seeder also has animal traction versions. The seeder made it possible to have a 50% reduction in the number of seeds/ha. Although tests are still on-going, it has been noted that the new seeder has enormous potential in rice production. For example, as a result of the homogenous planting of the rice seedlings and improved conditions for weeding of the farms, the plants blossomed excellently, and yield increased up to 30% as a result of the introduction of this cultural practice. The sister WAAPP NCoSs have indicated interest in benefiting from this technology.





**Figure 24: Demonstration of the newly adapted rice seeder at the Office du Niger.**

**WAAPP's new rice technologies in country-to-country support:** On joining WAAPP in 2011, Niger's first step was to quickly secure access to technologies released by the existing NCoS to boost its agricultural productivity, given that the country was being confronted with low rice productivity. Niger turned to the Mali based NCoS on rice productivity improvement. The first technology selected by Niger was the improved Gambiaca rice varieties. The WAAPP team procured 40 tons of Gambiaca improved rice from Mali that was distributed to rice farmers and rice seed growers. By 2013 the Gambiaca rice had been adopted by more than 10,000 producers who have improved their yield from 4-5 tons per ha to 7-8 tons per ha. In addition, 65 tons of certified Gambiaca rice seeds have been produced in 2013 that will cover an additional 100,000 ha in the next cropping season.

**WAAPP tackles waterweeds impeding irrigation of rice fields:** *Salvinia*, an invasive weed that also disrupts irrigation systems was spotted along the banks of the Niger River in Mali in 2000. Attempts to control the plant using manual labour and mechanical equipment proved costly and grossly ineffective. The costs incurred by the Office de Niger alone in controlling *Salvinia* by manual and mechanical means cost about US\$ 2 million per year. A WAAPP-financed programme on biological control of *Salvinia* in the Office du Niger led by Malian scientists introduced an insect (a weevil named *Cyrtobagous salviniae*) that is a natural enemy of *Salvinia* upon which it feeds. By feeding on the noxious *Salvinia* plant, the insect multiplied and helped unclog

waterways, hence easing irrigation to rice fields. This exercise cost 40 times less than the mechanical methods previously used by the Office du Niger. The insects feed only on the *Salvinia* plants, and thus pose no safety risks to the environment. The Malian researchers have fine-tuned the insect breeding process, and are ready to make this technology available to other countries.

The ultimate goal of the WAAPP's NCoS on rice is to ensure that the rice crisis of 2007-2008 does not return; and that the regional production capacity grows and is sustained, thereby reducing dependency on rice importation. Therefore continued policy support to the WAAPP and through this NCoS should consolidate results already achieved, and chart new paths to continued inclusive growth.

**WAAPP's changing sorghum and millet production in the Sahel:** Sorghum and millet, the cereals par excellence of the semi-arid zones and the long-standing staples of rural communities in the Sahel constituted the focus of technology development and use by the WAAPP NCoS on dry cereals based in Senegal. This NCoS in 2011 released four drought-tolerant and high-yielding sorghum varieties (ISRA 621 A, ISRA 621 B, ISRA 622 A and, ISRA 622 B); and two varieties of millet (Thialakh 2 and ISMI 9507) of similar characteristics as the sorghum varieties. On-farm trials amongst 10 rural farmers' organizations have demonstrated yield increases of 40-60% over the usual farmers' varieties.

**WAAPP's new sorghum varieties have potential in poultry:** The newly developed sorghum varieties are also characterised with low tannin content, which has been judged to be the most suitable in poultry feed production. High levels of tannin in poultry feeds reduce the growth rate of the birds by limiting the availability of certain nutrients such as protein and carbohydrate in the gut of the birds. It is also important to note that research has conclusively shown that high tannin in poultry diet reduce their egg laying

**Figure 25: Filled heads of the new ISRA 621 sorghum variety: Bambey, Senegal.**



**Figure 26: New millet ISMI 9507 variety: Bambey, Senegal.**



rate, weight of the egg, and body weight in poultry. The new sorghum varieties, also called the white sorghum, therefore presents strengthened hope in the production of feed for mono-gastric animals such as poultry. The expanding livestock sub-sector in the region is expected to drive the production and use of these varieties.

***In praise of the WAAPP bread in Senegal:*** In urban areas of Senegal, the consumption of bread, mostly in the form of baguettes, is widespread. About 300,000 tons of wheat is imported annually at a cost of about US\$ 100 million. Senegal had hitherto sought to reduce these costs, but to also ensure the availability of the baguettes for its people. Therefore many separate technologies were developed, and this included the combination of the country's abundant millet, with wheat flour in a proportion of 10-20% millet and 80-90% of wheat with varying results. WAAPP scientists reasoned that the challenge was more in identifying and using the right varieties of millet for a more consistent and more people-acceptable baguette production. With the support of WAAPP therefore a technology package was developed. This package addressed:

- (a) Production of the right varieties of millet.
- (b) Processing the millet grains into milled flour of appropriate baguette quality.
- (c) Training bakers on effective millet-based baguette production.
- (d) Familiarising consumers with the taste of this new bread.

In addition, WAAPP, through ASPRODEP (Senegalese Association for the Development of the Grassroots), organized farmers into producer groups using contract farming to ensure adequate supply of the appropriate millet grains, and their milling. Four agro-processors were mobilised for this purpose. It is important to highlight that Dakar's school system has included this baguette in their nutrition programmes. There are some 50 bakeries participating in the production of millet bread in Senegal.

***WAAPP's fruits and vegetables:*** The production and marketing of tomatoes in West Africa has been long restricted to the dry seasons. This restriction has been a result of the heavy disease infestations and spoilage of the crop during the rainy seasons. In order to ensure that tomato producers continue to produce and earn income during the rainy season, the NCoS on fruits and vegetables selected and introduced, via the IPs, three new tomato varieties: FBT 1, FBT 2, and FBT 3. These varieties of tomato are resistant to a broad spectrum of common diseases that afflict the crop during periods of high humidity. The varieties have also been shown to have high yield potentials during both the rainy and dry seasons.

***WAAPP's scaling-up improved all-season tomato varieties:*** During the period between 2012 and 2013, WAAPP mobilised 1,862 farmers in the production of seeds and new tomato fruits for markets. These demonstrations have been on about 125 ha of farmland. 150 farmers were trained in the preservation techniques for these technologies. The NCoS on fruits and vegetables based in Burkina Faso has already begun disseminating the varieties for testing and adaptation in Ghana.



*Tomato variety FBT 1*



*Tomato variety FBT 2*



*Tomato variety FBT 3*

*Improved tomato varieties resistant to a broad-spectrum of humidity related diseases.*



*Figure 27: Tomato harvest from resistant varieties.*

**WAAPP's plantain/banana:** The West Africa region remains an important plantain-producing region – accounting for about 32% of worldwide production<sup>28</sup>. Plantains have continued to be important staple crops in the region with a high nutritional content, a variety of preparation methods, and a production cycle that is less labour intensive. These qualities make the crop attractive, and hence the absolute necessity for the NCoS on banana and plantain to focus their investments on these crops.

28. Banana and plantain value chain: West Africa. Retrieved May 5, 2014 from [http://evans.washington.edu/files/Evans\\_UW\\_Request\\_239\\_West\\_Africa\\_Bananas\\_and\\_Plantains\\_8\\_20\\_final.pdf](http://evans.washington.edu/files/Evans_UW_Request_239_West_Africa_Bananas_and_Plantains_8_20_final.pdf)

***New technologies being taken to scale:*** Within the short period of the existence of this NCoS based in Côte d'Ivoire, one new variety, each of plantain (FHIA 21) and banana (PITA 3) have been released to farmers. Also the NCoS on banana and plantain adapted the PIF technology on the rapid multiplication of materials that are being distributed to SHFs. The PIF technology facilitates a quick seedling production from stem fragmentation. Five IPs were created to facilitate the uptake of the technologies and for improvement of the plantain and banana value chains.



**Figure 28:** Newly released banana variety PITA 3



**Figure 29:** Newly released plantain variety FHIA 21



**Figure 30:** A demonstration of the outcome of the PIF technology



**Figure 31:** Plantain seedlings being conditioned in a plant house before transplanting.



**Figure 32:** Newly established plantation from PIF technology.

**WAAPP's strides in the seed sub-sector:** The WAAPP programme, in liaison with the WASP of CORAF/WECARD, conducted a seed needs gap assessment in the 13 WAAPP implementing countries. The gap analysis indicated a huge gap in the availability of improved seeds of all the major grains used in staple food production. The gap was largest in rice, cowpea, and groundnut. WAAPP has continued to facilitate the

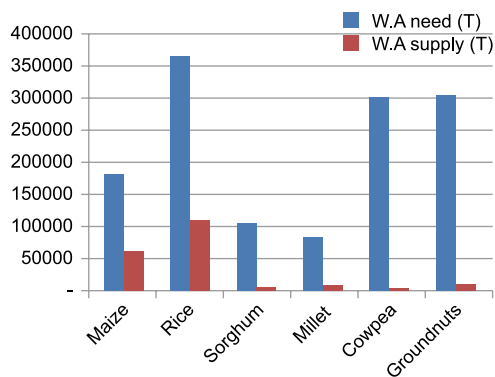


Figure 33: Seed demand versus supply (T)

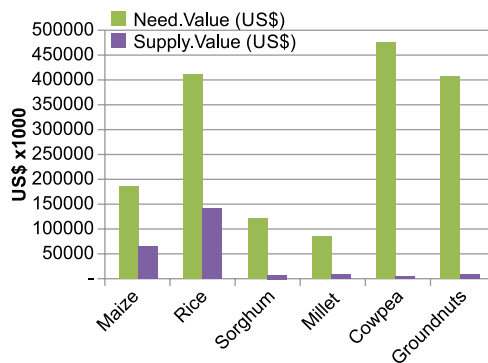


Figure 34: Value of demand versus supply (US\$)

use of improved techniques to increase production and management of breeder seeds. The targets set for annual seed production and distribution via the WAAPP are as follows: 48,000 tons of maize; 72,000 tons of sorghum; and 1,90,000 tons of rice.

Meaningful results are beginning to be realised (see Table 5 for results on maize in 2012-2013):

Table 5: Maize seeds produced in 2012-2013

Maize seeds produced (tons) during 2012-2013 agricultural season			
Countries	Breeder seeds	Foundation seeds	Commercial seeds
Benin	3,70	62	5,485
Burkina Faso	0,00	97	15,000
Côte d'Ivoire	0,00	574	54,700
The Gambia	0,13	10,30	4 0,8100
Mali	0,00	0,00	14,900,00
Nigeria	10,00	16,80	0,00
Senegal	5,69	235	2,281,00
Togo	1,00	8,55	500,00
<b>TOTAL</b>	<b>20,52</b>	<b>1,003,65</b>	<b>27,944</b>

**WAAPP's post-harvests:**

**WAAPP's solar dryer:** The new solar dryer developed by the NCoS on roots and tubers could also be used to dry food grains and flours. It could reduce the length of drying to 5 or 6 days from the usual length of 14-16 days depending on weather conditions (the weather remains the major factor in drying of foods locally for conservation). In addition to its ability to reduce the length of time required for drying, the solar-powered



**Figure 35: NERICA rice breeder seed production, M'Be, Côte d'Ivoire**



**Figure 36: Maize breeder seed production field with WASP.**



**Figure 37: Field visit to a maize breeder seed field at ISRA, Senegal.**



**Figure 38: Sorghum breeder seed field at ISRA, Senegal.**

dryer also ensures an effective reduction of moulds including the aflatoxin-inducing moulding from *Aspergillus* sp. Aflatoxins are known as some of the most dreaded carcinogens found in foods. In addition to being carcinogens, they also inhibit growth and development in children. It is important to highlight here that about 400 processors/producers were involved in the demonstration and early dissemination activities by 2013. Producers across the region are also indicating interest in acquiring the dryer.

**Figure 39 : Yam and cassava solar flash drier.**



**WAAPP's composite flour:** Wheat was responsible for the development of the great bread-wheat civilisations from Mesopotamia to India, China to Egypt, Greece and Rome, and then in our region. Wheat bread flour contains about 10.5–13% of a protein called gluten. Gluten is important for the bread making process. When flour is mixed with water, the gluten swells to form a continuous network of fine strands.

This network forms the structure of bread dough and makes it elastic and extensible. WAAPP adapted the wheat bread-making process by including significant proportions of locally produced starchy foods – millet, cassava, etc. This composite coarse grain/wheat technology (in Senegal) and cassava/wheat technology (in Ghana) was adapted so as provide solutions to countries of the region which had hitherto battled to reduce the amount of foreign exchange spent on wheat importation. It was also aimed at reducing the cost of bread in Senegal. Around 96 bakers (65 community bakers and 27 bakers of 24 senior high schools) in Ghana are being trained in the use of four types of composite flours: cassava/wheat; sweet potato/wheat; cowpea/wheat; and corn/wheat. The technology allows substitution of 20 to 100% of the pricier wheat flour by coarse grain or tuber crop flour, depending on the target end product. These bakers are currently operating in three southern regions of Ghana. Based on the successful results of the pilot dissemination phase involving 30 bakers in the use of composite cereal/wheat flour techniques for bread making, Senegal is scaling up this technique with a target of reaching 150 bakers. Using a value chain approach and contract farming arrangements, a task force involving the bakers association, flour millers and farmers organizations have designed a dissemination plan to ensure a widespread adoption of the technique. Senegal is also supporting Mali to fine-tune and introduce the composite flour technology in Mali.



Figure 40: Composite bread with 15% either millet, maize or cassava flour being marketed.

### Box 6: Socio-economic meaning of WAAPP's composite bread to socio-economics

The composite bread practices in Senegal and Nigeria:

- With composite bread (85% wheat flour + 15% millet or maize flour), the government of Senegal saves US\$ 10.4 million from wheat flour import and provides US\$ 15 million to local farmers for their millet and maize crops.
- Nigeria with US\$ 4 billion of wheat flour import, potentially saves US\$ 0.6 billion by making composite bread with cassava flour.



# Chapter Three : Strengthening capacity for agricultural research and innovation



## Introduction

Early in the implementation of the 1<sup>st</sup> CORAF/WECARD OP, detailed scoping studies identified serious weaknesses in institutional and individual capacities that were the principal constraints in effective delivery of regional agricultural research and innovation. The expected results in the OP implementation are to be delivered through coordination of conventional agricultural research, facilitation and management of IPs, participatory involvement of key broad-based stakeholders within the context of IAR4D, as well as policy options and dialogues. Capacity strengthening and KM which are relevant and appropriate to the demands and requirements of CORAF/WECARD stakeholders was ranked as a core function for CORAF/WECARD in order to adequately prioritise this activity.

This chapter describes how CORAF/WECARD addressed this crucial issue of capacity strengthening and presents specific outcomes of the implementation of capacity strengthening activities.

## The remit for CORAF/WECARD's capacity strengthening

One of the priority components of the 1<sup>st</sup> CORAF/WECARD OP is strengthening institutional and individual capacities for conducting regional agricultural research and innovation in WCA. As elaborated in the CORAF/WECARD OP, Result 3 is defined

as follows: “*Sub-regional agricultural research system strengthened and coordinated*” covering all aspects of capacity strengthening in the sub-regional agricultural research system including the diverse agro-ecological systems and zones, public and private sector organizations and institutions, input and output markets, and policy and decision making bodies.

The sub-regional agricultural research system is defined to include the following agro-production systems and environments:

- Agro-ecological systems and zones within the sub-region.
- Public and private sector organizations and institutes.
- Input and output markets.
- Policy and decision making bodies.

Recognising that the capacity of the NARS is not uniform across the sub-region, CORAF/WECARD initiated a major programme of strengthening the capacity of NARS as the basis for creating a strong SRO. As capacity was strengthened in the sub-region, a wide variety of stakeholders were capable of successfully participating in and contributing effectively to the technical activities of CORAF/WECARD’s research and innovation agenda. Capacity strengthening activities comprised conventional components of formal training and the development of skills and competencies to operate and function in the innovative paradigm of IAR4D. CORAF/WECARD’s capacity strengthening agenda focussed attention on *empowerment* of stakeholders to participate fully in the agricultural and rural community development process. Empowered stakeholders are thus able to engage in and play major roles in the management of IPs.

Furthermore, capacity strengthening activities targeted the CORAF/WECARD ES, regional research centres of excellence, national agricultural research institutes, and the individual technical capacity of researchers. Activities are conducted in the implementation of special collaborative programmes, namely Strengthening Capacity for Agricultural Research and Development in Africa (SCARDA), Dissemination of New Agricultural Technologies in Africa (DONATA), Regional Agricultural Information and Learning Systems (RAILS) as well as in a variety of IPs that constitute what CORAF/WECARD has designated as Impact Infrastructure in WCA. The IPs addressed issues in agricultural value chains, food systems and natural resources management and constituted an essential part of the enabling environment for learning, capacity development and innovation for the delivery of “regional and global public goods”.

## Implementation model

Consistent with its mandate and operational philosophy, CORAF/WECARD played its major role as a SRO, actively encouraging and facilitating capacity development and strengthening within its constituents.

To address interesting and complex capacity strengthening issues, CORAF/WECARD designed an implementation intervention model that consisted of participatory consultation and engagement of national partners, regional economic communities, ECOWAS,

CEMAC and UEMOA, the CGIAR centres, international donor and DPs, the NGOs and the public-private sector partnership. This arrangement ensured wide-scale regional participation and contribution from stakeholders of the CORAF/WECARD constituency.

## **Achievements**

Feedback from beneficiaries during the 1<sup>st</sup> OP implementation period, revealed significant improvements in institutional and individual capacities in the delivery of agricultural research and innovation. Selected case studies are presented here to illustrate the dimensions of some of the major achievements and how they have impacted on the livelihoods of smallholder agricultural producers and end users.

### *Strengthening capacity of the CORAF/WECARD organs*

#### **The CORAF/WECARD Governing Board**

The CORAF/WECARD Board was originally known as the Executive Committee composed only of agricultural scientists. The reforms introduced a Governing Board that comprised of agricultural research scientists, farmers, private entrepreneurs, NGOs, DPs and representatives of RECs. These representatives effectively contribute to the oversight role of the board and ensure quality delivery of outcomes.

#### **CORAF/WECARD Executive Secretariat**

At initiation of implementation of the OP, the organizational structure of the CORAF/WECARD ES was inadequate for promoting and facilitating the desired changes demanded by the new R&D paradigm. Therefore, CORAF/WECARD embarked on developing increased capacity at the secretariat through a change management initiative, to create the most appropriate enabling environment for successful operationalisation of the SP. This process resulted in key strategic changes within CORAF/WECARD. These changes include:

- i. A major paradigm shift from the network approach in which the network coordinators were based in various countries of the region to a centralised coordination based at the CORAF/WECARD ES. Eight Secretariat-based programmes were established to provide more coherence, convergence and horizontal interaction of the programmes. The eight programmes are:
  1. Livestock, fisheries and aquaculture
  2. Food crops
  3. Non-food crops
  4. Management of natural resources
  5. Biotechnology and biosafety
  6. Policies, markets and trade
  7. Capacity strengthening
  8. Knowledge Management

- ii. Better understanding of the CAADP and FAAP principles, especially at the secretariat and regional levels, and establishment of sound governance systems and policies.
- iii. Enhanced efficiency in programme coordination and innovation delivery: Scoping studies conducted by each of the eight programmes improved priority identification and setting and direct responses to demands and challenges in regional agricultural research.
- iv. Enhanced efficiency in joint programmes planning and execution: Centralised coordination of programmes at the Secretariat led to savings in time for research scientists and research managers; savings in resources; and savings in space leading to improved efficiency of the regional agricultural system.
- v. Major change in mind-sets on CORAF/WECARD regional agriculture priorities: The scoping studies in which all actors of the agriculture value chain become involved in priority identification, project development and delivery changed the perception of ownership of CORAF/WECARD – as actors now felt committed to a sense of belonging and part of the process. Actors of agriculture value chain became champions of CORAF/WECARD.

Enhanced efficiency in NARS execution of research and harnessing of the available expertise of NARS scientists: The competitive and commissioned research funding scheme pooled the expertise of scientists, private entrepreneurs, extension, and NGOs together from at least three countries thus creating the requisite critical mass of scientists to deliver public goods in agricultural technologies and innovations which are accruable to participating countries and other countries in WCA.

- vi. Strengthened capacity of the Secretariat and of NARS to manage huge research grants: The financial management system of the Secretariat has been strengthened to manage huge agricultural research funds.

### *The Scientific and Technical Committee (STC)*

The CORAF/WECARD reforms strengthened management and delivery of outcomes of the STC in the following ways:

- i. Enhanced quality of membership of the STC: The committee is composed of scientists with expertise in the various domains of CORAF/WECARD. This yields refined agenda that responds appropriately to stakeholder needs.
- ii. Reports to the Agricultural Science Week: The Chair of the STC now reports to the CORAF Biennial Agricultural Science Week, as distinct to only reporting to the CORAF/WECARD Governing Board.

### *GA/Agricultural Science Week spell out General Assembly*

- i. Enhanced efficiency and transparency in the management of the GA with palpable results in strategic orientation of regional agricultural development: The reforms introduced an innovation in which the GA elects its President at the onset of the Assembly, as distinct from the previous situation in which the CORAF/WECARD

Board Chair presided over the Assembly. The reforms obliged the Board Chair to report to the Assembly President in session. This enhanced transparency in governance, and improved the confidence of partners in CORAF/WECARD governance and management.

- ii. Enhanced quality of membership in the GA: The Assembly comprises not only of scientists but also farmers, private entrepreneurs, extension, NGOs, DPs, RECS and regional organizations. This has improved the quality of responses to agricultural productivity and production factors in the region.
- iii. Improved priority identification through the Agricultural Science Week: This Agricultural Science Week instituted by the GA constitutes a forum in which CORAF/WECARD further identified emerging trends which could be exploited in improving responses to regional agricultural productivity challenges.

### *Research and innovation capacity of NARS*

Conducting agricultural research in supportive environments for delivery of agricultural technologies and innovations depends largely on the exploitation of human talents. CORAF/WECARD promoted achievement of a critical mass of research scientists as a necessary resource for agricultural development. This objective was achieved through implementing the SCARDA project in the context of capacity enhancement relating to the implementation of IAR4D. In the implementation of SCARDA, the main thrust of CORAF/WECARD’s capacity strengthening intervention is empowering stakeholders to think, articulate and collaborate effectively with each other to create a multi-skilled cadre of motivated people capable of and willing to work towards delivery and impact. Capacity development and strengthening activities through training were conducted in a variety of topics (see Box 7) that significantly improved the institutional capacity of NARS in The Gambia, Ghana, Mali and Congo to conduct agricultural research and deliver technologies and innovation.

Further achievements in CORAF/WECARD capacity strengthening included:

- i. Enhanced capacity to conduct research in the context of IAR4D – in technology and innovation development and use.

#### **Box 7 SCARDA: Topics of capacity strengthening through training**

	<b>Countries</b>	<b>Beneficiaries</b>
• Management of agricultural research	4	20
• M&E and learning	4	13
• Advocacy and negotiation techniques	3	21
• Marketing and public relations	3	65
• Strategic planning and programming of agricultural research	1	21
• Management of financial resources	1	14
• Consideration of gender in agricultural programmes	4	25

- ii. Enhanced critical mass of scientists: In addition to training of NARS scientists, the competitive and commissioned research projects have been used as novel innovations in creating a critical mass of scientists to conduct research for the generation of agricultural technologies and innovation, and their use. The regional projects pool together at least three countries, and a diversity of scientists and actors of the agriculture value chain who are mandated to deliver regional public goods that should be useful to even countries with low levels of scientists.
- iii. Effective use of available Human Resources (HR): Regionally mobilising effective human resources for regional agricultural research to deliver public goods.

### *Strengthening institutional capacity*

Major achievements in the institutional and human resource capacity strengthening include the following:

- Improved strategic planning processes of the NARS, the research base centres (CERAAS, WALIC, CARBAP) and the NCoS use of the reformed CORAF/WECARD approach and RBM29.
- Improved basic research infrastructure through regional projects.
- Increased efficiency in the delivery of regional projects due to the provision of enhanced incentives for the motivation of project coordinators.
- Enhanced creation of regional champions through internships of NARS scientists at the CORAF/WECARD Secretariat. The interns return to their base as champions of CORAF/WECARD and promote regional integration of research. So far 22 interns have been involved.
- Strengthened capacity of partners of the agriculture value chain through the 171 IPs (the regional impact infrastructure) to uptake technologies. The 171 IPs created by CORAF/WECARD are also facilitating linkage of producers to markets; act as technology incubation opportunities; and access to credits
- IPs strengthened the awareness of smallholders on the need and merits of working together – since this encouraged learning; built trusts amongst producers; strengthened and fine tuned their negotiation skills with policy; and created better structure participation in community initiation.
- Improved mentorship of NARS scientists: Linkage with international mentoring organizations such as African Women in Agricultural Research and Development (AWARD) is improving quality of research outcomes and research management.
- Strengthened research skills: The reforms positioned and equipped the CORAF/WECARD research base centres and NCoS of the WAAPP to strengthen research skills of NARS scientists. The NCoS are being transformed to Centres of Excellence.
- Knowledge base of 57 MSc/PhD students (of which 10 are women) from WCA, was strengthened in various agricultural topics including
  - (i) The characterisation of the milk and vegetable value chains, and

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29. Réseau Billital Marobé

- (ii) Research on the improvement of productivity of sorghum, cowpea, and yam productivity, and processing of cereals; 27 of them were supplied with laptops to increase their capacity to acquire information.
- Skills of various categories of stakeholders in the sub-region were enhanced including:
  - (a) Vegetable producers (39 of whom 12 were women)
  - (b) Private sector entrepreneurs (101 men and 20 women)
  - (c) Producers (1080 of whom 21% are women)
  - (d) Farmers and entrepreneurs (300)
  - (e) Producers (1869 of whom 20% are women)
    - were strengthened in various techniques including:
      - (i) Improving and setting up nurseries
      - (ii) Sorghum seed production and marketing
      - (iii) Integrated Striga control in sorghum
      - (iv) Production and marketing of yam miniset
      - (v) Production and marketing of yam seeds
- Capacities of 67 NARS M&E officers strengthened in results-based management.
- Capacities of 40 M&E officers strengthened on impact assessment with the use of Dynamic Research Evaluation for Management (DREAM) software.
- In Cameroon, Chad and Nigeria 33 technicians were trained in Integrated Pest Management (IPM) and Integrated Soil Fertility and Water Management (ISFWM); these supported farmers in adopting these productivity enhancing technologies. 330 farmers were also trained in IPM and ISFWM.
- 868 beneficiaries (seed producers, producers, agricultural extension agents, NGO staff, agro-processors, and fabricators of plant pesticide extraction equipment) trained in the best practices of IPM, ISFWM, and equipment fabrication and processing, facilitated technology diffusion and adoption.
- Capacity of IP actors in Burkina Faso was strengthened on the modalities for accessing credit and facilitating the private sector and farmer access to finance.
- Capacities of beneficiaries in plantain projects were strengthened with PIF technology for planting material production, pest and disease management, soil fertility and water management, etc. A total of 1325 beneficiaries were trained, (503 women and 903 men), and capacities of these target groups were strengthened to diffuse and adopt technology.
- Knowledge of different categories of stakeholders including researchers, extension and advisory services agents involved in livestock, crops (millet and sorghum), and WAAPP implementation, improved on the IAR4D approach including project planning and M&E; value chain analysis; and business development services.
- Knowledge of over 60 scientists, lecturers, and development agents from Chad, Cameroon, Central Africa Republic, Niger, Senegal, Benin, Burkina and Mali

enhanced on IS perspectives using the Agriculture Science Technology Innovations (ASTI) training modules.

- Knowledge of over 80 universities and NARIs' staff from Cameroon, Niger, Burkina Faso, Mali, Côte D'Ivoire, Senegal, Chad and Central Africa, enhanced on ISs using the Technical Centre for Agricultural and Rural Cooperation (CTA) developed ASTI methodological framework.
- Knowledge of 17 NARI scientists in project writing, 15 in project development, and 30 in data management and analyses improved. These are considered as champions who are expected to train other scientists in their institutions.
- Knowledge of scientists improved in regional research coordination and management through 1-month internships for 18 NARS scientists and 12 months internships for 10 NARS scientists.
- About 10–22% women benefited from SCARDA capacity strengthening of managerial and technical competence and skills development.

### *Strengthening capacity of partners in the agriculture value chain - IPs*

In the implementation of the DONATA project, CORAF/WECARD designed, facilitated and coordinated the establishment of the initiative called *The Impact Infrastructure*. This consists of IPs addressing priority agricultural challenges at the community level, and operating on the concept of the IAR4D paradigm. Now fully operational all over WCA, IPs successfully deliver outputs and pockets of development outcomes and impacts, which are success stories of improving agricultural productivity and linking producers to markets. IPs bring stakeholders together as well as farmers and primary processors who are at the foundation of food production. Solutions and innovations are developed and rooted in local and national dynamics and address the challenges and potential solutions in food systems in WCA.

#### **Box 8**

According to one IP actor *Aziz Nignan*:

*“What I really like about the platform is that we have gained knowledge and skills. I have not been to school, but because of the learning and exchange visits, I can now speak easily in public and know how to conduct myself.”*

- Aziz Nignan. Grain and seed producer, regional production platform.

CORAF/WECARD IPs successfully developed the capacity of SHFs in many aspects of the agriculture value chain. Farmers become aware of one another and appreciated the strength in working together, generating trust amongst stakeholders, learning about efficient techniques for produce packaging and marketing, as well as improved negotiation skills, especially with policy makers, and better structured participation in community development initiatives.

We now present selected examples to illustrate how IPs facilitated by CORAF/WECARD provided not only the enabling environment and opportunities for strengthening





**Figure 41: Interactions in IPs provide opportunities for capacity strengthening for smallholder producers**

capacity for agricultural research and innovation, but also promoted enhancement in the livelihoods of SHFs and end users.

- Capacity strengthening activities have led to positive changes in the lives of small farmers and processors. Improved vegetable crop systems were developed and adopted by 44 farmers including 21 women. This innovation increased pepper yields from 14 to 39 tons/ha, resulting in increased income generated by farmers and vendors. Most of the farmers have doubled their production and their gains increased from CFA 25,000 francs to CFA 70,000 francs per month. The impact of the increased revenue on their livelihoods was demonstrated through the provision of better education for their children.
- Participants at the Fédération Nian Zwè IP in Burkina Faso numbering over 20,000 members in the two provinces of Sissili and Ziro, were organized into provincial, communal and village associations. IPs were organized for volunteer farmers to train their peers on maize production as vital actions to promote the future and sustainability of the IPs.
- IPs in Burkina Faso encompass some 250 entrepreneurs who process and add value to the farmers' output. Between 2008 and 2012, their income rose between two- and five-fold as a result of their involvement in the platforms.
- Through activities in IPs in Nigeria, Cameroon and Sierra Leone, cost effective and environmentally friendly integrated fish farming models were developed and enhanced the livelihoods of SHFs. For example, in Nigeria, stocking rate of 10 fish per m<sup>2</sup> resulted in an average weight gain of 223+10.02g after 12 weeks of rearing, compared with the mean weight gain of 400+15.01g obtained under conventional fish farming practices after 24 weeks of culture. The net income of Naira 204,834

(equivalent to about US\$ 307,251) with a profitability index of 0.23, and a cost benefit ratio of 1.3, was obtained when fish farming was integrated with rice and poultry. These values were significantly higher when compared to those recorded for conventional fish farming systems. The water utilisation efficiency was better under integrated fish farming than in the conventional system. The total yield of rice grains was extrapolated to 3.3t/ha, which was higher than the normal value of 2.3t/ha recorded in conventional rice production system.

- *Maize in Burkina Faso*

In 2008, Arzouma Namoro, a member of the Fédération Nian Zwè farmers' association, joined an IP facilitated by INERA<sup>30</sup>. Through the IP, Namoro and his colleagues obtained seeds of improved maize varieties, and learned about improved methods of maize cultivation and management. On his 8 ha land, Namoro first produced 2.5 t/ha of maize, just enough to feed his family and cover their household expenses. Through support from activities at the IP, he planted a larger area, and by 2012 was growing 14 ha of maize and obtaining average yields of 4.9 t/ha. Following his success, he was elected president of the association and has started several new businesses: he now raises guinea fowl, and has opened a restaurant and a shop where customers can recharge their mobile phones. Additionally, he has built a house in Léo, the capital of the Sissili province, which he rents out. He can now afford to send his children to private school, and has built up enough capital to be able to buy all the inputs he needs, so he no longer has to borrow money at the start of the season.

- *Cassava in the Republic of Congo*

The IP for cassava in the Republic of Congo provided the group with a mechanical grater and a press that helped to reduce the amount of drudgery, to make their production more efficient and to double incomes. A second processing group, in Loudima, makes mbala-pinda, a popular snack made from peanuts and cassava. The 33 women farmers in the group grow both these ingredients. They have pooled their savings to buy an electric grinder and together they make mbala-pinda which is sold to generate considerable income.

Thus, the IP has enabled these women to get organized to work together, increase their production and sell as a group in the market in Loudima. They are hoping to supply a school feeding programme with mbala-pinda, to replace the imported maize meal that the programme currently uses.

- *Cassava in Cameroon*

The IPs empower members to increase the quantity and quality of cassava in the value chains. An example is gari. The IP arranged for an expert to facilitate the learning of platform members on how to make this product. The trained members later facilitated learning by the others within their groups. Similar approaches have been used to rapidly multiply disease-free cassava cuttings, how to make bâtons de manioc (long, cooked rolls made of cassava, wrapped in arrowroot leaves), and how to produce products of consistent quality.

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30. De l'Institut de l'Environnement et de Recherches Agricoles

The IP also strengthened the capacity of members in the processing and marketing of cassava, through women working together successfully in well-organized groups. Selling products in bulk also enables the women to serve wholesalers who want to buy large quantities at one time.

## Conclusion

Implementation of the 1<sup>st</sup> CORAF/WECARD OP provided CORAF/WECARD the unique opportunity to deliver on Result 3 of the plan. Major achievements have been obtained through coordinating activities in the SCARDA and DONATA projects, which reinforced the capacity of CORAF/WECARD stakeholders and constituents to deliver on agricultural research and innovation for rural community development. The uniquely comprehensive intervention by CORAF/WECARD targeted the key processes of the agricultural value chain, in addressing production, processing, marketing, and local policy issues.

Research capacities of especially weak NARSs were strengthened while the engagement of the variety of partners in the agricultural production and marketing cycle have resulted in empowerment of producers and enhanced the livelihoods of smallholder producers and end users.

Examples of comments by beneficiaries of IPS (Box 9) vividly illustrate the extent to which the Impact Infrastructure model was successful in delivery of the CORAF/WECARD Result 3.

### Box 9

#### Case stories of benefits of IPs

##### Comment 1

*“What I really like about the platform is that we have gained knowledge and skills. I have not been to school, but because of the learning and exchange visits, I can now speak easily in public and know how to conduct myself.”*

- Azize Nignan. Grain and seed producer, regional production platform.

##### Comment 2

*“Producers have gained credibility in the eyes of banks and microfinance institutions. They used to be suspicious of producers, but through the innovation platform they have learned to engage with producers and trust them. The finance institutions are now aware of the political, technological and technical backstopping offered to the producers participating in the innovation platform.”*

- Dagano Moussa Joseph. Grain producer and former president of Fédération Nian Zwè, Burkina Faso.

##### Comment 3

*“Before people were talking in ten different languages, each spoke for himself; now we sit in the platform and discuss together until we speak the same language.”*

- Maman Douala. President, Nkong Abok platform, Cameroon.

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## Chapter Four : Knowledge management for agricultural research and innovation



### Introduction

CORAF/WECARD's 1<sup>st</sup> OP defined specific core functions for the effective delivery of the outputs of agricultural research and innovation. The KM core function was designed to promote the exchange of knowledge and information between technical programmes, as well as between the policy, delivery and technical aspects of the CORAF/WECARD strategy.

CORAF/WECARD defines KM as the exchange of knowledge, experience sharing, and information dissemination between technical programmes and stakeholders in the process of generation of agricultural technology and innovation. It is a cross-cutting function and mechanism which enables achievement of improved productivity and competitiveness and markets. CORAF/WECARD shifted from an information management approach that was targeted solely at the scientists, to a KM system that was inclusive of scientists and actors of the agriculture value chain who use research outcomes.

In the reformed CORAF/WECARD KM system, information is shared through distribution lists. It created a special mechanism in the form of a KM programme to deliver the KM core function for regional agricultural research and development.

These functions create the enabling environment in which the sub-regional agricultural research system grows, providing the mechanism for delivery of the results that are

identified as the necessary and sufficient conditions for CORAF/WECARD to achieve improved productivity, competitiveness, and markets. These functions lead to broad-based growth in the agriculture sector and ultimately contribute to poverty reduction in WCA.

The CORAF/WECARD KM programme, incorporating a communications strategy, was developed to ensure that all appropriate media channels are used for sharing knowledge and advocating for policy options. KM covers a wide range of issues and mechanisms and is closely linked to dissemination and uptake of knowledge, advocacy, coordination of effort and experiential learning.

KM is integrated as one of the eight programmes at the core of CORAF/WECARD's SP. The activities of this programme are designed to directly "address the key CAADP targets for improving technology dissemination and information flows as well as playing a key role in the delivery of each of CORAF/WECARD's results." Thus the programme serves as a strong signal to all stakeholders that CORAF/WECARD will adopt an operational paradigm shift to focus R&D activities onto the producers and end users of agricultural research. Thus the KM programme targets "a wide range of issues and mechanisms associated with dissemination and uptake of knowledge, advocacy, coordination of effort and experiential learning. Transforming information into knowledge through learning and the application of the tools that make the use of information the cornerstone of the capacity for innovation."

Thus during the implementation of the 1<sup>st</sup> OP, CORAF/WECARD mainstreamed KM to ensure that the *right* information is effectively delivered to the *right* beneficiaries in time, to guide appropriate decision making to address particular problems or needs. All programmes were designed to respond to, and deliver on, the needs of KM covered by guidelines elaborated in the KM programme strategy.

Information and communication activities coordinated by CORAF/WECARD resulted in the following major deliverables:

- (i) Creation and regularly updated overall mailing list of CORAF/WECARD (coraf-community@coraf.org).
- (ii) Development of a regional communication strategy.
- (iii) Publication of a quarterly newsletter on WAAPP to better communicate project results to all stakeholders.
- (iv) Development of a functional new CORAF/WECARD's website with four new web pages including a more dynamic WAAPP web page; regular publication of the monthly bulletin – *CORAF Echo* publication of several volumes of *CORAF Action* publication of annual reports up to 2012; and 20 programme documents.

## **Knowledge Management projects and achievements**

In collaboration with FARA, the Natural Resources Institute of the University of Greenwich, CTA in the Netherlands and other DPs, CORAF/WECARD implemented key projects in KM and communication. The key projects implemented include RAILS, The

Platform for African European Partnership on Agricultural Research for Development (PAEPARD) and Promoting Science and Technology for Agricultural Development (PSTAD). Through these initiatives, CORAF/WECARD successfully addressed gaps in the availability and accessibility of general information on agricultural R&D in WCA. Through its extensive partner networks, agricultural knowledge and information was made widely available and accessible to the scientific and agricultural community in the CORAF/WECARD mandate zone.

KM increased awareness of the availability, relevance and usability of the agriculture research outputs that are regional public goods.

Furthermore, communication and publicity materials such as brochures, white papers, and abstracts, harnessed from the larger KM systems, were made widely available to the WCA agricultural development community. Through publications and full disclosure, as well as open sharing of regional public goods delivered into the public domain, CORAF/WECARD effectively contributes to the international corpus of agricultural science knowledge and information. Supporting and facilitating the production of publications by NARS and their partners, is consistent with the CORAF/WECARD core function of KM.

CORAF/WECARD identified three regional KM systems, to which projects are aligned. These projects are ECOAGRIS, the information system of ECOWAS, and RAILS managed by FARA and AfricaAdapt.

ECOAGRIS is an information system designed to remodel the data on the M&E of the agricultural activities and initiatives within the ECOWAS sub-region. The programme is a management tool to update information about livestock, agricultural markets and trade opportunities as well as alert systems.

Transferable technologies are available but not sufficiently disseminated within the NARS in the countries in WCA. To meet this challenge, CORAF/WECARD, under the WAAPP initiative, implemented an electronic platform that uses a virtual marketplace called Market Innovations and Agricultural Technologies (MITA). CORAF/WECARD also facilitates the AfricaInteract Platform to facilitate the sharing of knowledge and experiences on adaptation to climate change in Africa. This network also aims to improve the livelihoods of the most vulnerable communities through informed decision making for effective adaptation to climate change by encouraging collaboration between researchers, policy makers, civil society and local communities.

### *The CORAF/WECARD publications policy*

CORAF/WECARD recognised that the publication and effective dissemination of agricultural information is vitally important for agricultural and rural development in WCA. Through publications, agricultural information is made available to all DPs who are interested in promoting agriculture-led community and rural development in WCA. Publishing, as a component of agricultural communication and KM was therefore adopted as an integral aspect of the activities of CORAF/WECARD's 1<sup>st</sup> OP.

An important achievement of CORAF/WECARD during this period is the development of an institutional Publications Policy (see Figure 42). The CORAF/WECARD Publications Policy is prescribed in the context of CORAF/WECARD's vision, mission and core functions, which are reflected in the quality of its publications. The Publications Policy ensures sound coordination and management in the production of CORAF/WECARD's institutional and technical publications, incorporating adequate consideration and management of intellectual property, commercial value and scientific or related sensitivities.

### *Promoting the visibility of CORAF/WECARD activities*

Enhanced visibility of CORAF/WECARD and a regional approach to agricultural research was achieved through improved quality of CORAF/WECARD publications within the framework of the publications policy, and the wider CORAF/WECARD use of the Internet in information dissemination.

In 2012, CORAF/WECARD published more than 40 flyers and brochures that described its regional project outputs and outcomes, and impact pathways. In addition, 12 issues of the monthly bulletin *CORAF Echo* were published in 2012. Furthermore, four issues of the quarterly web-based *CORAF Action* as well as the CORAF/WECARD Annual Reports for 2011, 2012 and 2013 were published and widely distributed.

Similarly, a social media strategy and CORAF/WECARD results were disseminated through Facebook, Twitter, and a page created on Wikipedia to widely publicise the work of CORAF/WECARD.

### *Collaboration with partners in agricultural KM*

In partnership with CTA, CORAF/WECARD completed the documentation of lessons learnt from agricultural research and technology use practices. This activity effectively promoted the dissemination of research outputs and the capitalisation of good agricultural practices by the actors of the agriculture value chain in WCA. This initiative also promoted the use of web-based ICT tools, radio and CD-ROM in efficiently accessing and diffusing information on available technologies and innovations to facilitate technology spill-over effects within WCA.

Information and communication with all CORAF/WECARD stakeholders in agricultural research for development was significantly improved in 2012. A total of 2,650 requests

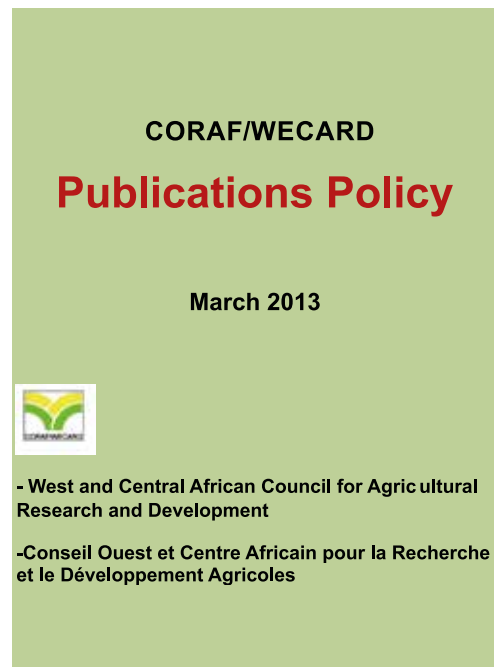


Figure 42: The CORAF/WECARD Publications Policy.



for inclusion in the CORAF/WECARD regular mailing list were registered. During the same period, more than 75,000 visits were made to the CORAF/WECARD website. In addition the CORAF/WECARD Secretariat developed four new web-portals specifically for the following:

- (i) DFID<sup>31</sup>-funded projects
- (ii) AusAID-funded projects
- (iii) USAID-funded projects
- (iv) PSTAD project
- (v) Implementation of RAILS project

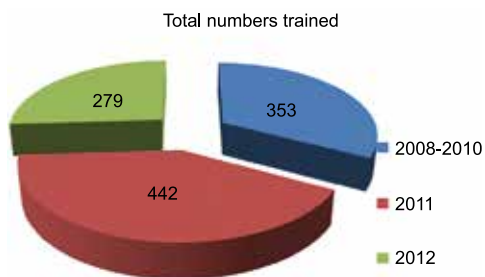
CORAF/WECARD successfully collaborated with FARA in the implementation of RAILS to:

- (i) Undertake advocacy to increase investments in the Agricultural Information Systems (AIS) by governments and African institutions.
- (ii) Improve access to information and the ability of African stakeholders to contribute to global agricultural knowledge.
- (iii) Facilitate synergies by combining information channels of African world suppliers of information on agriculture.
- (iv) Develop an African Platform for agricultural information and learning systems.

To improve communication services through increased ICT speed capacity in the NARS of CORAF/WECARD countries, computers and accessories were successfully installed and connected to broadband Internet to increase ICT speed and capacity to at least 1,256 bits per second in each country. 21 countries received computers and associated equipment, including servers, desktop computers, inverters and voltage regulators, net book computers and cameras. RAILS country participants created national RAILS websites linked to the eRAILS continental portal. By the end of 2012, 13 CORAF/WECARD countries had set up national RAILS websites that are linked with the eRAILS continental portal. These countries are Cameroon, Congo Brazzaville, Cote D'Ivoire, DR Congo, Ghana, Guinea, Mali, Mauritania, The Gambia, Sierra Leone, Senegal, Togo and Sudan. These national RAILS websites significantly facilitate sharing of knowledge and information between NARS to promote agricultural research and innovation.

Through the capacity development and strengthening component in the implementation of the RAILS project, CORAF/WECARD supported extensive training and capacity strengthening in ICT management for research and extension staff and other partners in the NARS of WCA. The total number of people trained under the RAILS component (see Figure 43) was 1,074, with women comprising 26% of the beneficiaries.

**Figure 43: Number of people trained in use of ICT tools and management.**



31. Department for International Development, United Kingdom

## *Promoting KM in IPs*

Establishment of the CORAF/WECARD Impact Infrastructure consisting of IPs was a major achievement. IP as a veritable tool for the delivery and uptake of knowledge. KM enhanced technology uptake from research by users who immediately adopted and adapted the technologies. This was particularly facilitated through IPs in which scientists and other actors of the agriculture value chain engaged and worked together in technology/innovation generation and use (see the case studies and success stories of maize crops in Burkina Faso and Mali, and cassava in the Republic of Congo).

Through the establishment and operations of IPs, opportunities and alliances were created for participatory learning, and knowledge and information sharing to increase access to knowledge across the value chain continuum. This resulted in increases of the areas of staple crops grown, yields and production to the target groups. Farmers participating in IPs developed business relationships that allowed valuable and productive market opportunities as well as access to and promotion of their products. The level of horizontal and vertical knowledge and information sharing among the different actors in the IP, determined, to a large extent, the success of the IP.

## **Implementation of DONATA**

Through implementation of the DONATA project, a wide range of channels was developed for disseminating improved agricultural technologies. These channels include:

- Involvement of government extension services.
- NGOs and farmer groups in multiplication and distribution of planting materials.
- Sensitising campaigns, bringing extension staff to the research station.
- Training (e.g. training of mothers in the nutritional value of OFSP for pregnant women and children).
- The Internet.
- Farmer Field Schools (FFSs), field days, agricultural shows, Innovation Platform for Technology Adoption (IPTA) meetings and IPTA reviews.
- Others are radio (including community-based radio and radio listening groups), TV, Participatory Variety Selection (PVS), schools, prisons, exhibitions, demonstrations, calendars, fliers, meetings with farmer-based organizations, mobile phones, DVDs, exhibitions, stickers, drama, birth attendants, exchange visits, discussions with policy makers, micro-finance, use of faith organizations and World Food days.

IPs facilitated by CORAF/WECARD provided excellent opportunities for building capacity and promoting agricultural communication KM. The following selected case studies are presented to illustrate the contribution of KM for the promotion of IP activities.

## **Case study 1: Maize IP in Burkina Faso**

The maize IPs in Burkina Faso provided the various actors a framework to conduct joint activities, exchange information, and learn from each other. During 4 years of

operations, the following knowledge exchange activities were organized: 300 field days, 12 radio programmes in local languages, and six articles in *Sidwaya*, a national daily paper. Farmers from other villages and provinces visited the platforms to learn what they are doing. Arzouma Namoro, the president of Fédération Nian Zwè, welcomes many such visitors each year to his fields. FFSs, demonstration fields, exchange visits and study tours were arranged as important mechanisms of information dissemination and exchange to familiarise farmers and other stakeholders with new agricultural technologies.

### **Case study 2 - Maize IP in Mali**

The IPs in Mali successfully built trust and spread information about the new maize production technologies. Through various channels, they arranged exchange visits by groups of farmers to see the field tests and demonstration plots. Facilitated by CORAF/WECARD, researchers at Institut d'Economie Rurale (IER) - the national agricultural research institute, produced posters and leaflets on the recommended technologies. The seed companies distributed the leaflets with each bag of seed they sold. The IER researchers, seed company and processors used the Internet to obtain information and coordinate their activities. Radio and television helped to reach a larger audience. The media representatives on the platforms broadcasted stories about the new technologies on community radio and television.

Farmers were trained to use mobile phones to ask key questions and for cooperative leaders to negotiate sales and arrange deliveries. The facilitators used their phones to arrange meetings and training sessions, and to get in touch with platform actors.

### **Case Study 3 - Cassava IP in Republic of Congo**

Information management was promoted through the use of journalists from a local private television station in two IPs in Loudima (production and processing). The local journalist interviewed IP actors and shot footage of their work to produce short documentaries that were broadcast on the station and used in training sessions. Programmes covered the whole range from field to plate: the choice of cuttings, planting and cultivation techniques, processing methods, and cooking recipes.

Information about the IPs was distributed through the RAILS, a component of the PSTAD project managed by CORAF/WECARD that produced films, posters, flyers and extension materials.

## **Conclusion**

CORAF/WECARD's information and KM programme made significant progress in improving efficiency of information dissemination for agricultural research and innovation. KM activities spanned a wide range of issues and mechanisms that are closely linked to dissemination and uptake of knowledge, advocacy, coordination of effort and experiential learning.

Through CORAF/WECARD's participation in the implementation of RAILS, PAEPARD, PSTAD and DONATA, the capacity of NARS partners for information exchange and KM was considerably enhanced, resulting in wide scale information exchange and documentation and publicity of agricultural research and innovation activities in WCA.

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## Chapter Five: Advocacy – Mechanisms for increasing the visibility of CORAF/WECARD



### Introduction

Since its founding in 1987, the primary goal of CORAF/WECARD has been to promote agricultural research cooperation, consultation and exchange of R&D information among its member institutions and its stakeholders. The results achieved have been based on a dynamic advocacy which was reaffirmed in the new SP 2007-2016. During implementation of the advocacy functions outlined in the OP 2008-2013, CORAF/WECARD:

- Ensured that its functions and role were known by partners and integrated into implementation of their activities.
- Encouraged dialogue and provided research information that strengthened NARS.
- Influenced regional policies and institutions in collaborative learning.

From 2003, CORAF/WECARD took the initiative to restore its credibility by engaging in a more transparent process for the recruitment of Executive Secretary and other high-level management staff. This initiative was followed by several other reforms which have been favourable to advocacy and alignment with the objectives of CAADP Pillar IV. These reforms include:

- (i) Its anchoring and political recognition by the integration and development institutions.

- (ii) Improving the partnership with all its stakeholders.
- (iii) Strengthening and improving institutional governance.
- (iv) Using appropriate tools for the implementation of its strategy based on specific and achievable objectives.
- (v) Improving its level of funding.

This chapter describes the process by which CORAF/WECARD initiated the reforms that reinforced its credibility, increased its responsibility and made more visible its actions for the benefit of its member NARS.

## **Restoration of the credibility of the Executive Secretariat**

The original operational structure of CORAF/WECARD included an annual General Assembly meeting, an Executive Committee comprised only of the representations of Directors of National Agricultural Research Institutes, and an Executive Secretariat inadequately staffed and expected to deliver high quality outcomes for the sub-region.

The mismatch between the human resources of the ES and the ambitions assigned to it, coupled with the irregular and insufficient financial resources negatively impacted on the performance of the ES. This created some disconnect in relationships between the CORAF/WECARD and its stakeholders, resulting in low fund mobilisation for the implementation of its SP. Nevertheless, CORAF/WECARD demonstrated significant resilience, thanks to the capacity and competence of its elite group of researchers who have been able to coordinate with varying degrees of success, the operational units consisting of 13 research networks, three base centres and two research poles. By continuing to benefit from the financial support of the DPs CORAF/WECARD was able to pursue its mandate, as much as possible.

Considering these shortcomings and the fact that leadership, HR management and quality were determining factors for institutional performance, a study on the organizational structure and modus operandi, a management audit of CORAF/WECARD was considered necessary by the Executive Secretary and commissioned in February 2004. The objective of this management audit was to strengthen the institutional capacity of CORAF/WECARD, and in particular, that of its ES, to enable it to fulfil its mandate and to overcome the financial crisis and credibility being experienced by the Association.

Funded through support from USAID and carried out by independent consultants, recommendations of the audit accompanied by an action plan were approved by the 5th GA of CORAF/WECARD held in Brazzaville, Congo, in April 2004.

Implementation of this plan resulted in strengthening the institutional capacity of the ES through the re-organization of the financial and accounting management processes supported by the recruitment of quality staff, including the Administrative and Financial Manager, revision and adoption of statutory and administrative procedures, and the matching of jobs with functions. This newly established credibility of the ES has strengthened confidence from different stakeholders in CORAF/WECARD, including the RECs.

## *Political anchoring and recognition of CORAF/WECARD*

The current membership of CORAF/WECARD is drawn from the NARS of 22 countries in WCA. The level of independence, together with the public and political authorities, has not influenced its mandate of this sub-regional body for implementing agricultural research policies in WCA. Similarly, the critical importance of its role in strengthening the effectiveness and coordination of agricultural research in WCA was derived from its NARs partners and stakeholders.

The mechanisms adopted by CORAF/WECARD for the promotion of cooperation, included, consultation and exchange of information necessary for the achievement of its objectives as well as development and implementation of programmes. This mechanisms helped to build a *community of practice* of sub-regional agricultural scientists who generate technologies that support agricultural growth and sustainable management of natural resources (CORAF/WECARD, 2004).

However, it has been established that progress of the SRO were slowed down by some challenges associated with limited understanding of the concept of NARS often seen as the National Agricultural Research Institutes (NARIs). Obviously, the institutional gap on the political legitimacy of CORAF/WECARD by its NARS memberships was quickly recognized in the 1990s by the initial leadership of institutions who, through several initiatives, sought to obtain political support. The first Conference of Ministers responsible for Agricultural Research in WCA held in Dakar (Senegal) in 1992, followed in 1996 by the meeting of the agriculture ministers of WCA held in Yaoundé (Cameroon), designated CORAF/WECARD as a SRO and a technical instrument for coordination of their research policies.

These recognitions were not followed by tangible support, but with the establishment of the credibility of the ES of CORAF/WECARD, and the endorsement of ECOWAP and the importance of agricultural research, there was extensive collaboration between ECOWAS and CORAF/WECARD. This action also promoted the visibility of CORAF/WECARD with policy makers including the Heads of State of WCA (see figures 44 and figure 45).

**Figure 44:** *Visit of the Executive Director of CORAF/WECARD to the Executive Secretary of ECOWAS in Abuja in August 2007.*



**Figure 45:** *The President of the Republic of Sierra Leone expresses interest during a visit to an exhibition stand at the meeting of the WAAPP Steering Committee held in Freetown in May 2013.*



The Cooperation Agreement between ECOWAS and CORAF/WECARD signed in December 2005, formalised the relationship aimed at promoting the effective implementation of innovative programmes of agricultural and food research that meet the nutritional needs of citizens of ECOWAS member states, promoting socio-economic development and reducing poverty. It enabled ECOWAS to designate CORAF/WECARD as its technical arm for coordinating the implementation of its priority programmes in agricultural research.

## **Achievements of the cooperation between CORAF/WECARD and ECOWAS**

### *1. Promotion of biotechnology and biosafety*

From 2007, and after a long process of consultation with various stakeholders interested in the application of biotechnology to agriculture in the sub-region, including scientists, professional agricultural organizations, the media and policy makers, CORAF/WECARD, in partnership with CILSS, facilitated the development and adoption of the Action Plan for the development of biotechnology and biosafety in the WCA zone.

The main objective of the 2007-2011 Action Plan which was the basis for the development of the Biotechnology and Biosafety Programme (BBP) of CORAF/WECARD. The application of biotechnology was to improve agricultural productivity and stimulate competitiveness, while maintaining the natural resource base.

The amount of US\$ 1.5 million generated by ECOWAS for the BBP during the period 2008-2013 was, however, below the estimated budget of US\$ 23 million, hence limiting the comprehensive implementation of the programme. Nevertheless, significant results were obtained in improving the productivity and competitiveness of priority food crops and cash crops and creating a regional regulatory framework suitable for the use of biotechnology products. Some of these results are now listed:

- Molecular markers assisted selection of rice varieties resistant to RYMV were identified and four of these varieties were introduced in Burkina Faso, Côte d'Ivoire, Ghana, Nigeria, Niger, Sierra Leone.
- Facilities for *in vitro* cultivation techniques were established and materials resistant to ACMV were produced and multiplied in Benin, Côte d'Ivoire, Ghana, Niger, Liberia, Sierra Leone and Togo.
- Collaboration between CORAF/WECARD and ECOWAS was also marked by the development, implementation and coordination by CORAF/WECARD of several other initiatives such as the National/Regional Agricultural Investment Programmes and the WAAPP.

The WAAPP program is presented in this book as an example of major achievements of CORAF/WECARD on the transformation of West African agriculture resulting from the application of the FAAP principles.



## 2. Promotion of a sustainable investment model for agricultural research: The WAAPP

WAAPP is the most complete expression of the recognition of CORAF/WECARD by ECOWAS, with the contribution of its member states and DPs that have set up an innovative mechanism for financing the programme. Initiated by ECOWAS in 2008 with the assistance of CORAF/WECARD, WAAPP has a 10-year implementation period consisting of two phases of 5 years each with a gradual integration of the eligible countries. Funding from the World Bank for the WAAPP program provides for each member country's conditionality and for CORAF/WECARD to receive 1/15<sup>th</sup> of the loan to support the coordination of regional initiatives.

Designed to facilitate the contribution of the countries of WCA to implementation of CAADP, WAAPP's achievements include:

- Conducive conditions created for the development, dissemination and use of improved technologies.
- NCoSs developed.
- Enhanced programme/project coordination, management, and Monitoring and evaluation (M&E).

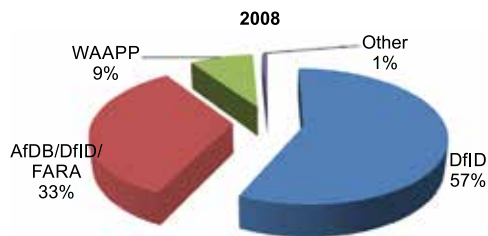
The main achievements in late 2013 demonstrated the strong contribution of CORAF/WECARD, are described in the Chapter two in the section "Dissemination of technological innovations through the Regional Productivity Programme"

The overall performance of WAAPP is considered as highly significant. WAAPP's contribution to the funding of the OP of CORAF/WECARD which was 9% in 2008 rose to 20% in 2012 (Figures 46 and Figure 47).

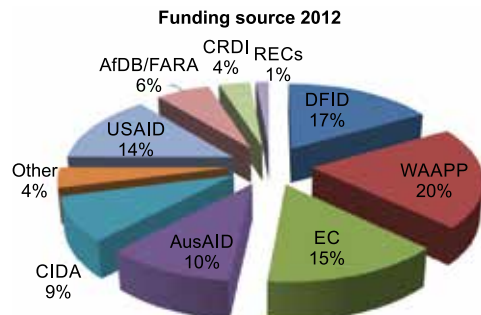
## 3. Implementation of ECOWAS seed regulations

ECOWAS Seed Regulations were established to facilitate the use of principles and rules approved by the member states that reduce, in a timely manner and at convenient places, the trade barriers and producers' access to quality seeds. They also seek to promote the

**Figure 46: Share of the contribution of different donors to the funding of the 2008-2013 OP in 2008.**



**Figure 47: Share of the contribution of the different donors to the funding of the 2008-2013 OP in 2012.**



creation of favourable conditions for private investment. The coordination and achievements of WASP, by CORAF/WECARD since 2012 may be attributed to the trust and the responsibility that it enjoys from ECOWAS and donors who initiated the project.

#### ***4. CORAF/WECARD-ECOWAS partnership, a vector of partnerships with other RECs and IGOs in WCA***

The partnership between CORAF/WECARD and ECOWAS was the trigger for the establishment of cooperation protocols with other RECs/IGOs of the sub-region that happened successively with UEMOA in February 2006, CEMAC in July 2007, CILSS in June 2008, ECCAS in July 2008, and the Mano River Union in March 2011.

Strengthening the political muscle of CORAF/WECARD with these institutions is marked by several important effects, some of which are listed below .

#### **Achievements of the cooperation between CORAF/WECARD and UEMOA**

Through the implementation of the West Africa Regional Biosafety Project , common procedures and methodologies for the assessment and management of risks associated with the introduction of biotechnology products in countries of the UEMOA zone were developed by CORAF/WECARD (UEMOA, 2013). The adoption of national biosafety legislations in West Africa had an impact on the implementation of the project. In addition to Burkina Faso in 2003, which provided a national biosafety legislation, Mali, Senegal and Togo have also established national regulatory frameworks on biosafety necessary for the promotion of biotechnology. From 2010, consideration by CORAF/WECARD in the UEMOA priority investment programme resulted in its association with strategic consultations in the agricultural sector of UEMOA including the annual meeting its heads of state. These actions led to the promotion of a greater visibility of CORAF/WECARD in the sub-region.

#### **Achievements of the cooperation between CORAF/WECARD and RECs of Central Africa**

By the end of 2013, participation of the NARS of Central Africa in the projects portfolio of CORAF/WECARD was estimated at 14%. This low level of participation is partly explained by the delay in the implementation of CAADP in the sub-region. Nevertheless , by managing to get three countries in the sub-region (Cameroon, Chad and Congo) from 2010 to express interest in CAAPP with the World Bank, CORAF/WECARD has laid the foundation for active collaboration with ECCAS, and focal institution for the implementation of CAADP in Central Africa. The CAAPP should benefit from technical support for its preparation under the auspices of ECCAS. With its funding to be provided by the same mechanism of adaptive programmatic loan from the World Bank, it is expected of ECCAS and its participating member states to initiate appropriate actions to meet the required conditionalities.

The review of cooperation between the Central African RECs and CORAF/WECARD, recommended by the last evaluation, strengthened cooperation between ECCAS

and CORAF/WECARD, for more effective promotion of research for agricultural development in Central Africa. Implementation of the 2<sup>nd</sup> OP of CORAF/WECARD offered the opportunity for revitalising this partnership.

### Achievements of the cooperation between CORAF/WECARD and CILSS

The complementarity and synergy between the activities of CORAF/WECARD and those of CILSS supported the establishment of the Framework Protocol for Scientific and Technical Cooperation between the two institutions. Thus the technical cooperation involved participation of specialised entities of CILSS (Secretariat, Executive, AGRHYMET, INSAH) in the implementation of competitive and commissioned projects of the OP.

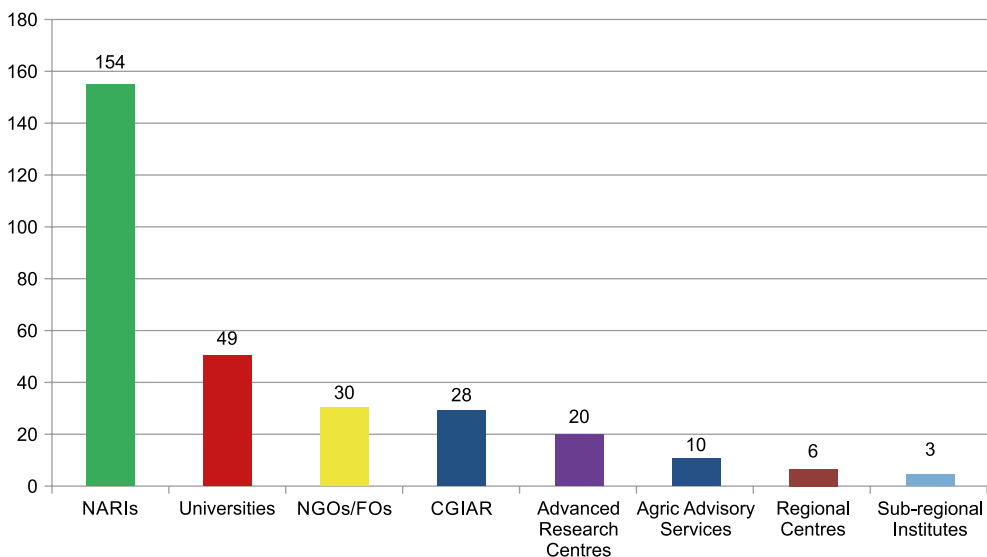
### Achievements of the cooperation between CORAF/WECARD and the Mano River Union

The partnership with the Mano River Union resulted in technical support from CORAF/WECARD for the preparation and implementation of WAAPP 1C on improving rice production in countries of the Union namely, Côte d'Ivoire, Guinea, Liberia and Sierra Leone.

#### Expansion of technical partnership

CORAF/WECARD's strategy for advocacy has helped to significantly improve the quality of the partnership with SPs involving technical institutions, research funding institutions and umbrella organizations for coordination and implementation of research programmes. The dynamism and diversification of this partnership is clearly reflected by the level of participation of SPs in the implementation of regional projects as shown in Figure 48.

Figure 48: Participation of the NARS in implementation of regional projects by the end of 2013.



This strategy for advocacy has also strengthened the partnership with FARA, other sub-regional agricultural research organizations, AFAAS, ROPPA, PROPAC , and the private sector. This partnership has led to a more sustained presence of CORAF/WECARD in regional, continental, and international fora, allowing for better visibility, more efficient cooperation and increasing the level of trust with its partners. The outcome of this increased stakeholder confidence is an increase in CORAF/WECARD's responsibility for the coordination of partner initiatives relating to research priorities and agricultural development in the WCA sub-region.

The AfricaInteract project illustrates appreciation by its DPs of CORAF/WECARD's coordination capacity for creating the conditions for dialogue between researchers and policy makers on adaptation to climate change. This project was developed by the ES of CORAF/WECARD following a request for expression of interest by IDRC . Its continental scope required its preparation in the context of FARA's subsidiary principles. With an overall cost of US\$ 3 million dollars for a period of 3 years, AfricaInteract was selected from several competing projects and implemented from April 2011 in collaboration with several partners in Africa (FARA, ASARECA, CCARDESA, NASRO, FANRPAN, ENDA and COMIFAC, etc.). Implementation of AfricaInteract generated significant results in terms of policy options on climate change and the promotion of a framework for dialogue between researchers and policy makers.

## **Improved status and quality of financial resources**

The cost of the OP 2008-2013 amounted to US\$ 112 million. Only 31% of its funding was secured in 2008, but this funding gap was filled well before the end of the implementation of the plan (Figure 49). Total resources mobilised by the end of 2013 amounted to US\$ 1,30,407,009 million, that is, a surplus of 16% compared to the required funding.

The intense advocacy by CORAF/WECARD resulted in diversification of its financial partnership, through support from a significant number of donors as detailed in the resource mobilisation . This situation is an indication not only of the level of ownership of the SP of CORAF/WECARD by donors but also an expression of their vote of confidence in the financial management efficiency and responsibility. These processes focus on information and accountability and are built around strong principles of risk management, multiple levels of accountability and verification (Figure 50).

It is also emphasised that the quality of these resources was related not only to diversity but also of their type of financing based on bilateral agreements with donors (DFID, AusAID, USAID, IDRC, ECOWAS, UEMOA, etc.), the retrocession agreement with ECOWAS countries for the funding of WAAPP, and the trust fund managed by the World Bank and funding from the European Union (EU) and Canada.

By allocating at least 2/3 of the resources mobilised for financing implementation of the activities of the OP 2008-2013 programmes, CORAF/WECARD also improved the resource mobilisation of its NARS members and stakeholders.

## Strengthened tools for producing results

The programme approach of the OP 2008-2013 used the mechanism of competitive and commissioned funds for the implementation of research projects of the eight programmes of the plan promoted networking among stakeholders of CORAF/WECARD. Using the Manual for Competitive and Commissioned Funds, these actors have increased their access to information on procedures for response to calls for proposals. It also helped to ensure the best conditions for managing the funds allocated to projects, and to ensure transparency for fund management and to facilitate evaluation and external audit of the funds.

Competitive projects were prioritised to guarantee scientific quality in the choice of the best proposals through a transparent process of peer review. However, the weak institutional capacity and lack of expertise limited the participation of some NARS research institutes in responding to calls for proposals on specific topics. Therefore, the concept of commissioned projects was adopted to facilitate participation of such weak NARS research institutes. Furthermore, CORAF/WECARD is creating opportunities for “weak” institutions to participate in competitive grant proposals through building the capacity of such institutes through training, and investments.

The IAR4D approach, a new paradigm of the 2008-2013, is promoted to ensure the involvement of all actors in the agriculture production value chain in the implementation of various projects of CORAF/WECARD. Excellent results, in specific case studies, have been reported in the adoption of the IAR4D in Innovation Platforms which have positively affected the lives of smallholder producers in WCA.

## Strengthened institutional governance

Governance reforms constituted the bedrock of sustainability of the regional agricultural research for development system led by CORAF/WECARD. Therefore CORAF/WECARD governance was reformed according to the FAAP principles for

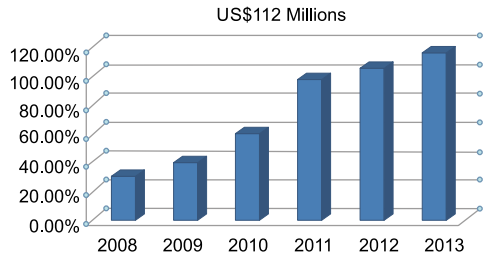


Figure 49: Progression in the level of funding mobilisation of PO 2008-2013.

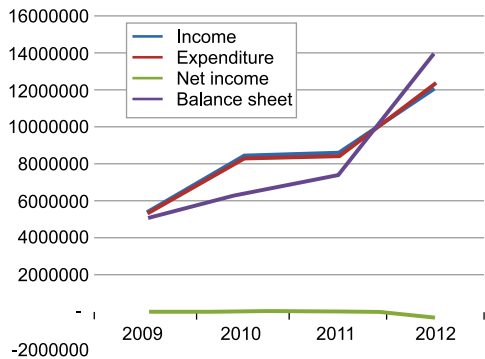


Figure 50: Trend in financial performance of CORAF/WECARD from 2009-2012.

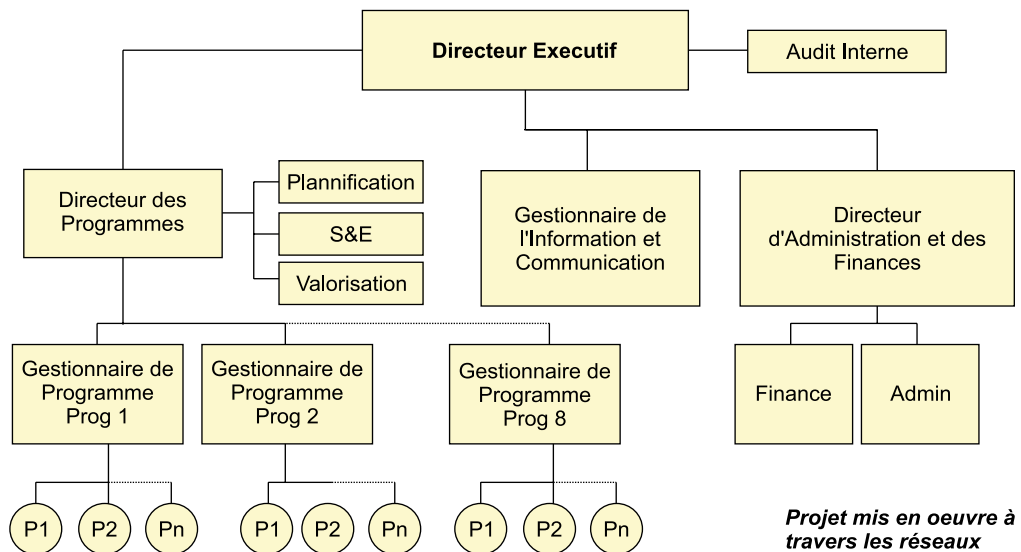
implementation of IAR4D. The achievements of the reform which spanned a period of 18 months included:

- (a) Revision of the CORAF/WECARD Statutes to strengthen institutional governance. Governance processes involved improvements in the reporting format by the Governing Board to the General Assembly, the supreme authority of CORAF/WECARD.
- (b) Development and publication of the Governance Manual, the Manual of financial management and accounting procedures, and the Manual of procedures for programme management.
- (c) The ES has also been strengthened with the establishment of a Programmes department ensuring the supervision of programme managers and featuring a new Planning and M&E Unit (Figure 51).
- (d) Institutional reforms resulted in Improvements in institutional governance by CORAF/WECARD integrated into national and regional processes in WCA.

## Conclusion

A most important achievement of the CORAF/WECARD advocacy function during the period of 2008-2013 was the resounding success in bringing agricultural research back into the policy agenda of governments of countries and RECs of the region. By doing so, governments and RECs became fully committed to support the following programs, WAAPP, Biotechnology and Biosafety, Seed systems, Capacity Strengthening, Technology development and use, and Financial sustainability of regional research.

Figure 51: Structure of the ES of CORAF/WECARD after the adoption of OP 2008-2013.



These programs provided the framework for the continuing agricultural transformation of the region, and placed CORAF/WECARD ahead in regional research coordination for development.

Through the implementation of OP 2008-2013, CORAF/WECARD delivered on its results with great satisfaction. The key function of advocacy was instrumental in achieving mobilisation of the total funding of the plan. Appropriate institutional reforms carried out before and during the implementation of the plan increased the level of ownership of CORAF/WECARD by its stakeholders, diversify its technical and financial partnership and enjoy confidence and trust from its donors.

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## Chapter Six : Looking ahead



### Introduction

The way forward for CORAF/WECARD's regional drive in food and income security is to build on the achievements from the implementation of the 1<sup>st</sup> OP, ensuring a systematic and repeatable consolidation and out-scaling of the Impact Infrastructure whose effectiveness in technology uptake and entrepreneurs creation was proven during the 2008-2013 period. This concept has been elucidated in the new 2<sup>nd</sup> OP of CORAF/WECARD, and could be highlighted as follows:

- (a) Evolution of CORAF/WECARD into an innovation and learning institution.
- (b) Establishment of appropriate M&E and learning systems at national and regional levels.
- (c) Strengthening partnerships with other partners of the agriculture value chain especially the private sector.
- (d) Establishment of a system for scaling up and scaling out existing results.

### Innovative projection towards people and societal benefits

CORAF/WECARD's new business model (2014-2018) is focused not only on the generation of technologies and their use, but also focuses particular attention on how



such technologies affect the livelihoods of all actors of the agriculture value chain. This model is predicated not only on how many technologies are generated, but also on how many users have adopted the technologies, and the areas cultivated to improved technologies, as well as on the extent to which the technologies change lives through improved food and nutrition security, entrepreneurships and wealth creation by users of technologies.

Achieving this goal would require doing business even more unusually. Traditionally, CORAF/WECARD would continue in the business of technology generation and use. However, in the new model of CORAF/WECARD's pattern of operations, it is evolving towards developing enduring agricultural entrepreneurships built on people and societies. People and societal centred benefits from agricultural technologies will be core to CORAF/WECARD's purpose in its new innovation thinking approach.

This model posits that CORAF/WECARD programmes and projects are more than instruments for generating agricultural technologies; they are also channels for providing meaningfully improved livelihoods for those who use the technologies. Therefore the value that CORAF/WECARD creates would also be measured in terms of how it sustains the conditions that allow it to flourish over time. This means that the outcome of agricultural technology use must include sustained food and nutrition security, and wealth creation.

Hence, as an innovation and learning organization, CORAF/WECARD will be delivering more than just technologies; it will also be ensuring building of enduring nutritious food production systems, agricultural entrepreneurship and durable research for development institutions. These should surely provide palpable returns to investments first at the level of users of the agricultural technologies, and secondly, to those who invest in order to transform agriculture as the real engine for growth and development in the WCA region.

The new 5-year operational framework of CORAF/WECARD adopts societal and people's values as decision-making criteria – based on the belief that its technologies and *modus operandi* have a purpose in meeting stakeholders' needs in ways that include wealth creation, youth employment, and enhancing the quality of lives of users of technology. This concept revolves around the development of formidable business partnerships with research, extension and advisory services, DPs and policy establishments.

In order to achieve this, CORAF/WECARD's new operating model has internalised what previous strategies had externalised, and has defined its purpose and values for the next 5 years based on a measure of such 'externalities'. Therefore all future actions of CORAF/WECARD will be linked to producing societal impact values – whether or not those actions relate to CORAF/WECARD functions of technology generation and use systems. Whereas CORAF/WECARD previously concentrated on technology generation and use, the thrust of the new model is to balance societal benefits with technology use – ensuring sustainable dividends to users and the larger investing community.

## **Moving towards an M&E and learning system based on managing for impact**

In order to ensure that this new model yields the desired outputs, outcomes and dividends, CORAF/WECARD has put in place new innovations in participatory M&E systems capable of capturing and appropriately analysing data on impact of agricultural technology use on livelihoods. The new system is built to ensure that CORAF/WECARD programmes and project actions have built-in critical improvement-oriented components that maximise learning for optimal impact on users of agricultural technologies along the value chain. The new M&E programme is armed with tracer techniques that assist in tracking and demonstrating that improvements in people and societal livelihoods (impact) are accountable to the agricultural technologies and *modus operandi* of CORAF/WECARD. The new impact-oriented M&E system ensures that stakeholders are involved in a more creative process of learning how to continually improve regional agricultural project outcomes in order to maximise impact. Therefore different stakeholders will be apt in analysing how best each stakeholder can best be involved, and their peculiar needs for a productive involvement in the process.

The CORAF/WECARD's new 2<sup>nd</sup> OP 2014-2018 provides for a robust M&E system which should serve as a veritable management tool, designed to concentrate not only on projects and programmes outcomes, but also on advocacy and governance activities of CORAF/WECARD. In this respect all activities of CORAF/WECARD are designed from a professionally scrutinised M&E perspective. This should ensure clarity on the desired impact at the macro and micro levels. By so doing, all actors and stakeholders will be clear on how progress and impact would eventually be assessed; on the process of data collection and analyses; and on the tracking/tracing of impact. The system is built on experiential learning processes that enable all actors of the agriculture value chain to understand and be able to explain reasons for successes and the way forward in rectifying any failures. The CORAF/WECARD new 2<sup>nd</sup> OP 2014-2018 has therefore elevated M&E to a directorate level which emphasises the importance of delivering demonstrable impact within the next 5 years. This trajectory on ensuring and accounting for impact by CORAF/WECARD constitutes a deviation from the practice of only technology development and its use. In the new dispensation CORAF/WECARD holds itself accountable for impact, and this should be pleasurable to the various investors and DPs that seek to see the real value addition of CORAF/WECARD and its regional *modus operandi*.

## **Strengthening partnership with other actors of the agriculture value chain**

Striving for entrepreneurships of SHFs as the major keyword in the agricultural transformation process of WCA means a more robust and innovative partnership between CORAF/WECARD and the major agro-based industries and the allied private sector. The new approach in the 2<sup>nd</sup> OP envisions a regional agricultural research for development system in which complementary public and private resources are deployed for mutual advantage through mutual consultations on goals, responsibilities and the

sharing of benefits. Although public-private partnerships concepts are relatively new in agriculture, they are being successfully used in infrastructure development, in defence, pharmaceuticals, road management and in the Olympics<sup>32</sup>. CORAF/WECARD's new trajectory looks forward to similarly mobilising the private sector's enormous expertise in services delivery with respect to high-end biosciences, post-harvest handling, value-added agro-processing, and in agro-product marketing to complement the public sector's crop, livestock and fisheries improvement systems for enhanced smallholder productivity. The new trajectory posits that enhancing access to assets on both sides of the divide, i.e. the public and private sectors, would also increase value of outcomes, reduce operational and time costs of projects, together with a minimised risk of failure given that both the public and private investors would be striving for maximal individual benefits and mutual dividends. CORAF/WECARD envisions a Public-Private Partnership (PPP) system that promotes transformation of the regional agriculture led by smallholders. This should energise agricultural growth and rural economies. The new PPP will therefore strive to develop competitive value chains in staples and livestock similar to the case in high value industrial crops such as cotton, cocoa, coffee, tea, and other agricultural produce. This would take into account the limitations of smallholders with respect to access to markets, investment capital needs, access to improved agricultural technologies (seeds, livestock, fisheries, machinery, etc.), and the contentious issue of subsidies. In all cases clarity on the benefits accruing to each of the public and private sector will be demonstrated.

## Scaling-up and scaling-out existing results

A most distinguished achievement of CORAF/WECARD during the first 5 years of the implementation of its 10-year SP 2007-2016 through the OP 2008-2013 was the successful establishment of a wide range of Impact Infrastructure, otherwise called the IPs, and its demonstration of the socio-economic potential of these IPs.

The IPs established during this phase of implementation number 171, and are scattered all over the region. As described in earlier chapters of this book the IPs played significant roles in technology uptake, technology incubation and entrepreneurship creation in pockets of areas they were operated. From the onset of implementation of the OP 2008-2013, the IPs were designed as structures for scaling-up and scaling-out of technologies – reaching the people and larger society with peculiar windows of opportunities for wealth creation which enable actors of the value chain to identify with them. They were designed to serve as impact infrastructure – the regional action pathway to scaling-up and scaling-out.

The approach of CORAF/WECARD in establishing and expanding on the IPs was built on the conviction that successes being achieved through regional projects and programmes were not going to be a one-time event, but more of a springboard to launch from pockets onto a wider society for broader socio-economic impact. Here again the

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32. Marco Ferroni and Paul Castle. 2011. Public-private partnerships and sustainable agricultural development. *Sustainability* . 3:1064-1073; doi: 10.3390/su3071064

new CORAF/WECARD M&E and learning tools have been designed to innovatively capture and account for these successes in such a way as to provide proof to investors and governments of the dividends of their investments.

The CORAF/WECARD trajectory as described in the 2<sup>nd</sup> OP therefore recognises the need for taking such successes to scale – expanding a wide range of services; the horizontal replication of successes to greater geographical areas; functional expansion as seen in the new thematic expression of CORAF/WECARD programmes and organizational restructuring; and the vertical scaling from smaller localities to nationally institutionalising the expansion of proven successes. Certainly, these would need a greater engagement by CORAF/WECARD of public and private delivery systems with the aim of sustainably improving agricultural productivity and their gains to producers and actors of the agriculture value chain. It would also require that public interventions in scaling-up would be designed from a regional schema that would be apolitical to be able to withstand changes in national governments and public administrations. This would ensure longer-term sustainability of the scaling process. Therefore, formidable partnerships with non-state actors and the private sector in scaling-up and scaling-out would be primordial. Johannes Linn of IFPRI had similarly opined that although the diffusion of agricultural innovations could be spontaneous and rapid, the path from research to widespread application often required systematic support from public, private and not-for profit agencies. Such support for scaling should be predicated on appropriate and durable institutional, policy and investment strategies that could stand possible changes in governments and administrations.

Naturally, there would be challenges in taking achievements to scale. And such challenges should serve as learning processes in the innovation process and should not be seen as defeat or failure. In that line therefore such challenges should provide some kind of their own dividends. CORAF/WECARD's 2<sup>nd</sup> results framework has internalised most of such challenges that have been identified as externalities. Therefore a most glaring and enduring success story on socio-economic impact demonstrating dividends on agricultural research for development investments is on the way.

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# Acronyms

ACMV	African Cassava Mosaic Virus
AFAAS	African Forum for Agricultural Advisory Services
AGRHYMET	Centre Regional de Formation et d'Application en Agrometeorologie et Hydologie Operationelle
AIS	Agricultural Information Systems
ASARECA	Association for Strengthening Agricultural Research in Eastern and Central Africa
ASPRODEP	Senegalese Association for the Development of the Grassroots
ASTI	Agriculture Science Technology Innovations
AU	African Union
AUC	African Union Commission
AU-NEPAD	New Partnership for Africa's Development of the African Union
AWARD	African Women in Agricultural Research and Development
BBP	Biotechnology and Biosafety Programme
CAADP	Comprehensive Africa Agricultural Development Programme
CAAPP	Central African Agricultural Productivity Programme
CAEC	Central Africa Economic Community
CAR	Central African Republic
CARBAP	Le Centre Africain de Recherches sur le Bananiers et Plantains (Banana and Plantain African Research Center )
CCARDESA	Centre for Coordination of Agricultural Research and Development for Southern Africa
CEMAC	Central Africa Economic and Monetary Community
CERAAS	Regional Centre for Studies on the Improvement of Plant Adaptation to Drought
CGIAR	Consultative Group on International Agricultural Research
CILSS	Comité permanent Inter-Etats de Lutte contre la Sécheresse
COMIFAC	Commission des Forêts d'Afrique Centrale

CORAF/WECARD	Conference of African and French leaders of agricultural research institutes/ West and Central African Council for Agricultural Research and Development / Conseil Ouest et Centre Africain pour la Recherche et le Développement Agricoles/ West and Central African Council for Agricultural Research for Development
CTA	Technical Centre for Agricultural and Rural Development
DFID	Department for International Development, United Kingdom
DONATA	Dissemination of New Agricultural Technologies in Africa
DP	Development Partner
DREAM	Dynamic Research Evaluation for Management
EAEC	East Asia Economic Caucus
ECCAS	Economic Community of Central African States
ECOAGRIS	The information system of ECOWAS
ECOWAP	The agricultural policy of ECOWAS
ECOWAS	Economic Community of West African States
ENDA	Environnement, Développement, Action dans le tiers monde
eRAILS electronic	Regional Agricultural Information and Learning Systems
ES	Executive Secretariat
EU	European Union
FAAP	Framework for African Agricultural Productivity
FANRPAN	Food, Agriculture and Natural Resources Policy Analysis Network
FAO	The Food and Agriculture Organization of the United Nations
FARA	Forum for Agricultural Research in Africa
FFS	Farmer Field Schools
GA	General Assembly
GDP	Gross Domestic Product
HPAI	Highly Pathogenic Avian Influenza
HR	Human Resources
IAA	Integrated Agriculture Aquaculture
IAR4D	Integrated Agricultural Research for Development
ICRA	International Centre for development-oriented Research in Agriculture
ICT	Information and Communications Technology
IDRC	International Development Research Centre
IER	Institut d'Economie Rurale
IFPRI	International Food Policy Research Institute
IGAD	Inter Governmental Authority for Development

IGO	Inter-Governmental Organizations
IP	Innovation Platform
IPM	Integrated Pest Management
IPTA	Innovation Platform for Technology Adoption
INERA	de l'Institut de l'Environnement et de Recherches Agricoles
INSAH	Institut du Sahel
IRD	Institut de recherche pour le développement
IS	Innovation System
ISFWM	Integrated Soil Fertility and Water Management
KM	Knowledge Management
M&E	Monitoring and Evaluation
MAPP	Multicountry Agricultural Productivity Programme
MITA	Market Innovations and Agricultural Technologies
NAIP	National Agricultural Investment Programmes
NARIs	National Agricultural Research Institutes
NARS	National Agricultural Research Systems
NASRO	North African Sub Regional Organization
NCoS	National Centres of Specialization
NEPAD	New Partnership for Africa's Development
NERICA	New Rice for Africa
NGOs	Non-Governmental Organizations
OP	Operational Plan
PAEPARD	The Platform for African European Partnership on Agricultural Research for Development
PPP	Public-Private Partnership
PRIA	Regional Agricultural Investment Programmes
PROPAC	Sub-Regional Platform of Farmers' Organizations in Central Africa / Plateforme Sous-Régionale des Organisations Paysannes d'Afrique Centrale
PSTAD	Promoting Science and Technology for Agricultural Development
PVS	Participatory Variety Selection
QPM	Quality Protein Maize
R&D	Research and Development
RAILS	Regional Agricultural Information and Learning Systems
REC	Regional Economic Community
ROPFA	West Africa Farmers and Producers Organizations Network
RTIMP	Root and Tuber Improvement and Marketing Project

RYMV	Rice Yellow Mottle Virus
S3A	Science Agenda for African Agriculture
SADC	South African Development Community
SADC-FANR	Southern Africa Development Community – Food, Agriculture and Natural Resources
SCARDA	Strengthening Capacity for Agricultural Research and Development in Africa
SHFs	Smallholder Farmers
SMEs	Small and Medium-sized Enterprises
SP	Strategic Plan
SRO	Sub-Regional Organization
STC	Scientific and Technical Committee
TFP	Total Factor Productivity
UEMOA	Union Economique et Monétaire Oues-Africaine (West African Economic and Monetary Union)
UniBRAIN	Universities, Business and Research in Agricultural Innovation
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
WAAPP	West Africa Agricultural Productivity Programme
WARDA	West Africa Rice Development Association
WASP	West Africa Seed Programme
WCA	West and Central Africa







## CORAF/WECARD brief

CORAF/WECARD is the Conseil Ouest et Centre africain pour la recherche et le développement agricoles/West and Central African Council for Agricultural Research and Development, the apex regional agricultural research coordinating agency for development in West and Central Africa. CORAF/WECARD is one of the three SROs that was instrumental in founding FARA.

CORAF/WECARD is designated the technical arm of the (ECOWAS, ECCAS, UEMOA and CEMAC) for the implementation of the regional agricultural research policy anchored in the CAADP pillar IV.

Membership of CORAF/WECARD includes the NARS of 22 countries of the region: Benin, Burkina Faso, Cameroon, Cape Verde, Central African Republic, Congo Côte d'Ivoire, Chad, Democratic Republic of Congo, Gabon, Ghana, Guinea, Guinea Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, The Gambia, and Togo. The key functions of CORAF/WECARD include: coordination and facilitation of agricultural R&D programmes, projects and initiatives that have potential for spill-over and impact in similar agro-ecologies of the various countries; competence and skills enhancement of the national research systems to improve performance and change; access to and use of information and knowledge to improve productivity and increase incomes especially of smallholders; and advocacy to increase the scale of investment and policy reforms necessary to improve the performance of the national research systems in contributing to sector-wide growth

### CORAF/WECARD strategic statements

**Vision statement:** '... A sustainable reduction in poverty and food insecurity in WCA through an increase in agricultural-led economic growth and sustainable improvement of key aspects of the agricultural research system...'

**Mission statement:** "... Sustainable improvements to the competitiveness, productivity and markets of the agricultural system in West and Central Africa by meeting the key demands of the sub-regional research system as expressed by target groups..."

**Specific objective:** 'Broad-based agricultural productivity, competitiveness and markets sustainably improved for targeted groups in West and Central Africa'

### CORAF/WECARD four result areas

1. Appropriate technologies and innovations developed.
2. Strategic decision-making options for policy, institutions and markets developed.
3. Sub-regional agricultural research system strengthened and coordinated.
4. Demand for agricultural knowledge from targeted clients facilitated and met.

### CORAF/WECARD donor partners

World Bank, European Commission, the governments of the United Kingdom, United States of America, Australia, and Canada.



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