



Contributions of the Multi Donor Trust Fund (MDTF) to agricultural development in West and Central Africa through CORAF/WECARD



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Summary

Agriculture is the largest economic sector in West and Central Africa. It accounts for 35 percent of GDP, over 15 percent of exports, and 65 percent of employment. The CORAF/WECARD sub-region is home to 320 million people in 22 countries and many are among the world's poorest. Food insecurity is a major concern within the sub-region and is chronic in the Sahel, where poverty is most acute. Agricultural technology is a core element of the CAADP Pillar IV, which covers agricultural research, technology dissemination and adoption.

CORAF/WECARD supports the advancement of a sub-regional agricultural research system that generates scientific knowledge and information appropriate to the needs and demands of the sector across the sub-region. In line with agricultural policy frameworks at the continental and sub-regional levels, CORAF/WECARD developed a revised Strategic Plan 2008-2016 as well as a five year Medium Term Operational Plan (MTOP) for implementing the first phase of the Strategic Plan (2008-2013). Based on achievements and lessons from first Operational Plan (OP1), the second Operational Plan (OP2) has been developed through consultations with CORAF/WECARD's stakeholders. The role of the OP2 is to take CORAF/WECARD from where it currently is, to full achievement of its Strategic Plan objectives.

The Multi Donor Trust Fund (MDTF) is a US\$ 21 million support provided by the European Union and Canada. The fund is financing a portion of CORAF/WECARD's Medium-Term Operational Plan (MTOP) through the following three components: *Component 1. Research for Development Programs, Component 2: CORAF/WECARD Governance, Administration and Change Management, and Component 3. Management, Administration, and Supervision of the MDTF.* The objective of the MDTF is to support integrated agricultural research for development within West and Central Africa through the implementation of the CORAF/WECARD MTOP, with the aim of contributing to sustainable improvements in the productivity, competitiveness, and markets of the agricultural systems in West and Central Africa. It was anticipated that several donors would be actively involved in the MDTF. Eventually the MDTF comprised of the Canadian International Development Agency (CIDA) and the European Union, while several other donors continued a bilateral engagement with CORAF/WECARD.

By the end of OP1 the MDTF was financing 17 projects (29% of total number of projects implemented by CORAF/WECARD based on its Strategic Plan) contributing a total of 138 technologies/innovations since the initiation of projects in 2012. These projects are a significant component of CORAF/WECARD's OP2. Over the past three years the MDTF projects have benefitted a total of 65,122 individuals (42% are female) being 80 percent of the targeted beneficiaries of the programme. A total of 18,848 (comprising 15,543 males and 11,915 females) individuals in various categories benefitted from short term training while 206 benefitted from long term training mainly M.Sc and PhD through the 17 projects funded under the MDTF. These figures surpass the targets of 16,140 (117%) and 152 (136%) for short and long term training, respectively.

About 15 percent of the total MDTF funding provides support for governance, administration and change management. In this regard MDTF was the major source of support for core funding including salaries and operations of most of the programmes during the first operational plan (OP1). Since the beginning of the second Operational Plan this proportion has further increased due to the phasing out of some sources of bi-lateral support for example DFAT. Change management was a key component of OP1. A series of consultations/workshops and associated capacity enhancement initiatives involving a variety of stakeholders across the region significantly contributed to the achievements during OP1. Moreover, in addition to the direct results achieved under the project implemented with MDTF funding, Programme managers as well as other core staff members paid by MDTF funds contribute to a variety of successes which need to be accredited to MDTF support.

Overall, the MDTF has enabled the implementation of joint donor support to CORAF/WECARD in realizing its key institutional priorities (regional mandates, management, administration, monitoring and evaluation, program coordination, gender mainstreaming, quality management, etc.) as well as thematic priorities (IAR4D and Value Chain approaches, and focal programs. It has also ensured a smooth and efficient reporting and disbursement mechanism to the single monitoring agency which is the World Bank.

Introduction

Agriculture is the largest economic sector in West and Central Africa. It accounts for 35 percent of GDP, over 15 percent of exports, and 65 percent of employment. The CORAF/WECARD sub-region is home to 433 million people in 22 countries and many are among the world's poorest. Food insecurity is a major concern within the sub-region and is chronic in the Sahel, where poverty is most acute. Agricultural technology is a core element of the CAADP Pillar IV, which covers agricultural research, technology dissemination and adoption. This Pillar significantly impacts on the other three CAADP pillars: land and water management (Pillar I); rural infrastructure and trade-related capacities for improved access to markets (Pillar II); and increasing food supply and reducing hunger (Pillar III).

The agricultural policies of the Regional Economic Communities in West and Central Africa aim at improving the effectiveness and efficiency of smallholder farms and promoting the agribusiness sector. Within this context, CORAF/WECARD has been given the mandate to:

(i) Promote cooperation, consultation and information exchange between member institutions and partners; (ii) Define joint sub-regional and regional research objectives and priorities; (iii) Serve as a consultative body for research carried out by regional and international organizations operating at the sub-regional level; (iv) Develop and ensure effective implementation of sub-regional research for development programs aimed at adding value to national programs; (v) Harmonize the activities of existing research constituents and facilitate the creation of new regional programs or other operational research units with a regional character.

CORAF/WECARD supports the advancement of a sub-regional agricultural research system that generates scientific knowledge and information appropriate to the needs and demands of the sector across the sub-region. In line with agricultural policy frameworks at the continental and sub-regional levels, CORAF/WECARD developed a revised Strategic Plan 2008-2016 as well as a five year Medium Term Operational Plan (MTOP) for implementing the first phase of the Strategic Plan (2008-2013). Based on achievements and lessons from first Operational Plan (OP1), the second Operational Plan (OP2) has been developed through consultations with CORAF/WECARD's stakeholders. The role of the OP2 is to take CORAF/WECARD from where it currently is, to full achievement of its Strategic Plan objectives.

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1.0 CORAF/WECARD's Research Strategy and Results Framework

CORAF/WECARD's strategy for agricultural research for development embraces an inclusive approach called the ***Integrated Agricultural Research for Development (IAR4D)***. This approach integrates the actions of all categories of stakeholders including farmers/producers, the private sector, NGOs, working together around common themes, in the areas of technology generation, dissemination, adoption and access to markets as well as in the areas of policies and institutional development.

CORAF/WECARD adds value to the work of the NARS of member countries by supporting: (i) identification of common goals and promotion of economies of scale and scope through collaboration, specialization and sharing of results; (ii) identification of sub-regional public goods that would be under-produced in the absence of shared goals and a regional mechanism; and (iii) sharing knowledge and experiences in institutional development for effective IAR4D, which includes technology generation, extension, agricultural training and education, with the participation of all stakeholders at each step in the process in West and Central Africa.

The five result areas targeted by CORAF/WECARD for effective contribution to the declared 6 percent growth in agriculture in West and Central Africa are:

Result 1: Increased use of appropriate technologies and innovations in WCA;

Result 2: Increased uptake of Strategic decision-making options for policy, institutions and markets;

Result 3: Enhanced Institutional and human capacity in agricultural research for development;

Result 4: Demand for agricultural knowledge from target client facilitated and met;

Result 5: Result delivery effectively managed by the CORAF/WECARD Executive Secretariat.

CORAF/WECARD partners have also agreed during the first operational plan that the following eight programmes are appropriate to deliver the above results: (i) Livestock, Fisheries and Aquaculture (ii) Staple Crops (iii) Non staple crops (iv) Natural Resource Management (v) Biotechnology and Biosafety (vi) Policy, Markets and Trade (vii) Capacity Strengthening (viii) Knowledge management. However, the strategic revisions for the second operational plan (2014 – 2018) resulted in fusing the crops and Non Staple Crops programmes into the Crops Programme for a more holistic and integrated consideration of crops, while the Knowledge Management Programme was upgraded into a Directorate for more effective development, sharing and utilization of knowledge. Moreover, based on lessons learned from OP1, and the need to align with strategic thematic interventions of the Regional Economic Communities (RECs), calls for competitive and commissioned projects for the implementation of programmes will be launched under the following themes:

Theme 1: Food, health and nutrition security;

Theme 2: Markets and trade;

Theme 3: Sustainable agriculture

2.0 Framework of the Multi Donor Trust Fund (MDTF)

2.1 Aim of the MDTF

The MDTF aims at contributing to the CAADP's highest level objective of general economic development, eradication of poverty and hunger, through the sustainable improvement of agricultural productivity, competitiveness and markets. This is being done through scaling up the level of investment in agricultural research, extension, and education at the regional level in West and Central Africa through CORAF/WECARD. This is expected to accelerate the development and adoption of improved technology and practices in agriculture and agribusiness; lead to improved institutional effectiveness at the level of the NARS and to policy reform and innovation related to regional approaches – including better integrated and coordinated programs at the national level.

2.2 Components of the MDTF

The MDTF is financing a portion of CORAF/WECARD's Medium-Term Operational Plan (MTOP) through the following three components: *Component 1. Research for Development Programs, Component 2: CORAF/WECARD Governance, Administration and Change Management, and Component 3. Management, Administration, and Supervision of the MDTF.* The objective of the MDTF is to support integrated agricultural research for development within West and Central Africa through the implementation of the CORAF/WECARD MTOP, with the aim of contributing to sustainable improvements in the productivity, competitiveness, and markets of the agricultural systems in West and Central Africa.

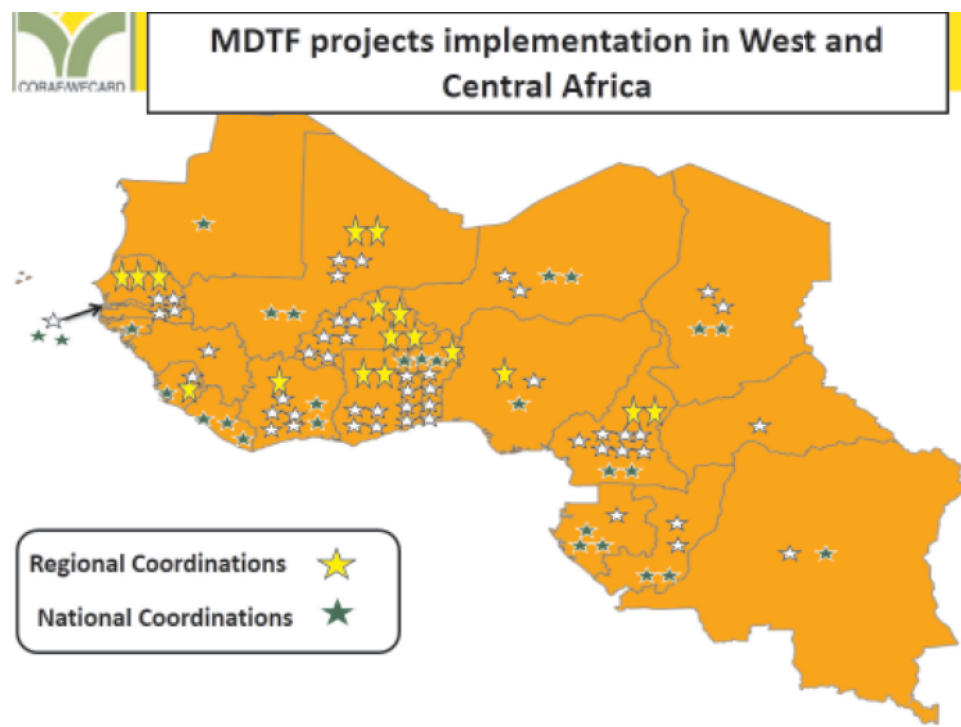
2.3 Partners of the MDTF

Through the MDTF, several development partners interested in supporting CORAF/WECARD would be able to provide their support in a harmonized and programmatic manner. It was anticipated that several donors such as the United Kingdom's Department for International Development (DFID), the European Commission (EC), Canadian International Development Agency (CIDA), DutchAid, Swedish International Development Agency (SIDA), United States Agency for International Development (USAID), Spanish AID, International Fund for Agricultural Development (IFAD), and the German Federal Ministry for Economic Cooperation and Development (GTZ) would be actively involved in the MDTF. Eventually the MDTF (a total of US\$21,829,514) comprised of the Canadian International Development Agency (CIDA contributing CAD 10,000,000) and the European Union (contributing €11,745,000), while several other donors continued a bilateral engagement with CORAF/WECARD. The MDTF is managed by the World Bank with its costs for monitoring support services provided to CORAF/WECARD covered by the fund.

2.4 Projects and funding mechanism of the MDTF

Funding for research projects is being channelled through a Competitive Grant Scheme (CGS) and Commissioned Research Grant mechanism. A total of 17 projects are being implemented with funding by the MDTF. The Crops programme is implementing the largest number of projects (6), followed by the Livestock, Fisheries and Aquaculture programme (4) and then the Natural Resources management Programme (3). The Capacity Strengthening Programme is implementing 2 projects while both the Policy Markets and Trade Programme and the Knowledge Management Programme are each implementing one project. Project

grants have generally ranged from US\$350,000 to US\$1,500,000 depending on the type of activities. The countries and number of projects are shown in the Figure below. The activities under each research program are funded through research projects that are linked to the specific priorities within each program and endorsed for implementation by the CORAF/WECARD Board of Governors.



3.0 Contribution of MDTF to CORAF/WECARD operations and results framework

3.1 Support to CORAF/WECARD Governance, Administration and Change Management

About 15 percent of the total MDTF funding provides support for governance, administration and change management. In this regard MDTF was the major source of support for core funding including salaries and operations of most of the programmes during the first operational plan (OP1). Since the beginning of the second Operational Plan this proportion has further increased due to the phasing out of some sources of bi-lateral support for example DFAT. Change management was a key component of OP1. A series of consultations/workshops and associated capacity enhancement initiatives involving a variety of stakeholders across the region significantly contributed to the achievements during OP1. Moreover, in addition to the direct results achieved under the project implemented with MDTF funding, Programme managers as well as other core staff members paid by MDTF funds contribute to a variety of successes which need to be accredited to MDTF support. With support of the MDTF, the monitoring support, twice a year by the World Bank, has had a positive impact on CORAF/WECARD's level of operational and financial performance. In this respect, CORAF/WECARD's annual accounts are being audited and rated by international audit firms, to comply with international standards. Also,

through the World Bank and Canada's support, CORAF/WECARD now has a fully operational system of Monitoring & Evaluation in place and a Gender Strategy and Action Plan under implementation. CORAF/WECARD has also embarked on the process of obtaining ISO Certification of scientific quality and performance management of its operations with respect to effective and timely results delivery.

3.2 Contribution of MDTF to CORAF/WECARD delivery of CORAF/WECARD results

3.2.1 Result 1. Increased use of appropriate technologies and innovations in WCA

Under this result, the target during OP1 (2008 – 2013) was 15 technologies/innovations. The expectation was that each of the 8 programmes would implement about 5 projects giving a total of 40 projects and at least one key technology per project. At the end of OP1 a total of 58 projects were actually implemented to meet the expressed demand of stakeholders. Consequently a total of 98 technologies/innovations were developed and promoted. By the end of OP1 the MDTF was financing 17 projects (29% of total number of projects) contributing a total of 138 technologies/innovations since the initiation of projects in 2012. Under this result also, it was planned to develop at least 60 multi-stakeholders partnerships and mechanisms during OP1 for the development of appropriate technologies and innovations. A total 315 partnerships were actually formed around the competitive and commissioned projects; exceeding the target. A total of 112 IPs (more than 35% of total IP) are associated with the existing 17 projects funded by MDTF. The following are some of the key technologies/innovations developed under the various programmes:

Livestock, Fisheries and Aquaculture Programme

- ***A balanced feed ration for dairy cow based on locally available feed resources developed.*** A forage *ad libitum* + 1 kg of maize bran, 1.5 kg cotton cake among others have led to an increase in milk production from 1.91±1.13 liters/cow/day to 4.12 ±2.06 liters/cow/day in the extensive livestock farming system during the dry season.
- ***A strategy for managing milk quality along the value chain,*** including the best practices and *appropriate kits of equipment for milking, collecting and processing,* has been developed, based on the findings of studies on milk quality (chemical composition, nutritional quality, bacteriological quality).



- ***Reduction in the inter-calving time*** is being achieved by means of a supplementary ration in feeding pregnant and milking cows during the first 3 months. Results show a reduction in the time between calving and the next *oestrus* from 180 days to 45-90 days. This intermediate result is in the way to achieve the reducing of the inter-calving time and improve milk productivity.

- ***A more efficient and cost-effective protocol of Artificial Insemination (AI) based on natural oestrus, has been developed*** with livestock farmers actively involved in the process of oestrus detection. Preliminary results from the dissemination and use of this protocol show an increase in the success rate of Artificial Insemination, from 30% to 38%.
- **Integrated aquaculture technologies developed:** The best technologies for integrated aquaculture for adoption based on the peculiarity and need of each of the country were developed. In Nigeria, the integration was done mainly for egg production while the rice field was created directly inside the pond for space management. In Cameroun the rice field is separated from the pond but the design is done in a way to allow for maximum utilization of pond effluents by the rice. The project have successfully achieved almost a 100% waste utilization as nearly all the waste products of the integration have successfully utilized under various production systems. For instance wastes from the poultry are used for maggot production and pond fertilization while the offal from the processed fish are used in fish meal and fish oil production. The waste from rice processing are used in production of rice bran which is energy yielding feedstuff in fish and poultry feeds



- **A low cost floating feed pellet based on locally available feed resources developed:** Average weekly weight gain of $38.10 \pm 2.16\text{g}$ was recorded during the two trials. Outcome - At a mean initial weight of 80g and stocking density of four fish per M², an average of weight of 780g was achieved in three months of feeding with this feed. This floating feed will soon be commercialized and made available for fish farmers. This is expected to bring over 80% reduction in the cost of catfish feed in these countries.

Other technologies and initiatives include:

- Construction, testing and distribution of modern smoking kilns that have significantly facilitated and enhanced the quality of fish for storage and transportation
- Production and distribution of 25,000 fish seeds of African catfish and Nile Tilapia to fish farmers in the demonstration plots and farmers adopting the technology. Two MoUs have been signed: (1) with WAAPP Nigeria for the multiplication and dissemination of fingerlings in 12 states in Nigeria and, (2) Grand Cereal Nigeria Ltd., a private fish feed manufacturing company on fish feed development and research.



- Improved technology for Tilapia seed production in the extensive family fish farming systems developed: the withdrawal of the parents 45 days after stocking can significantly increase the quantity of fingerlings, depending of the weight of the parents, the water temperature and the productivity of the pond;

Crops Programme

- Aflatoxins are mycotoxins that are toxic and among the most carcinogenic substances known because when ingested regularly they attack the liver of human as well as animals. **Low level of awareness of the dangers of aflatoxin revealed:** A reference study of contamination of peanuts with aflatoxin on the value chain has been completed in four project countries. The results of the study revealed low level of knowledge of actors/actresses on toxic mold (*Aspergillus flavus*), their effects on trade in peanut and consumer health. However, actresses/actors recognize certain events (vomiting, diarrhea, stomach ache, etc.) that follow contaminated peanut ingestion or poor quality peanut products. But many of them do not associate these events with the intake of *Aspergillus flavus* or aflatoxin. This may be one reason for the low level of awareness observed.

- *Development of new methods for reducing aflatoxin contamination:* In Burkina Faso and Mali, the evaluation of three types of conservation traditionally used by producers (jute bags, polystyrene and attics). Two (2) types of improved granaries for storage of peanuts are offered to producers. One room attic which uses a blend of two plants *Hyptis suaveolens* and *Hyptis lanceolata* at a proportion of 1:1 and the double room attic which uses the smoke coming from the second room that is used as kitchen and the first one as a storage room.



One room attic
(5 months storage in very good condition)



Double room attic
(Accumulation of smoke creates hostile environment for peanut stored pests)

- **Tomato varieties tolerant to *Ralstonia solanacearum* (Smith) Yabuuchi identified in Senegal and Burkina Faso:** Of the eight varieties tested in Senegal, six have proven tolerant to bacterial blight. These are: MAKIS F1 (V9), PLATINUM 701 F1 (V10), F1 COBRA 26 (V2), GOOD YEAR (V8) F1 THORGAL (V1) and Mongal F1 (V4 / control). Among the 11 varieties tested in Burkina Faso, 3 proved to be tolerant. These are "Lindo F1" Cobra and "buffalo ". These varieties had similar behavior as the tolerant check (Mongal).
- **Two new potato varieties**, 'Mandola and Spounta' were promoted in Guinea, and variety Safrane resistant to *Ralstonia* were promoted in Senegal.



- **Five (5) morphological traits of interest from cotton have been identified.** Seeds of five (5) genetic materials bearing the five morphological traits were obtained to initiate crosses with African varieties to obtain isogenic varieties keeping qualities of African-fortified varieties and morphological traits of interest. The crossing work is done jointly with Burkina Faso and Togo, but also in Cameroon. In all three countries, the transfer of morphological traits is done on two separate African varieties, in the form of 10 crosses giving 10 isogenic varieties.
- At least six (6) high production potential clones and having a tolerance to biotic hazards are being vegetatively propagated by grafting on seedlings in Research Station. The high production potential and good level of tolerance to black pod and mirids confirmed by in situ observations for five (5) clones.

Other technologies and initiatives include:

- One (1) African eggplant; six (6) African nightshade; two (2) Jute mallow and two (2) amaranth varieties from AVRDC have been evaluated and seeds distributed to farmers in Burkina Faso and Cameroon
- Drip irrigation, plastic and hay mulching techniques, low planting density were also demonstrated for adoption by vegetable growers.
- A manual for good postharvest handling and hygiene practices during TAV storage and processing has been developed; a book of TAV recipes for Burkina Faso and Cameroon are developed. A **technology for fresh fruits** and leafy TAVs storage using traditional tools has also been developed.



Natural Resources Management

- ***Enhanced understanding of biodiversity and shade management options in cocoa agroforestry systems obtained.*** An inventory of 3200 fruit trees and 1832 forest trees belonging to 46 species made from 60 cocoa orchards in Cameroon revealing existing biodiversity associated with cocoa farms while optimum shade management has been identified among the common cocoa agroforestry systems resulting in enhanced biodiversity, improved disease management and increased income to farmers particularly women who are increasingly being given the opportunity to harvest and sell produce from associated fruit trees.



- **The correlation between farmers ranking and primary nutrient content of tree leaves has been determined in Cameroon:** There appears to be a positive correlation between farmers ranking of local tree species found in their fields with the amount of primary nutrients (N, P, K g/ka) contained in the litter collected under the trees. The tree species *Milicia excels*, *Ceiba pentandra*, *Ficus mucoso*, and *Alstonia boonei* were ranked among the first four by farmers. These species also had the highest NPK contents. This finding has provided the opportunity for farmers and researches to collaborate in enhancing the productivity of the system particularly with regards to soil fertility management with preferred and productive components that will increase farmers' income
- **Capacity of cocoa farmers to tap into the carbon market enhanced:** Various studies under the cocoa agroforestry project have developed and adapted tools to effectively determine carbon stocks above and below ground of cocoa agroforestry systems in the project countries. This development has enabled the farmers to meet the crucial requirement of Monitoring, Reporting and Verification for participation in the carbon market. The successful participation of these farmers in the carbon market will open up avenues for income generation while encouraging much needed mitigation efforts.



- **Pattern of introgression of Sahelian zebu genes into the taurine cattle of Southern West Africa identified:** The zebu admixture proportions estimated were not negligible and were always higher in the N'Dama cattle than in the Lobi cattle of Burkina Faso. This suggested that the introgression of Sahelian zebu genes into the taurine cattle of Southern West Africa can follow a complex pattern that can depend on local agro-ecological features. The current research pointed out that the estimation of admixture coefficients is highly dependent on both the assumptions underlying the methodologies applied and the selection of parental populations. Our analyses suggest that either too high or nil genetic identity between the parental and the expectedly derived populations must be avoided.
- **PCR and sequencing methods optimized to ensure efficient typing of the samples:** A set of microsatellites useful to assess genetic diversity in cattle as well as statistical techniques useful to assess spatial pattern of variation, regardless of it is genetic, phenotypic or others developed.

- In a bid to improve utilization of urban waste in peri urban agriculture, a study covering Burkina Faso, Senegal, Togo and Congo has revealed risks in contamination with bacteria and heavy metals. Awareness messages have been shared with women vegetable growers as well as methods for safely handling urban waste.



- Six different types of composts were produced by the research team from three solid waste of the city of Ouagadougou for use in vegetable production. The use of such composts have had a positive effect on productivity of crops as well as a reduction in the risk of contamination of the women.

3.2.2 Result 2: Strategic decision-making options for policy and markets developed

Twenty (20) strategic policy options proposed/recommended and advocated for, to decision makers at regional and national levels were planned under OP1. In 2015 a total of 14 policy options related to MDTF funded projects have been proposed.

Livestock ,Fisheries and Aquaculture Programme

- **Market access/opportunities identified:** Various market access and opportunities have been identified in Sierra Leone, Cameroon and Nigeria. These include the surrounding local markets, hotels and restaurants where point and kill business is carried out, supply of processed products to supermarkets; women do come to the farm to buy for home use and for retailing.

Natural Resources Management

- **Strategies for conservation of local cattle breeds developed:** The draft document outlines key strategies including selection and cross breeding for improvement in the conservation of animal genetic resources based on prevailing conditions in the respective countries. These strategies when finally shared with relevant communities will greatly help in conserving the valuable Ndama breed.

Policy , Markets and Trade

Strategic innovation options of natural resource management based on Non Timber Forest Products were identified and proposed:

- In Burkina Faso platform actors identified three categories of innovative strategic options based on the following objectives: (i) Focus on sustainability of shea resource, (ii) promote the recovery of shea kernels, (iii) Strengthening the capacity of stakeholders and promoting communication in the areas of sustainability and enhancement of the shea resource.
- In DRC the following recommendations were made (i) promote the marketing of the product through the organization of the sector (cooperative of collectors for example), (ii) raise pickers on effective crop techniques. (iii) promote the domestication of Gnetum, (iv) develop and disseminate techniques of storage and processing of the resource, (v) develop

an operating system that preserves the resource through appropriate legislation that reflects concern of small producers, (vi) promote the creation of small and medium enterprises around the product for a better valuation

- In Senegal, the issue of sustainable NTFP management is a complex field that takes into account many factors, both direct, and indirect. Thus, a good policy based on NTFP management should be structured around three main axes: (i) the integration of NTFPs in different texts and laws related to the management of natural resources; updating the current Forest Code, should be guided by learning and taking into account the suggestions of various categories of players investing in the sector and take into account the socio-economic realities, but also ecological (scarcity); (ii) the promotion of new harvesting techniques, storage, packaging, processing of NTFPs to ensure rational and sustainable management to maximize returns to stakeholders and (iii) knowledge of marketing channels, marketing, distribution of these products.

- In Cameroon, to identify innovative policies and programs for NTFP management policy options, the synthesis of the work done by the platform recommends as follows: (i) establish and operationalize platforms frameworks for dialogue and synergistic actions of different actors, particularly for small producers; (ii) provide a clear distinction between domesticated NTFPs and those collected in the wild and adopt incentive regulation intensive domestication in favor of small producers; (iii) find ways to exclude from the list of special products, food products such as okok; (iv) extend the concept of right to use to marketing of NTFPs for small producers; (v) propose the simplification and decentralization of procedures for operating permits for wild NTFPs collected.

- In Gabon, to improve the functioning of *Irvingia gabonensis* (Odika) value chain and improve policies, programs and strategies of NTFPs management and development, some strategic options were proposed as follows: (i) Encouraging participatory involvement of each actor in the link in the value chain of Odika (including harvesters), (ii) Initiate the creation of economic interest groups, to put the PPs well defend their interests, and participation in meetings of access to internal and external markets; (iii) To standardize the units of measurement, such as jars, glasses or pots in which the Odika seeds are sold and their derivatives along the value chain; (iv) reduction in municipal taxes and to stabilize the price of products sold and making available prizes to players via information systems markets

3.2.3 Result 3: Sub-regional agricultural research system strengthened and coordinated

The evaluation of the Change Management Program (CMP) indicated that 80% of the needs identified were met through the training of CORAF/WECARD stakeholders in various areas. Prior to the implementation of Programs, scoping studies were conducted to identify priority intervention areas, including sets of capacity strengthening needs of stakeholders along the value chains. In response to the capacity strengthening needs, various training activities were organized, targeted at various stakeholders in diverse areas. A total of 18,848 (comprising 15,543 males and 11,915 females) individuals in various categories benefitted from short term training while 206 benefitted from long term training mainly M.Sc and PhD through the 17 projects funded under the MDTF. These figures surpass the targets of 16,140 and 152 for short and long term training, respectively. Below is a highlight of the key capacity building initiatives under the various programmes.

Livestock, Fisheries and Aquaculture Programme

- A total of 876 value chain actors trained in various areas of improving the productivity and the competitiveness of local milk:
- 411 farmers including 45% of women trained in oestrus detection of local cows and optimization of AI on natural oestrus;
- 280 value chain actors (100% of women) trained in hygiene and quality of local milk in Burkina Faso and Senegal;
- 160 farmers, including 16% of women and 44% of youths trained in collecting and conserving natural hay and stabling of dairy cows;
- Capacity of the undergraduate and postgraduate students of 15 universities and 4 colleges of agriculture enhanced through the use of the adaptive research facilities for research and training: over 3,500 hundred students have been trained through this process, out of which 1,400 are females.
- 1,494 farmers trained, out of which 539 farmers were women and youths in Integrated Aquaculture System with rice and poultry

Crops Programme

- A total of 300 producers and extension agents (50 from each of the 6 participating countries) received training (as trainers or agents for the dissemination best practices in their respective countries) on various aspects of cotton production.
- A total of 6840 people in 4 countries including 3195 women (43.03%) and 3897 men (56.97%) have had enhanced awareness of aflatoxin and its impact on health. These people are expected to further sensitize their compatriots.
- An exchange visit was organized for 68 women which enabled farmer-to-farmer interaction between “La Saisonnière”, a European Union-funded women’s gardening project and ASUDEC farmers. The women from “La Saisonnière” admired the low planting density of amaranth as they usually plant it in high density. ASUDEC farmers were taken to “La Saisonnière” garden the same day and were impressed to learn about the aboveground composting technology.

Natural Resources Management

- Seventeen (17) Project Coordinating Team members received training in result based management and technical backstopping through annual review and planning workshop.
- A total of 170 vegetable producers (comprising 95 females or 56%) had enhanced capacity in managing city waste as a source of organic manure for vegetable production, and safe handling of organic waste.
- Almost 500 pastoralists including an average of 25% of women across the project countries have had increased awareness on the need to preserve the ndama breed in addition to improved management of cattle.



- The INERA laboratory has been equipped with a range of equipment that has enabled the institution to carry out DNA extraction , DNA quantification and quality control, PCR amplification for diagnostic and genetic characterization and Safe storage of samples. Dr Traore happily notes that at the beginning of the project his team had to send the samples for all the analysis to a partner laboratory in Spain. He is now very pleased that most of the required analysis involving samples from the eight additional countries that have been included in the project will now be done in his laboratory. Dr Traore also notes that the laboratory will be used to train technicians and other scientists from the region in addition to analyzing samples from other parts of the region.
- In Ouagadougou, Burkina Faso a total of 30 women of the green brigade of Ouagadougou were supported to produce compost from urban waste collected in the city of Ouagadougou. This effort is not only providing a source of income for the women but also reducing the risks of contamination.
- A "Soils and Environment" module for Master in Soil Sciences has been developed at the University of Ouagadougou. The module has provided an opportunity to enable hundreds of students to address relevant issues related to health and nutrition.

Capacity Strengthening and Knowledge Management Programme

- A total of 8,322 producers and members of farmer organizations from the participating countries particularly in Central Africa , Cameroun and Tchad have benefited from capacity strengthening support including training been trained in governance principles, Organizational change, appropriate leadership, negotiations and lobbying , packaging and certification, standard Certified seed production and marketing according to regional standards, financial reporting.
- The procurement, supply and installation of processing equipment for two of the three Civil Society projects.

3.2.4 Result 4: Demand for agricultural knowledge from target clients facilitated and met

CORAF/WE CARD has established under OP1, more than 90 functional Innovation Platforms in 22 countries in WCA through which, the demands of stakeholders were assessed, analyzed and satisfied. At the moment the 17 MDTF funded projects are associated with a total of 112 Innovation Platforms across the West and central Africa region. As complements to the innovation platforms, many other tools with contribution from MDTF were established among which were: (i) a regional database on achievements made in agricultural research and development and containing information on scientific publications, new technology, best practices, directory of researchers, and projects, (ii) a Market Innovations and Agricultural Technologies electronic platform (MITA), which collects and

make available information on relevant already existing but not widely known or used technologies in WCA countries, (iii) partnerships with other regional knowledge management programs such as ECOAGRI (ECOWAS) and RAILS & Africa Adapt (FARA). The IPs and above initiatives have provide forum for learning and sharing of knowledge which have significantly contributed to the development and use of technologies and innovations.

Conclusions

The MDTF has made a significant contribution towards enhancing the capacity of CORAF/WECARD in effectively coordinating agricultural research for development in WCA. Overall, the MDTF mechanism has enabled the implementation of joint donor support to CORAF/WECARD in terms of institutional priorities (regional mandates, management, administration, monitoring and evaluation, program coordination, gender mainstreaming, quality management, etc.) and of thematic priorities (IAR4D and Value Chain approaches, and focal programs. It has allowed a smooth and efficient reporting and disbursement mechanism to the single monitoring agency which is the World Bank.

This support has resulted in enhanced capacity of the National Agricultural Research System in WCA as well as the development and use of a variety of technologies and innovations that have impacted on livelihoods in the region. The MDTF support which covered most of the first OP has been extended to September 2016, in effect covering about half the period of the second OP. This extension has been primarily approved to capitalize on the major thrust of the second OP which is out scaling of technologies developed during the first OP. Most of the MDTF supported projects will therefore out scale proven and demand driven technologies within and without the original countries of implementation. This out scaling is also going to benefit several countries that have not been very active in implementing the highly competitive CORAF/WECARD research grants. The regional spill-over of technologies and innovations is indicative of the efficiency and effectiveness (value for money) of CORAF/WECARD approaches. The MDTF has strengthened the institutional capacities of CORAF/WECARD as a Regional Knowledge Hub that substantially contributes to the agricultural transformation in West and Central Africa. It is therefore expected that the impact of MDTF support will continue to be felt after the funding period. It is also expected that the already impressive gains made with the MDTF funds will provide evidence for support by other interested partners.



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