WEST AFRICA AGRICULTURAL PRODUCTIVITY PROGRAMME (WAAPP) GHANA

MINISTRY OF FOOD AND AGRICULTURE (MOFA)

PROGRAMME IMPLEMENTATION COMPLETION REPORT (WAAPP 1A)

FEBRUARY 2013
# Table of Content

*List of tables and figures* ................................................................................................................................................. 4  
*Abbreviations and Acronyms* ........................................................................................................................................... 5  
*Executive Summary* ......................................................................................................................................................... 6  

## 1. Introduction

1.1 Background ................................................................................................................................................................. 9  
1.2 West African Agricultural Productivity Programme (WAAPP) ..................................................................................... 9  
1.3 Objectives .................................................................................................................................................................... 10  
1.4 Assessment Framework .................................................................................................................................................. 10  
1.5 Approach and Tools ...................................................................................................................................................... 12  

## 2. Achievement Level of Programme

2.1 Achievement level of Programme Development Objectives .......................................................................................... 14  
2.2 Achievement of level of Programme Output ................................................................................................................ 18  
2.2.1 Enabling Conditions .................................................................................................................................................. 18  
2.2.2 National Centre of Specialization ............................................................................................................................ 19  
2.2.3 Demand-Driven Technology Generation and Adaptation ......................................................................................... 20  
2.2.4 Programme Coordination, Management, Monitoring and Evaluation .......................................................................... 22  
2.3 Pictorial Presentation of Selected Programme Achievements ........................................................................................ 27  

## 3. Assessment of Programme Performance

3.1 Relevance ........................................................................................................................................................................ 32  
3.2 Effectiveness ................................................................................................................................................................... 33  
3.2.1 Level of Attainment of the PDO / Intermediate Indicators .................................................................................... 33  
3.2.2 Physical Progress of Planned Activities/Outputs ........................................................................................................ 35  
3.2.3 Implementation Effectiveness of Cross-Cutting Issues ............................................................................................... 37  
3.2.4 Conformity of the Processes / Procedures of released Technologies to Regional Standards .................................... 38  
3.2.5 Effectiveness of the Procedures for the Release of Crop Varieties in the Country .................................................... 39  
3.2.6 Extent of Compliance of the Environmental Management Component .................................................................. 39  
3.3 Efficiency ......................................................................................................................................................................... 40  
3.3.1 Project Management .................................................................................................................................................. 40  
3.3.2 Adherence to Plans and Budgets / Financial Performance ........................................................................................ 42  
3.3.3 Monitoring and Evaluation ....................................................................................................................................... 45  
3.3.4 Economic / Financial Efficiency Analysis .................................................................................................................. 45  
3.3.5 Adherence to Obligations: Government of Ghana and the World Bank .................................................................. 46  
3.3.6 Efficiency Improvements Generated by Project Outcomes ...................................................................................... 46  

## 4. Sustainability................................................................................................................................................................. 48  

## 5. Project Risks................................................................................................................................................................. 49  

## 6. Issues and Recommendations..................................................................................................................................... 49  
6.1 Overall Project Rating .................................................................................................................................................... 49  
6.2 Issues ............................................................................................................................................................................... 49  
6.3 Recommendations .......................................................................................................................................................... 53
Attachments
Attachment 1: Evaluation Framework.................................................................56
Attachment 2: List of contact.............................................................................57
Attachment 3: List of some major documents ..................................................59
Attachment 4: Interview guide/Sample Questions..........................................60
Attachment 5: List of harmonized protocols for bio-efficacy trials developed
by Ghana under WAAPP ..................................................................................63
Attachment 6: List of developed technologies under WAAPP 1A.................64
Attachment 7: List of grant, budget, amounts disbursed and expected completion period...65
Attachment 8: List of publication (journals (international and Ghana, magazines)........68
Attachment 9: Technology distribution system ..............................................69
Attachment 10: M&E structure of WAAPP.....................................................70
Attachment 11: Terms of reference..................................................................71
List of Table and Figure

List of tables

Table 1.1 UNDP Standardized Rating Framework................................................................................12
Table 2.1: Results Framework – Achievement Level of Programme Development Objectives.................................................................................................................................17
Table 2.2: Results Framework – Achievement Level of Programme Outputs...........................................17
Table 3.1: Over All Budget Performance as at December 2012 In USD Millions.................................24
Table 3.2 Component Budget Performance as at December 2012..........................................................24
Table 4.1: Risk Profile of Project............................................................................................................48

List of figures

developed at KNUST ..............................................................................................................................28
Figure 7: Training of food processors by partners and processed, Source: FRI ........................................29
Figure 8: Float to showcase achievement of WAAPP to the general public, Source: FRI .......................29
Figure 9: Locally constructed solar dryer (large scale and small scale) ....................................................29
Figure 10: Cassava and Yam field with Good farm sanitation - Afigya Kwabre district and Fumesua in the Ashanti region ..............................................................................................................29
Figure 11: Cocoyam and sweet potato field of newly released varieties .................................................30
Figure 12: Solar dryer for sliced cocoyam leaves (‘kontomire’) – CRI ......................................................30
Figure13a: Package product of yam grits ..................................................................................................30
Figure 14: pictorial representation of on e-extension network ................................................................31

Figure 1: Completed office block at Pokuase to host National Seed Council ........................................27
Figure 2: Biotechnology Laboratory Complex for the National Centre of Specialization at CRI, Fumesua – Kumasi ........................................................................................................................................27
Figure 3: Cassava varieties ....................................................................................................................27
Figure 4: Cocoyam varieties ..................................................................................................................28
Figure 5: Sweet potato varieties ...........................................................................................................28
Figure 6: Mechanical cassava harvester - Fabricated harvesters with improved and wear resistant cutting blades, developed at KNUST ..........................................................................................28
Figure 7: Training of food processors by partners and processed, Source: FRI ........................................29
Figure 8: Float to showcase achievement of WAAPP to the general public, Source: FRI .......................29
Figure 9: Locally constructed solar dryer (large scale and small scale) ....................................................29
Figure 10: Cassava and Yam field with Good farm sanitation - Afigya Kwabre district and Fumesua in the Ashanti region ..............................................................................................................29
Figure 11: Cocoyam and sweet potato field of newly released varieties .................................................30
Figure 12: Solar dryer for sliced cocoyam leaves (‘kontomire’) – CRI ......................................................30
Figure13a: Package product of yam grits ..................................................................................................30
Figure 14: pictorial representation of on e-extension network ................................................................31
### Abbreviations and Acronyms

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
</tr>
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<tbody>
<tr>
<td>AEA</td>
<td>Agricultural Extension Agent</td>
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<tr>
<td>APL</td>
<td>Adaptable Programme Loan</td>
</tr>
<tr>
<td>AWP</td>
<td>Annual Work Plan</td>
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<tr>
<td>CAADP</td>
<td>Comprehensive African Agricultural Development Programme</td>
</tr>
<tr>
<td>CARGS</td>
<td>Competitive Agricultural Research Grant Scheme</td>
</tr>
<tr>
<td>CORAF/WECARD</td>
<td>West and Central African Council for Agricultural Research and Development</td>
</tr>
<tr>
<td>CRI</td>
<td>Crop Research Institute</td>
</tr>
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<td>CSIR</td>
<td>Council for Scientific and Industrial Research</td>
</tr>
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<td>DADUs</td>
<td>District Agricultural Development Units</td>
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<tr>
<td>DAES</td>
<td>Directorate of Agricultural Extension Services</td>
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<td>DCS</td>
<td>Directorate of Crop Services</td>
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<tr>
<td>ECOPWAS</td>
<td>Economic Community of West Africa</td>
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<td>EPA</td>
<td>Environmental Protection Agency</td>
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<tr>
<td>ESMP</td>
<td>Environment and Social Management Plan</td>
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<tr>
<td>FAAP</td>
<td>Framework for African Agricultural Productivity</td>
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<td>FARA</td>
<td>Forum for African Agricultural Research</td>
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<td>FASDEP</td>
<td>Food and Agriculture Sector Development Policy</td>
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<td>FRI</td>
<td>Food Research Institute</td>
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<tr>
<td>GTV</td>
<td>Ghana Television</td>
</tr>
<tr>
<td>HQCF</td>
<td>High Quality Cassava Flour</td>
</tr>
<tr>
<td>IDA</td>
<td>International Development Association</td>
</tr>
<tr>
<td>METASIP</td>
<td>Medium Term Agricultural Sector Investment Plan</td>
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<td>MoFA</td>
<td>Ministry of Food and Agriculture</td>
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<td>MTR</td>
<td>Mid-Term Review</td>
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<tr>
<td>NARS</td>
<td>National Agricultural Research System</td>
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<tr>
<td>NCOS</td>
<td>National Centers of Specialization</td>
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<td>NEPAD</td>
<td>New Partnership for Africa’s Development</td>
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<td>NAIP</td>
<td>National Agricultural Investment Programme</td>
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<tr>
<td>PAD</td>
<td>Project Appraisal Document</td>
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<tr>
<td>PCR</td>
<td>Project Completion Report</td>
</tr>
<tr>
<td>PCU</td>
<td>Project Coordination Unit</td>
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<tr>
<td>PDO</td>
<td>Programme Development Objectives</td>
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<td>PIM</td>
<td>Project Implementation Manual</td>
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<td>PMC</td>
<td>Project Management Committee</td>
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<td>PMP</td>
<td>Pest Management Plan</td>
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<tr>
<td>PPRS</td>
<td>Plant Protection and Regulatory Services</td>
</tr>
<tr>
<td>R&amp;D</td>
<td>Research and Development</td>
</tr>
<tr>
<td>UNDP</td>
<td>United Nations Development Programme</td>
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<tr>
<td>WAAPP</td>
<td>West Africa Agricultural Productivity Program</td>
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<tr>
<td>VAT</td>
<td>Value Added Taxes</td>
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### Executive Summary

<table>
<thead>
<tr>
<th>Focus Area</th>
<th>Narrative</th>
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</table>
| Objectives of the Implementation Completion Report | - Assess the level of achievement of the programme development objectives and the outputs expected from the programme components  
- Assess programme implementation performance  
- Identify any lessons from the implementation of the project from 2008 to 2012  
- Make recommendations based on lessons learnt for the development of WAAPP 2A |
| Overall Project Performance | The overall project rating is Satisfactory. In terms of the achievement level of the project, the PDO and the intermediate indicators/objectives were satisfactory rated. In terms of the design/implementation of the project, relevance, effectiveness and sustainability were each rated satisfactory; efficiency was rated moderately satisfactory. |
| Key Achievements of Project | Project Development Objectives (SOME)  
- There were about 87891 beneficiaries of the project – farmers, extension officials, research scientists, technologists etc  
- 19 new technologies have been released which reduce production costs and/or post harvest losses. All the released technologies show at least 15% improvement in yields at the farm level  
- 36,000ha area under cultivation with respect to the improved varieties |

#### Outputs/Intermediate Indicators

**Enabling Environment**

- The Directorate of Crop Services of MoFA and other stakeholders with support of WAAPP (i) reviewed and harmonized existing process and procedure for varietal release and registration (ii) catalogued 130 crop varieties and available technologies consistent with regional conventions (iii) established a national varietal registration system and (iv) facilitated the establishment of the National Seed Council including the renovations and fitting of its Offices/secretariat.

- Within the context of the efficacy and bio-safety of agro-chemicals being in conformity with ECOWAS protocols, the Environmental Protection Agency (EPA) / Plant Protection and Regulatory Services Directorate developed manuals for the harmonization for fertilizer import and use, and pesticide registration process in Ghana.

- The project supported the DCS to set up a 5 ha cassava planting multiplication site at the Wenchi Agricultural Institute. Similar support was provided for the setting up of a 5 ha for the multiplication of improved cassava planting materials for farmers in Nkoranza.

**Technology Dissemination**

The Directorate of Agricultural Extension Services (DAES) aired 10 episodes of video documentary on GTV to promote released root and tuber crops; use of audio visual to show documentaries on the released root and tuber crops were shown to groups of farmers in 3 districts in the Eastern Region of Ghana; an e-extension hub has been initiated – to be operational in 2013, will involve the use of mobile phones and internet facilities to reach farmers on the improved technologies; an e-extension portal with an audio conferencing interphase has been built and initially piloted in 50 districts but revised to 10 districts in the Greater Accra (8)
National Center of Specialization

- Construction of the bio-technology laboratory is 95% complete. Equipment and furniture for the lab have been procured and are in the process of being installed.

- Equipment has been procured and installed in the CRI, FRI etc for use by the research scientists / technologists.

- Improved varieties of cassava, yams, cocoyam and sweet potatoes have been attained. For example, improved cassava varieties show average yield of 55 mt/ha as against 16.1 mt/ha of farmers’ yield; improved yam varieties show average yield of 20 mt/ha against 14.1 mt/ha of farmers yield; and improved cocoyam varieties show average yield of 8.2 mt/ha as against 6.2 mt/ha of farmers field.

- 19 improved technologies have been attained, made up of 11 varieties and 8 technologies/innovations. The improved technologies are more productive / efficient as compared to existing technologies. These technologies are assessed to show an improvement in yield of at least 15% in farm level productivity over the control and easy farm management.

- Three sorghum varieties developed with project support – Kapaala, Kadaga and Dorado were sent to Senegal for evaluation. Mali sent to Ghana for evaluation 30 sorghum and 60 cowpea breeding lines. Ghana also sent to Mali three extra early varieties of maize and two CSIR bred cassava genotypes were sent to Mali for adoption.

- The project recorded 28 exchange/scientist visit and 3 study tours made within the between Ghana Senegal and Mali.

Demand Driven Technologies

- The FRI developed high quality cassava flour (HQCF) with greater marketability than the traditionally processed kokonte. The HQCF has export potential and a good substitute for wheat flour in baking.

- The Department of Agricultural Engineering, Kwame Nkrumah University of Science and Technology has developed a cassava harvester and 5 prototypes are being fabricated for the AMSEC Centres to be used for demonstration.

- Solar dryers have been developed with the support of the project to improve cassava chips quality and vegetables.

Project Management

- 99% of the project funds of $ 15 million had been spent at the close of the project.

Recommendations for Phase 2-A

- To enhance adoption of the developed varieties, phase 2A should address the impact of the interventions on farmers’ incomes on both short / long term basis. Phase 1A seemed to have addressed the long term concerns on income stability of the farmer. The farmers immediate concern is (i) improving of the shelf life of his/her produce and (ii) access to capital to process the produce into a form that can be kept and sold when the market is good.

- A focal unit/person should be identified to design / implement
- Programmes that will maximize Ghana’s benefits from her contributions to CORAF
- To minimize the situation of cash-outs and hence delays in micro project implementation all micro projects should develop quarterly work plans / budgets – project management should use the information to plan and rationalize the disbursement / replenishment processes.
- Specific project management analytics should be built into the project progress reporting / monitoring systems. This will enhance project design/ management efficiency
- To enhance effective dissemination of improved varieties/technologies the role of micro-implementer (i.e. Publication Unit of CSIR-CRI, DAES, and DCS) must be clearly defined. The Extension and Publication Unit of CSIR-CRI should provide publications on the developed technologies and their characteristics as well as coordination, while the role of multiplication and extension are provided by DAES and DCS; and/or all implementing agents should come together in all activities, pull resources together and work as a team in all dissemination activities.
- A focal unit/person should be identified to help incorporating and facilitating gender issues in all aspect of the project
- Efforts should be made to educate and sensitize implementing partners and the general public on environmental issues, as well as implementing the developed ESMP and the PMP
- To ensure effective implementation of procedure for registration of species and varieties, efforts should be made to facilitate the inauguration of the National Seed Council. A detailed assessment of existing germbank must be done to ensure effective preservation of registered species and genetic materials. A website, linked to other countries in the sub-region, should be designed to host registered species and varieties, as well as providing other information
1. Introduction

1.1 Background

Increasing population and urbanization, coupled with climate change and its impact on land available for agriculture, if not counteracted by measures to enhance agricultural productivity could accentuate the level of food insecurity in the developing world, especially in sub-Saharan Africa. Development and adoption of new technologies to increase agricultural productivity against the background of diminishing land availability for agricultural expansion which had been the prime source of increase in agricultural production in the developing world has now taken a pride of place in the fight against food insecurity and poverty.

It is in this light that the New Partnership for Africa’s Development (NEPAD) has designed a Comprehensive Africa Agricultural Productivity Programme (CAADP). With support from Forum for African Agricultural Research (FARA), A Framework for African Agricultural Productivity has been developed as a guiding principle for the implementation of CAADP. Following these development, the West African Agricultural Productivity Programme, a comprehensive programme for the Economic Community of West Africa (ECOWAS) Sub-Region, was set up as implementing instrument with two principal objectives: (i) to make agriculture more productive and sustainable and (ii) to support regional integration in the area of agriculture.

Many West African countries have responded by designing and revising their agricultural policies and programmes to improve productivity in the agricultural sector in line with the regional objectives. Ghana’s response saw the revision of the Food and Agriculture Sector Development Policy (FASDEP II) and the Medium Term Agricultural Sector Investment Plan (METASIP).

1.2 West African Agricultural Productivity Programme (WAAPP)

The WAAPP is being implemented through an Adaptable Program Loan (APL) by the World Bank since 2008. Ghana together with Mali and Senegal commenced implementation of WAAPP 1A. The total project cost of Phase 1 is US$49.5 million over a five-year period, including IDA financing of US$45.0 million, the three Governments’ contribution of US$3.3 million (in terms of value added taxes (VAT) forgone) and beneficiaries’ contributions of US$1.2 million (mostly in kind). The amount of IDA credit to each country is an equal US$5 million of the country’s regular IDA allocation and US$10 million allocation from the Africa Regional Integration Unit, i.e., the usual financing breakdown of IDA regional project. From their IDA credit proceeds, each of the three countries provides a grant of US$1 million (3 million in total) to CORAF, of which they are members, to assist in harmonization of procedures, knowledge sharing and dissemination, and coordination of monitoring and evaluation activities.

The objective of this Support Project was to generate and disseminate improved technologies in the participating countries’ top priority areas that are aligned with the
region’s top priorities, as identified by Central Africa Counsel for Agricultural Research (CORAF). These include roots and tubers in Ghana; rice in Mali; and cereals in Senegal.

The three countries were the first recruits into the Phase 1 of the programme in 2008-called Phase 1A Countries. Subsequently, other members of the ECOWAS, Burkina Faso, Cote d’Ivoire, and Nigeria in 2010; and Benin, Guinea, Liberia, Niger, Sierra Leone, The Gambia and Togo in 2011, were recruited into the program - called Phase 1B and Phase 1C Countries, respectively. The programme implementation for the phase 1A countries came to an end in December 2012.

WAAPP has four main components. The first component is enabling conditions for regional cooperation in technology generation and dissemination. This aims at strengthening the mechanisms and procedures for the dissemination of technology, as to allow countries to benefit fully from the regional cooperation in technology generation that is being promoted. This component targets: common regulations related to genetic materials, pesticides and other crop protection products; national registration committees for genetic materials and pesticides in the participating countries; and information system on agricultural technologies and research skills at the regional level. The second programme component is the national centres of specialization; this aims at strengthening the alignment of national priorities with regional priorities within participant countries’ National Agricultural Research Systems (NARS). The third programme component is funding of demand driven technology generation and adoption, which aims at strengthening priority-focused, transparent funding mechanisms for demand-driven agricultural R&D within participating countries. The fourth and final component is the programme coordination, management, monitoring and evaluation. This aims at establishing an effective coordination, management and M&E system at the national and regional levels.

1.3 Objectives
The objectives for the preparation of this Project Implementation Completion Report (ICR) are three fold and they are to:

- Assess the level of achievement of the programme development objectives and the outputs expected from the programme components
- Assess programme implementation performance
- Identify any lessons from the implementation of the project from 2008 to 2012
- Make recommendations based on lessons learnt for the development of WAAPP 2A

1.4 Assessment Framework
The programme assessment framework is in two complementary parts. The first one relates to the achievement level of the programme. The second focuses on programme implementation performance. Both the programme level of achievement and the
implementation performance are rated as per a rating scale contained in the inception report.

**Achievement Level of Programme**

The assessment of the programme level of achievement is based on the results framework contained in the Project Appraisal Document (PAD). The overall programme level of achievements are manifested by the Programme Development Objectives (PDO), which has five indicators with annual targets commencing 2010, with base figures developed at the Mid-Term Review (MTR). The indicators cover beneficiaries, released technologies, level of improvement in yields of released technologies, area under improved technologies and producers who have adopted the improved technologies.

Project components – Enabling conditions for regional cooperation, National Centers of Specialization (NCOS), Demand-Driven Technology Generation and Project Management have varying number of intermediate indicators. They are called intermediate indicators because their attainment has impact on the attainment of the programme development objectives. There are fifteen intermediate level indicators for the four project components. Examples of the indicators with one from each component starting from enabling conditions are: regulations adopted and aligned to regional regulations, technologies generated by NCOS and demonstrated by the project in the project areas, national research projects financed project reports submitted within 45 days of the end of the project report. Each of the indicators has an annual target commencing 2010 with base line figures developed for each indicator/target during the MTR.

Variance analysis for each of the PDO/intermediate indicators and targets are done and explanations given for the variations. Chapter 2, sections 2.1 to 2.5 cover such variance analysis.

**Assessment of Programme Performance**

Programme Implementation Performance assessment follows the standard United Nations Development Programme (UNDP) framework for projects, namely relevance, effectiveness, efficiency, partnership and sustainability. Attachment 1 presents the framework with explanations for each factor within the context of the WAAPP. Chapter 3, sections 1-5 cover the five factors indicated.

**Rating Scale**

The standard UNDP Rating Framework for evaluating projects, programmes/levels of achievement as per table 1.1 is used for preparation of the ICR. The Client accepts the use of Table 1.2 as the basis for evaluating the WAAPP.
Table 1.1 UNDP Standardized Rating Framework

<table>
<thead>
<tr>
<th>Rating</th>
<th>Goal, Outcome and Output Levels (PDO/Component Outputs Levels)</th>
</tr>
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<tbody>
<tr>
<td>Highly Satisfactory</td>
<td>Project (outcomes and outputs) is expected to achieve or exceed all its major objectives, and yield substantial national benefits, without major shortcomings. The project can be presented as “good practice”. (80% and above)</td>
</tr>
<tr>
<td>Satisfactory</td>
<td>Project (outcome/output) is expected to achieve most of its major objectives, and yield satisfactory benefits, with only minor shortcomings. (70-79%)</td>
</tr>
<tr>
<td>Moderately Satisfactory</td>
<td>Project (outcome/output) is expected to achieve most of its major relevant objectives but with either significant shortcomings or modest overall relevance. Project is not expected to achieve some of its major objectives or yield some of the expected benefits. (60-69%)</td>
</tr>
<tr>
<td>Moderately Unsatisfactory</td>
<td>Project (outcome/output) is expected to achieve some of its major objectives with major shortcomings or is expected to achieve only some of its major objectives. (50-59%)</td>
</tr>
<tr>
<td>Unsatisfactory</td>
<td>Project (outcome/output) is not expected to achieve most of its major objectives or to yield any satisfactory benefits. (40-49%)</td>
</tr>
<tr>
<td>Highly Unsatisfactory</td>
<td>The project (outcome/output) has failed to achieve, and is not expected to achieve, any of its major objectives with no worthwhile benefits. (Below 40%)</td>
</tr>
</tbody>
</table>

The figures in brackets developed by the Consultants are used to rate the level of achievement of an indicator at the higher or intermediate level. For example, an indicator that is 80% attained, will be rated highly satisfactory. The overall rating of the level of achievement for the entire project, PDO and each component intervention will be based on the rating specified as defined by the Table 1.1

The same process will be used to rate the elements within the factors - relevance, efficiency, effectiveness, partnership and sustainability - and the totality of each factor when it comes to the assessment of programme performance.

### 1.5 Methodology and Tools

#### Methodology

- **Documents review**: This was done through desk review of documents. The documents reviewed provided the following insights for the assignment: (i) the programme development objectives, the component outputs / activities which were the subject of the assessment; (ii) information for the design / development of the assessment framework / matrix; (iii) progress towards the attainment of PDO and component outputs / activities; and (iv) information required for assessment of programme implementation performance information pertinent for the design / development of WAAPP 2A.

- **Meetings / Validation Discussions**: Meetings were conducted with (i) implementing partners; (ii) project management; (iii) funding partner; and (iv) project beneficiaries. The discussing with each of the partners were geared towards their relevance / areas of interest. For example in the case of implemented projects the focus was on the assessment of the progress towards the attainment of outputs, the effectiveness of existing management arrangements and insights for the development of WAAPP 2A; in the case of beneficiaries the discussion emphasis was on the benefits from association.
with programmes, measures for leveraging the benefits which could be incorporated into WAAPP 2A.

c. **Field Visits:** Field visits were conducted to observe the physical status of some of the programme inputs. For example field visits were conducted to observe cassava harvesters and demonstration plots which were developed with programme funds. Pictures taken during some of these field visits attesting to the stage of completion of some programme interventions appear in section 2.6

d. **Critical / analytical thinking:** This tool was used by the Consultants in designing the interview guide, mapping formats; analysing the information gathered; assigning the rating etc. For example critical and analytical thinking were used to apply the six levels of the rating scale (Table 1.2) to the level of achievement of the PDOs, the intermediate indicators and level of success of programme implementation.

**Tools**

a. **Use of interview guide:** Interview guide questions were developed and administered to (i) implementing partners and (ii) sub-components of project management (procurement, financial management and monitoring and evaluation (Attachment 4 provides a sample of the questionnaire)

b. **Mapping:** The PDOs, outputs, planned activities, progress level of the activities were mapped and analysed – this enabled the Consultants to rate the level of achievement on the PDOs/and component outputs

c. **Power Point Presentation:** This tool was used by the researchers / developers of the new varieties in presenting their findings / recommendations / conclusions etc. to the Consultants at CSIR-CRI, Fumesua in Kumasi. The tool was applied during the stakeholder validation focus meeting for the discussion of the draft report.
2. **Achievement Level of Programme**

2.1 **Achievement Level of Programme Development Objectives**

Table 2.1 presents a summary of the results framework for the achievement level of the programme development objectives. Though the programme commenced in 2008 the targets set for the achievement levels start from year 2011. This is explained by the fact that 2009/2010 were the intervention periods and the two year lag was required to generate the outcomes in 2011 and 2012. The year 2010 is used as the base year for the evaluation.

**Indicator 1: Project beneficiaries direct and indirect (breakdown 40% whom are female)**

The number of project beneficiaries (the farmers, the processors, trained scientists /professional staff at the national, regional and district levels etc) is one of the indicators for the attainment of the PDO. The 2010 MTR review base line figure was 6000 with 60% of them male and 40% female. The target beneficiaries for 2011 were 25,000 and the actual was 22,155 representing 87% level of attainment. The cumulative target beneficiaries for 2012 was 125,000 with the cumulative actual being 87,891 representing 70.3%; 38% of the cumulative actual was female and 62% was male.

The underachievement is attributable to two main reasons. Firstly, the lag between the development of the technology and adoption/ dissemination was longer than anticipated and hence more beneficiaries are likely to be identified after the end of the project. The second reason – as per discussions with two farmers group – was lack of means for profitable disposal of their outputs which prevented them from further disseminating of the varieties to other interested farmers.

The level of achievement for this indicator is **SATISFACTORY** the average level of achievement for 2011 and 2012 is 78.65% which is less than 80% but more than 70%.

**Indicator 2: Released technologies by NCOs (at least 3 over five years, cumulative)**

By the end of the project period (2012) 19 technologies had been released as compared to the target of 9. This represents 211.1% in terms of achievement. However in 2011, the target of 6 technologies, which should have been released, was not met, only 4 could be released, representing 66% due to amongst others (i) underestimation of the completion cycle in the funding request proposals submitted by most of the grantees/researchers (ii)untimely release of funds and (iii) competing demands on the researchers time.

These issues are explored further on the assessment of the project performance under efficiency and effectiveness.

Since the average level of achievement of the indicator for 2011 and 2012 is 138.55% the assigned rating is **HIGHLY SATISFACTORY**
**Indicator 3:** Released technologies by NCOS that show an improvement in yield of at least 15% in farm level productivity and over the control

In each of the years, 2010, 2011 and 2012, all the released technologies by the NCOS showed an improvement in yield of at least 15% in farm level productivity and over the control. Below are some of the improved technologies released by the project1:

- 4 high yielding cassava such as CRI-Sika bankye (56mt/ha), CRI-Broni bankye (40mt/ha), CRI-Ampong (59mt/ha) and CRI-Otuhia (65mt/ha) released compared to a current national average of 16.01mt/ha (2011).

- 3 cocoyam varieties released, the first of its kind in Africa, namely; CRI-Gye me di (8.2mt/ha), CRI-Akye (5.2mt/ha) and CRI-Maye yie (7.6mt/ha) compared to current national average of 6.3mt/ha (2011) were bred and released.

- 4 sweet potato varieties were inspected and released on the 18th of December 2012 namely; CRI-'Patron’ (20mt/ha), CRI-'Bohye’ (22mt/ha), CRI-'Ligri’ (22mt/ha) CRI-'Dzila Dadanyune’ (18mt/ha)

- No yam variety have been released under WAAPP, instead existing released varieties such as Kukrupa and Dente are disseminated to producers. These varieties show an average 20mt/ha as against the current yield of 20mt/ha

- Three improved varieties of cocoyam (Xanthosoma sagittifolium, Linn, Schott) released: CSIR-CRI “Gye Me Di” (Trust me), CSIR-CRI“Akye” (Gift), CSIR-CRI “Ma Aye Yie” (I am better off)

Since all the released technologies shows improvement in on-farm yield of at least 15% over control. The level of achievement of the Indicator is **HIGHLY SATISFACTORY**, that is over 100%. Further details analysis will be presented later in the report.

**Indicator 4:** Area under improved technologies disseminated under the project

With respect to area under improved technologies disseminated under the project, a base line figure at 2010 is 2400 ha. The target for the 2011 was 6000 ha while the actual was 5632 ha, representing 93% level of achievement. The cumulative target for 2012 was 30000 ha while the corresponding actual was 36004, representing 120% level of achievement.

The distribution of the area under improved technologies disseminated under the project at the end of 2012 is as follows: cassava 69%; cocoyam 3%; yam 23% and sweet potatoes 6%.

The level of achievement of the indicator is **HIGHLY SATISFACTORY** since the average the score for 2011 and 2012 is 106.5%- a figure above 80%

**Indicator 5:** Producers who have adopted improved technologies made available under the Project

---

1 WAAPP – GHANA, *Summary of Achievement – A Pamphlet issued by the Project Implementation Unit, 2012*
The expected number of producers who would have adopted improved technologies made available under the project at 2011 was 15,000 while the actual number was 13,393, representing 89.2%. The corresponding figures for 2012 are 75,000, 57,129 and 76.2% respectively.

Producers under this indicator are all farmers. Of the total accumulated actual of 57,129 producers identified at the end of 2012, 71% were producing cassava; 23% were producing yams; 1% were producing cocoyam and 5% were producing sweet potatoes.

A rating of **HIGHLY SATISFACTORY** is assigned for the indicator – while a score of 89.2% was attained for 2011, the score for 2012 is 76.2%. The average for both years is 82.7 – which is above 80%.

**Overall Rating for PDO**

A rating of **SATISFACTORY** is assigned despite the fact that four of the five indicators were assigned **HIGHLY SATISFACTORY**. The actual project beneficiaries, the key driver of the project, were 30% below target.
<table>
<thead>
<tr>
<th>PDO Level Results Indicators</th>
<th>Base at MTR 2010</th>
<th>CUMULATIVE TARGET VALUES</th>
<th>RATING</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Target</td>
<td>Actual</td>
<td></td>
<td>% Achieved</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Achieved</td>
</tr>
<tr>
<td>1. Project beneficiaries direct and indirect (breakdown 40% whom are female)</td>
<td>6000</td>
<td>25000</td>
<td>125000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>40% female</td>
<td>22155</td>
<td>87891</td>
<td>70.3</td>
</tr>
<tr>
<td></td>
<td>60% male</td>
<td></td>
<td></td>
<td>38 female</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Released technologies by NCOs (at least 3 over five years, cumulative)</td>
<td>4</td>
<td>6</td>
<td>9</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>211.1</td>
</tr>
<tr>
<td></td>
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<td></td>
</tr>
<tr>
<td>3. Released technologies by NCOs that show an improvement in yield of at least 15% in farm level productivity and over the control</td>
<td>100%</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>4. Area under improved technologies disseminated under the project</td>
<td>2400ha</td>
<td>6000</td>
<td>30000</td>
<td>36004</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5632</td>
<td></td>
<td>120</td>
</tr>
<tr>
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<td></td>
<td></td>
</tr>
<tr>
<td>5. Producers who have adopted improved technologies made available under the Project</td>
<td>6000</td>
<td>15000</td>
<td>75000</td>
<td>57129</td>
</tr>
<tr>
<td></td>
<td></td>
<td>13393</td>
<td></td>
<td>76.2</td>
</tr>
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</tr>
</tbody>
</table>

**SATISFACTORY**
- The actual for 2011 is 88% of the target
- The actual for 2012 is 70.3% of the target
- The average for both years 79.15% which is above 70% but less than 80% - the assigned rating is satisfactory

**HIGHLY SATISFACTORY**
- The actual for 2011 is 66% of the target
- The actual for 2012 is 211.1%
- The average for both years 135.5% which is above 80% - the assigned rating is highly satisfactory

**HIGHLY SATISFACTORY**
- 100% releases having a 15% improvement in yield at the farm level over the control was attain in both years
- Since the level of achievement for each year was 100%, the average for both years is 100%, above 80% - the assigned rating is highly satisfactory

**HIGHLY SATISFACTORY**
- The actual for 2011 is 93.8% of the target
- The actual for 2012 is 120% of the target
- Since the average for both years is 106.9% (above 80%) a rating of highly satisfactory is assigned

**HIGHLY SATISFACTORY**
- The actual for 2011 is 89.2% of the target
- The actual for 2012 is 76.2 of the target
- The average for both years is 82.7% - a rating of highly satisfactory is assigned
2.2 Achievement Level of Programme Outputs

The intermediate indicators as per the PAD form the planks for the outputs of the project. The indicators cover the four components of the project, namely the enabling environment, NOCS, demand driven technology generation and adaptation and project management. Table 2.2 presents the results framework for the achievement level of the outputs while sections 2.2.1 – 2.2.4 provide the narrative.

2.2.1 Enabling Conditions/Environments for Regional Cooperation in technology Generation and Dissemination

**Indicator 1:** Regulations adopted and aligned to regional regulations

The cumulative target for year 2011 and 2012, was to have two regulations adopted and aligned to regional regulations. These targets were met in both years - two regulations were adopted and adapted in both years. These regulations issued under ACT 803, year, 2010 are:

- Procedures for release and Registration of Crop Genetic Materials
- Harmonized Protocol for Bio-Efficacy Trials (details in Attachment 5)
- Harmonized Pesticides Protocol (Pesticides Registration Manual)

Since in both years the targets were met (100%), the rating assigned for the indicator is **HIGHLY SATISFACTORY.**

**Indicator 2:** A system for data collection, analysis and reporting on agricultural technologies, research skills and regional agricultural productivity is established and managed by CORAF/WECARD

This indicator covers the existence of a system of data collection, analysis and reporting on agricultural technologies, research skills and regional agricultural productivity. Since 2011, an ACESS based data management (with plans to up-grade to a web based data management system) system has been in place. Based on formats prescribed by the project, the implementing agencies (CSIR, CRI, MoFA, EPA etc ) and beneficiaries on the value chain provide quarterly monitoring information to the PCU. The PCU inputs and analyses the data and prepares quarterly reports for project stakeholders. In the case of CORAF, the reports are submitted semi-annually and annually. The system has been used to generate information / data for the preparation of the semi and annual reports for 2011 and 2012.

The rating for the indicator is **HIGHLY SATISFACTORY.** A system has been in place in both 2011 and 2012 to collect, input, analyze and disseminate project progress / output data for submission of annual/ semi/ quarterly reports to stakeholders including CORAF.

**Indicator 3:** Establishment and operation of National Registration Committee for genetic materials and pesticides

The indicator covers the establishment and operation of national registration committee for genetic materials and pesticides. Information gathered indicates that the National Seed Council members have been nominated and presented, and awaiting approval from the President. A building facility to house the council is almost completed and some office facilities have already been procured.
The rating for this indicator is **SATISFACTORY**, as the nominated council members have not been approved although grounds work for its operation is almost completed.

2.2.2 National Center of Specialization

**Indicator 1:** Technologies generated by NCOS and demonstrated by the project

The cumulative targets for the technologies to be generated and demonstrated by the project though the work of the National Center of Specialization were 6 for 2011 and 9 for 2012. The corresponding actuals were 9 and 15 respectively. The 2011 level of achievement was 133.4% of the target while 2012 level of achievement was 166.6% of the target.

The full list of the technologies released and demonstrated by the project appears as attachment 6. Some of them are:

- Verification trials on knapsack spray shield for herbicide weed control in cassava
- Promotion of Root and Tuber Crops as leafy vegetable
- Alternative use of sweet potato through value addition
- 4 sweet potato varieties were inspected and released on the 18th of December 2012 namely; CRI-'Patron' (20mt/ha), CRI-'Bohye' (22mt/ha) CRI-'Ligri' (22mt/ha) CRI-'Dadanyuie '(18mt/ha)
- 4 varieties of cassava(CRI-Sika banye (56mt/ha), CRI-Broni banye (40mt/ha), CRI-Ampong (59mt/ha) and CRI-Otuhia (65mt/ha) and 3 varieties of coco yam (three (3) cocoyam varieties namely; CSIR Gye me di, CSIR Akyede and CSIR Maye yie) were released

The rating for the indicator is **HIGHLY SATISFACTORY** because the average level of attainment for both years is 150%.

**Indicator 2:** Technologies released by NCOS and demonstrated in at least 2 other ECOWAS countries

Seven technologies were released and demonstrated in at least two other ECOWAS Countries against a target of 1 in 2011. Against a cumulative target of 2, a cumulative target of 7 had been achieved in 2012.

The seven technologies released and demonstrated in at least 2 other ECOWAS Countries cover:

- Sorghum (3 varieties: Dalado; Kadaga and Kapaala) - Senegal. Cassava (2 varieties: CSIR-Sika banye; CSIR-Ampong) – Mali; Maize (3 varieties: Okumkom, Abrohemma and Omankwa) – Mali

Since the targets for both 2011 and 2012 were exceeded, a rating of **HIGHLY SATISFACTORY** is assigned to the indicator

**Indicator 3:** Client days of training provided (includes scientists, extension agents, agro-dealers, farmers etc
Client (scientists, extension agents, agro-dealers, farmers etc.) days of training provided exceeded the cumulative targets in both 2011 and 2012. The actual for 2011 was 11,544 trainees against the target of 500. In 2012, the cumulative actual was 15057 against the cumulative target of 700.

The percentage distribution of the beneficiary trainees at the end of the 2012 is:

- 40% from NCOS
- 14% from Crop Services Directorate
- 19% from CARGS
- 26% from DAES (including farmers)

A rating of **HIGHLY SATISFACTORY** is assigned to the indicator because in both 2011 and 2012, the cumulative targets were exceeded.

**Indicator 4: Exchange visits/ study tours**

The level of attainment of the indicator at the end of 2011 is:

- There were 11 exchange visits against a target of 6- indicating an attainment level of 183% of the target.
- There were 3 study tours against a planned of 4- indicating an attainment level of 75% of the target

In 2012 the following is observed on cumulative basis:

- There were 28 cumulative exchange visits against a target of 10 – indicating an attainment of 280% of the target.
- There were 4 study tours against a target of 6- indicating an attainment of 66.3% of the target

Some of the exchanges / visit and study tours included:

- Exchange/scientist visits made during 2011 and 2012 was 28 out of a targeted number of 10 visits, this represents 280%
- 3 study tours were made out of a targeted 6 tours, this represents 50%

The average level of attainment for the two events within the two years, 2011 and 2012 is 165%- a rating of **HIGHLY SATISFACTORY** is assigned to the indicator.

2.2.3 Demand-Driven Technology Generation and Adaptation

**Indicator 1: Multi-country research proposals financed by regional competitive Agricultural Research Grant System (CARGS) maintained by CORAF**

The indicator relates to the number of multi-country research proposals financed by the regional Competitive Agricultural Research Grant System (CARGS) maintained by the
CORAF. This indicator is not evaluated since WAAPP Ghana is not responsible for its execution. However at the end of 2012, two out of a target of 4 had been attained.

Those two 2 researches are: (i) Promotion of Integrated Management Technology for Increased Productivity of Small Scale Plantain Farmers and (ii) a research on Crop livestock integration project

**Indicator 2**: National Research Projects financed (CARGS)

National Research Projects financed under the CARGS- a target of 34 was set for 2011 with an actual of 31 representing 91%. For 2012, the cumulative target was 34 with the cumulative actual of 50, representing 147%. Attachment 7.

A **HIGHLY SATISFACTORY** rating is assigned to the indicator because the actual level of achievement of the target was both over 80%.

**Indicator 3**: Technologies generated under the CARGS and demonstrated by the project in the project areas

For 2011, a target of 20 technologies was supposed to be released and demonstrated in the project areas. The actual released and demonstrated was 7, representing 35% of the target. The cumulative target for 2012 was 26 with the actual being 21 representing 81% of the target. The average actual performance for the two years is 58%. The list of technologies released appears as attachment 6.

The underperformance is explained by (i) the under estimation of the completion times by most of the projects awarded the grants (ii) late / delay / untimeliness in the release of the funds to the technology developers and (iii) some of the researchers / technology developers having other assignments that competed for their time.

A rating of **MODERATELY UNSATISFACTORY** is assigned to the indicator - the level of achievement on the average is 56% which falls between 50-59%

**Indicator 4**: Publications released in regional / national magazines

A target of 7 publications in regional / national magazines from the research supported by the project was set for 2012, but the actual was 20, representing 285%. For 2012, the cumulative target was 9 and the cumulative actual was 21, representing a level of achievement of 233%. Attachment 7 shows some of the list of publications.

A rating of **HIGHLY SATISFACTORY** is assigned. The level of achievement for both 2011 and 2012, exceeded 80%.
Indicator 5: Foundation seeds produced with project support

The target for foundation seeds provided with project support was 360 ha but the actual was 14 ha, representing about 3.5% level of achievement for 2011. In 2012, the cumulative target set for 2012 was 3600 ha while the actual was 34.5 ha, representing 0.98%.

The reasons for this poor performance include (i) lack of irrigation facilities at the multiplication sites (ii) intermittent drought conditions that were experienced during the period (iii) lack of coordination in the dissemination channel. Discussions with the breeding scientist revealed that at a multiplication ratio of between 1 to 10 for cassava, the output for 2011 can generate 1780 foundation seeds while that of 2012, can generate 3000 foundation seeds. Both together will exceed the cumulative target of 3600 ha foundation seeds. The fact is that by the end of December 2012, this had not been done.

The assigned rating is HIGHLY UNSATISFACTORY. The level of attainment in both 2011 and 2012 fell below 40%; in fact it fell below 5%.

2.2.4 Project Management / Monitoring and Evaluation

Indicator 1: Procurement and Financial Management activities executed in conformity with the procurement plan, implementation manual and IDA procedures

It was expected that under procurement, the PCU will ensure that (i) procurement plans within the framework of PAD will be developed on an annual basis and (ii) implemented. Review of the procurement documents indicated that procurement plans were prepared and that they were implemented under each of the 2 years, 2011 and 2012 as per the guidelines contained in the procurement manual which was in conformity with IDA procedures.

Financial management activities envisaged under the project included annual work plans and budgets; management of the expenditure incurring and accounting processes; financial management reporting; preparation / coordination of funds replenishment plans; coordination of disbursement, among others, were all consistent with the PIM / IDA procedures.

In view of the above two paragraphs, a rating of HIGHLY SATISFACTORY is assigned to the indicator. All planned activities expected by the project were executed.

Indicator 2: Project reports presented within 45 days of the end of the project period

Project reports, namely monitoring reports – quarterly, semi-annual and annual reports were all presented within 45 days at the end of the completion of the relevant cycle. For instance semi and annual monitoring reports to CORAF, the World Bank etc were always done with 45 days of the completion of the relevant activity cycle.

A rating of HIGHLY SATISFACTORY is assigned.
**Indicator 3:** A harmonized M&E system established and operational

This indicator covers the existence of a system of data collection, analysis and reporting on agricultural technologies, research skills and regional/national agricultural productivity. Since 2011, an ACESS based data management (with plans to up-grade to a web based data management system) system has been in place. Based on formats prescribed by the project, the implementing agencies (CSIR, CRI, MoFA, EPA etc) and beneficiaries on the value chain provide quarterly monitoring information to the PCU. The PCU inputs and analyses the data and prepares quarterly reports for project stakeholders. In the case of CORAF, the reports are submitted semi-annually and annually. The system has been used to generate information/data for the preparation of the semi and annual reports for 2011 and 2012. Field data are collected monthly from implementing agencies farmers and other players/stakeholders along the R&T value chain to update the Result Framework.

The rating for the indicator is **HIGHLY SATISFACTORY.** A system has been in place in both 2011 and 2012 to collect, input, analyze and disseminate project progress/output date for submission of annual/semi/quartely reports to all stakeholders.

**Indicator 4:** Sub-project granted with environmental management plan have implemented the plan effectively

This indicator covers the extent of the success of the implementation of the environmental management plan. Environmental and Social Management Plan (ESMP) and a Pest Management Plan (PMP) were prepared and disclosed as required. The EPA with support from other collaborators and the ECOWAS Commission has produced and published harmonized protocol for the biological evaluation of pesticides and pesticide registration manual for use by stakeholders. During implementation, however, not much has been done to implement the ESMP and the PMP. This has been explained by the project team as due to minimal to negligible issues with safeguards. There were no actions undertaken on safeguards during project implementation. Among the reasons for this are: (i) Lack of awareness, low sensitization among the key targets on the application of the ESMP; and (ii) The assumption that most of the activities were research-based and therefore not expected to create serious environmental concerns.

In view of the above, a rating of **MODERATELY SATISFACTORY** is assigned.
Table 2.2: Results Framework – Achievement Level of Programme Outputs

<table>
<thead>
<tr>
<th>Results Indicators</th>
<th>Base at MTR 2010</th>
<th>CUMULATIVE TARGET VALUES</th>
<th>RATING/COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMPONENT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENABLING ENVIRONMENT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Regulations adopted and aligned to regional regulations</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Birthday</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• A 100% score of the target was attained in 2011</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• A 100% score of the target was attained in 2012</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• The average for both years is a score of 100%; a rating of very satisfactory is assigned</td>
</tr>
<tr>
<td>2. A system for data collection, analysis and reporting on agricultural technologies, research skills and regional agricultural productivity is established and managed by CORAF/WECARD</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td></td>
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<td>• Very satisfactory rating is assigned because the M&amp;E system existed/ functioned/ generated reports in both 2011 and 2012</td>
</tr>
<tr>
<td>3. Establishment and operation of National Registration Committee for genetic materials and pesticides</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Because the National Seed Council members are nominated but not yet approved, therefore not operational</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Renovation of building facility to house the council is almost completed</td>
</tr>
<tr>
<td>OVER ALL RATING FOR COMPONENT</td>
<td></td>
<td></td>
<td>HIGHLY SATISFACTORY</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Each of the two indicators had very satisfactory rating; the average of the two very satisfactory gives very satisfactory</td>
</tr>
<tr>
<td>NATIONAL CENTRE OF SPECIALIZATION</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
1. Technologies generated by NCOS and demonstrated by the project | 4 | 6 | 8 | 9 | 15 | 166.6 | HIGHLY SATISFACTORY
   • The target for each year was exceeded. For example for 2012, the level of achievement was 188.6 of the target.

2. Technologies released by NCOS and demonstrated in at least 2 other ECOWAS countries | 0 | 1 | 7 | 2 | 7 | 350 | HIGHLY SATISFACTORY
   • The cumulative technologies released and demonstrated in other 2 ECOWAS Countries exceeded the target for each year

3. Client days of training provided (includes scientists, extension agents, agro-dealers, farmers etc) | 300 | 500 | 11544 | 700 | 15057 | 2153.6 | HIGHLY SATISFACTORY
   • In both years, the actual beneficiaries of the training programme far exceeded the targets

4. Exchange visits/ study tours | 0/2 | 6/4 | 11/3 | 10/6 | 28/4 | 200 | HIGHLY SATISFACTORY
   • Average level of achievement was 150% for each of the 2 years.

OVER ALL RATING FOR COMPONENT |  

DEMAND DRIVEN TECHNOLOGY GENERATION AND ADAPTATION |  

1. Multi-country research proposals financed by regional competitive Agricultural Research Grant System (CARGS) maintained by CORAF | 0 | 2 | 2 | 4 | 2 | 50 | NOT RATED
   • Outcome beyond the control of the project
   • But projected could have devised interventions to increase the rate of participation since Ghana is losing out on the funding from that intervention for sub-optimal participation

2. National Research Projects financed (CARGS) | 25 | 34 | 31 | 34 | 50 | 147 | HIGHLY SATISFACTORY
   • The actual level of attainment both years 2011 and 2012 were 91% and 147% respectively. Both are higher that 80%

3. Technologies generated under the CARGS and demonstrated by the project in the project areas | 9 | 20 | 7 | 26 | 21 | 81 | MODERATELY SATISFACTORY
   • The average level of achievement for both years was 56%, which falls between 50-59%
4. Publications released in regional / national magazines

<table>
<thead>
<tr>
<th>Year</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>3</td>
</tr>
<tr>
<td>2012</td>
<td>7</td>
</tr>
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<td>2013</td>
<td>20</td>
</tr>
<tr>
<td>2014</td>
<td>9</td>
</tr>
<tr>
<td>2015</td>
<td>21</td>
</tr>
<tr>
<td>2016</td>
<td>233</td>
</tr>
</tbody>
</table>

**HIGHLY SATISFACTORY**
- The level of attainment in 2011 (285%) and 2012 (233%) exceeded 80%.

5. Foundation seeds produced with project support

<table>
<thead>
<tr>
<th>Seed Count</th>
<th>Plant Count</th>
<th>Seed Count</th>
<th>Plant Count</th>
<th>Seed Count</th>
<th>Plant Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>36</td>
<td>360</td>
<td>14</td>
<td>3600</td>
<td>34.5</td>
<td>0.98</td>
</tr>
</tbody>
</table>

**HIGHLY UNSATISFACTORY**
- Less than an average of 2.5% of the cumulative targets was attained in both years.

**OVER ALL RATING FOR COMPONENT**

**SATISFACTORY**
- Though an average performance of 107% is attained over the 4 indicators, which should have qualified for very satisfactory rating, because one score very unsatisfactory and another moderately satisfactory, it is felt that a rating of satisfactory will be more appropriate in this case.

**PROJECT MANAGEMENT**

1. Procurement and Financial Management activities executed in conformity with the procurement plan, implementation manual and IDA procedures

<table>
<thead>
<tr>
<th>Year</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>100</td>
</tr>
<tr>
<td>2011</td>
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<td>2012</td>
<td>100</td>
</tr>
<tr>
<td>2013</td>
<td>100</td>
</tr>
<tr>
<td>2014</td>
<td>100</td>
</tr>
</tbody>
</table>

**HIGHLY SATISFACTORY**
- All processes and procedures as per the PIM / Bank guidelines with report to procurement and financial management were adhered to for the period 2010 to 2013.

2. Project reports presented within 45 days of the end of the project period

<table>
<thead>
<tr>
<th>Year</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>100</td>
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<td>2013</td>
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<td>2014</td>
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**HIGHLY SATISFACTORY**
- The reporting deadlines set for submission of reports to stakeholders were met in each of the two years.

3. A harmonized M&E system established and operational

<table>
<thead>
<tr>
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<tbody>
<tr>
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**SATISFACTORY**
- A harmonized M&E system exists and functioning. It however needs to be updated to a web base system.

4. Sub-project granted with environmental management plan have implemented the plan effectively

<table>
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<td>100</td>
</tr>
<tr>
<td>2014</td>
<td>100</td>
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**MODERATELY SATISFACTORY**
- Harmonized protocol for the biological control evaluation of pesticides and pesticide registration manual published for use by stakeholders
- ESMP and PMP prepared
- Not much has been done to implement the ESMP and PMP due to assumption of minimal to negligible issues with safeguard.
2.3 Pictorial Presentation of Selected Programme Achievements

1. Enabling environment

Figure 1: Completed office block at Pokuase to host National Seed Council

2. National Center of Specialization

Figure 2: Biotechnology Laboratory Complex for the National Centre of Specialization at CRI, Fumesua –Kumasi

Figure 3: Cassava varieties
Figure 4: Cocoyam varieties

Figure 5: Sweet potato varieties

3. Demand-Driven Technology Generation and Adaptation

Figure 6: Mechanical cassava harvester-Fabricated harvesters with improved and wear resistant cutting blades, developed at KNUST, Source: KNUST
Figure 7: Training of food processors by partners and processed, Source: FRI

Figure 8: Float to showcase achievement of WAAPP to the general public, Source: FRI

Figure 9: Locally constructed solar dryer (large scale and small scale)

Figure 10: Cassava and Yam field with Good farm sanitation - Afigya Kwabre district and Fumesua in the Ashanti region
Figure 11: Cocoyam and sweet potato field of newly released varieties

Figure 12: Solar dryer for sliced cocoyam leaves (‘kontomire’) –CRI

Fig. 13a: Package product of yam grits chips)-FRI

Fig. 13b Precooked vacuum packaged yam (ampesi and
Fig. 14: pictorial representation of on e-extension network
3. Assessment of Programme Performance

While the last chapter dwelt on the level of achievement of the PDOs and the intermediate indicators/ objectives, this chapter addresses the extent to which the project continued to be relevant during the period of implementation, how effective was the project management in attaining the results, how efficient was project resources utilized with respect to the PDOs/ outputs it generated amongst others.

3.1 Relevance

The continued relevance of the project is viewed at the national and regional levels- it goes beyond national level since an aspect of the project was to promote regional integration.

The New Partnership for Africa’s Development (NEPAD) postulates that for Africa to attain its MDGs goals by 2015, agricultural total factor productivity must grow at least 3% per annum plus at least 6% growth in agriculture GDP for sub-Saharan African Countries. NEPAD under the auspices of the African Union, came out with the Comprehensive Africa Agricultural Development Programme (CAADP) which translated NEPADs vision into programmes as the continental blueprint for Africa’s agricultural development, an aspect of the blueprint has been measures to improve agricultural productivity through NEPADs Framework for African Agricultural Productivity (FAAP), prepared by Forum for African Agricultural Research (FARA).

At the regional level, ECOWAS\(^2\), within the framework of NEPADs – Framework for African Agricultural Productivity, initiated a programme through ECOWAP to support the formulation and implementation of harmonized National Agricultural Investment Programmes (NAIP). It is interesting to note that during the period 2010-2011 when the WAAPP 1A –Ghana implementation was on full throttle, the ECOWAS Commission for Agriculture coordinated the preparation of and National Agricultural Investment Programmes (NAIP) to form the basis of national and donor interventions in agriculture.

At the country level, Ghana’s Food and Agricultural Sector Development Policy (FASDEP II) and the Medium Term Agriculture Sector Investment Plan (METASIP), - both prepared in conformity with NEPAP’s initiated CAADP, stress the need for improvements in agricultural productivity through development and adoption of agricultural technologies.

In a nutshell, the WAAPP 1A / its PDO, components – regional integration, national centres of excellence and demand driven –research for improved agricultural productivity stayed relevant and consistent with agricultural policy initiatives at the Continental, Regional and National Levels. That is there was no need to change the programme focus during implementation, signifying that the project design / objectives / assumptions set at the preparatory phase required no modification at implementation. In view of this, the project remained relevant throughout the implementation stage. Hence the level of programme performance in terms of relevance is **HIGHLY SATISFACTORY.**

\(^2\) ECOWAS Agricultural Policy (ECOWAP) adopted by ECOWAS Heads of States in 2005
3.2 Effectiveness

Effectiveness relates to the extent to which the project outcomes/PDO, outputs, activities were attained in terms of completion / desired impact or quality. Coverage of the assessment of project effectiveness span : (i) the level of attainment of the PDO/Intermediate indicators / targets (ii) the physical progress of activities and outputs (iii) implementation effectiveness of cross-cutting interventions (iii) conformity of the processes and procedures of released technology with regional standards (iv) effectiveness of the procedures for the release of crop verities in the country and (v) the extent of compliance of the environmental management sub-component.

3.2.1 Level of Attainment of the PDO / Intermediate Indicators

Chapter two provided a detail presentation of the level of achievement of the PDO / Intermediate indicators. What is presented here is a summary.

PDO

The levels of attainment of the five project development objectives are:

- A cumulative target of 87,891 project beneficiaries was set for 2012; at the end of the project period, only 70.3% of the target had been met.
- A cumulative target of 9 technologies were to be released by the end of 2012; at the end of 2012, 19 had been released, representing 211% of the target
- All released technologies were to show at least 15% productivity improvement at the farm level over existing models/varieties. Released technologies resulted in at least 30% increase over existing ones. A cumulative target of areas under the improved technologies was set at 30,000 ha for 2012; the actual was 36,000 representing 120%.
- Producers who would have adopted the improved technologies were expected to be 75,000 at end of 2012; the actual was 57,129 representing 77.6%

In terms of project execution effectiveness- the ability of the project to meet the set targets, 3 out of the 5 exceeded the set targets. The other two targets which were not achieved could have been exceeded if dissemination of the developed technologies were effectively conducted to reach many producers as a result of lack of coordination in the dissemination process between DAES and DCS as well as Extension and Publication Unit of CSIR-CRI. To enhance the rate of adoption of the developed technologies will require setting a clear cut multiplication and extension role from that of coordination and publication. For instance the Extension and Publication Unit of CSIR-CRI could provide publications on the developed technologies as well as coordination role in the dissemination process (since they work more closely with scientist who developed the technologies) while the role of multiplication and extension are provided by DAES and DCS, on one hand. On the other hand, these Units (i.e. Publication Unit of CSIR-CRI, DAES and DCS) could come together in all activities, pull resources together and work as a team in all dissemination activities.

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3 Note Producers/farmers constitute 65% of the beneficiaries, this is a purposive target of the project
Intermediate Indicators /Outputs

There are four components under the intermediate indicators: enabling environment, National Centre of Specialization, demand driven research and project management. Table 2.2 presents the results matrix.

- **Enabling Environment:** There were two indicators and the target set for each was attained - alignment of national regulations to that of the regional and system in place for data collection. Also the Environmental and Social Management Plan (ESMP) in a framework and Pest Management Plan (PMP) have been prepared.

- **National Centre of Specialization:** There were four indicators and the targets set for each indicator was exceeded – technologies generated; technologies generated and disseminated in 2 other ECOWAS countries, client training and exchanges and visits. The cumulative target for Client training set at 700 person days for 2012, was far exceeded by the actual which was 15,057. Discussions with project management staff revealed that the target was completely underestimated and now realize that in setting targets for training the following should be taken cognizance of amongst others: (i) use of experiences /outcomes in projects similar in nature (ii) estimation of training days (number and average training days by level of intervention / year prior to aggregation) and (iii) annual revisions to targets based on outcomes of the current year.

- **Demand Driven Technology Generation and Adaptation:** There were five indicators / targets and only two of them were achieved/exceeded, national research financed through CARGS and publications released. The other three, multi country research financed by CORAF (2 out of 4), technologies generated by CARGS (21 out of 26) and foundation seeds generated by the project (35 out of 3600) fell below the targets.

  The selection outcome of multi-country research by CORAF cannot be influenced directly by the project and hence it is not appropriate for this aspect of the results framework to be assigned to the project. All what the project can do is to ensure that researchers from Ghana are made aware so that they can apply. The technologies generated by the project scored 81% of the target, which in the evaluation framework can be classified as very satisfactory. The generation of foundation seeds performed abysmally by the end of 2012 – less than one percent and the lessons learnt should be clear: (i) climatic changes, especially related to the rainfall should have been taken cognizance of and appropriate measures taken to mitigate the risk during project design (ii) timely release of funds with respect to interventions of that nature is crucial for success and (iii) management of the re-generation cycle within a project context must be optimized.

- **Project Management:** All the four targets set were exceeded / attained. The execution of the project was in conformity with the PIM and World Bank guidelines with respect to procurement and financial management; project reports were generated and distributed on time; a monitoring and evaluation framework was in place / functioning and the environmental management sub-component was successfully executed.
3.2.2  Physical Progress of A Planned Activities/Outputs

These are organized along components and in bullet form. Outputs that formed part of the evaluation in section 3.2.1 are left out to avoid duplication.

Enabling Environment

- The Directorate of Crop Services of MoFA and other stakeholders with support of WAAPP (i) reviewed and harmonized existing process and procedure for varietal release and registration (ii) catalogued 130 crop varieties and available technologies consistent with regional conventions (iii) established a national varietal registration system and (iv) facilitated the establishment of the National Seed Council.

- Secretariat of the National Seed Council: As part of the alignment of the regulatory processes between Ghana and ECOWAS regulatory processes, a National Seed Council is being formed. The project is supporting the renovation of an office block to house the secretariat of the National Seed Council. It is 95% complete and is located within the premises of the Plant Protection and Regulatory Services Directorate of the MoFA. Furniture and other fittings have also been procured by the project.

- Within the context of the efficacy and bio-safety of agro-chemicals being in conformity with ECOWAS protocols, the Environmental Protection Agency (EPA) / Plant Protection and Regulatory Services Directorate developed manuals for the harmonization for fertilizer import and use, and pesticide registration process in Ghana.

- The project supported the DCS to set up a 5 ha cassava planting multiplication site at the Wenchi Agricultural Institute. Similar support was provided for the setting up of a 5ha for the multiplication of improved cassava planting materials for farmers in Nkoranza.

- Technology Dissemination: The Directorate of Agricultural Extension Services (DAES) aired 10 episodes of video documentary on GTV to promote released root and tuber crops; use of audio visual to show documentaries on the released root and tuber crops were shown to groups of farmers in 3 districts in the Eastern Region of Ghana; a e-extension hub has been initiated to be operational in 2013.

- e-Extension Programme

The midterm review recommended the strengthening of the mechanism for the dissemination and adoption of the technologies generated by the project. The low farmer Agricultural Extension Agent ratio and the inadequate transport support to extension staff hamper their penetration effectiveness with respect to the dissemination and adoption of project technologies. In view of this the project

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4 A manual of procedure for registration of species and varieties in Ghana is published
supported the e-extension platform / programme of MoFA as part of the post-midterm interventions to accelerate the dissemination and adoption of project generated technologies through a private service provider. The service provider was given the mandate to design a complementary extension delivery methodology where mobile phones and internet facilities will be used to disseminate proven technologies to widen coverage of improved agricultural information to farmers. Progress to date on the implementation of the e-extension platform includes:

- An e-extension portal – www.e-extension.gov.gh with an audio conferencing interface has been built with content translated into 6 major languages to be available to farmers with the use of standard mobile phones when fully operational
- Data connect equipment has been procured and internet services/access also operational.
- 200 field staff have been trained in 10 pilot districts and procurement of 200 smart phones for use done
- An e-lab has been established at the DAES

National Centre of Specialization

- Biotechnology Laboratory at Fumesua, Kumasi: Construction of the laboratory is 95% complete. Equipment and furniture for the lab have been procured and are in the process of being installed. It is envisaged that the laboratory will be ready for use by the end of April 2013.

While strenuous efforts are being made for the laboratory to be completed, it has been realized that the funding for its operational costs has not been identified. Incremental staff costs, electricity and waters, maintenance and laboratory supplies have not been planned for. This has to be addressed with all the urgency it deserves. To ensure that the laboratory operates as soon as it is completed, WAAAP 2A should consider making provision for its operational funding in the first two years as CSIR prepares itself to take over the operational cost afterwards.

- Equipment support / upgrades for CSIR: The list of equipment supplied by the CSIR to the various units in support of their research spanned amongst other vertical electrophoresis, thermo cycler with reaction module, labsystems multiscan ms plate reader + windows software, pasta extruder with dough sheeter and setter, aspirators etc. The full list of the equipment supplied is contained the Inspection Report, Supply of Laboratory Equipment (CSIR/WAAPP/ICB/20009/02)

- Regional Cooperation / Integration: Three sorghum varieties developed with project support – Kapaala, Kadaga and Dorado were sent to Senegal for evaluation. Mali sent to Ghana for evaluation 30 sorghum and 60 cowpea breeding lines. Ghana also sent to Mali three extra early varieties of maize and two CSIR bred cassava genotypes were sent to Mali for adoption.
• The project recorded 28 exchange/scientist visit and 3 study tours made within the between Ghana Senegal and Mali.

Demand Driven Research

• The FRI developed high quality cassava flour (HQCF) with greater marketability than the traditionally processed kokonte. The HQCF has export potential and a good substitute for wheat flour in baking.

• The Department of Agricultural Engineering, Kwame Nkrumah University of Science and Technology has developed a cassava harvester and 5 prototypes are being fabricated for the AMSEC Centres to be used for demonstration.

• Solar dryers have been developed with the support of the project to improve cassava chips quality.

Project Management

• The PCU organized 8 PMC and 4 Steering Committee Meetings and a number of unspecified emergency meetings to with respect to programme implementation.

3.2.3 Implementation Effectiveness of Cross-Cutting Issues

Gender:

Assessment indicate that gender issues were crucial in the implementation of the project but no conscious efforts were made regarding achieving gender parity in the project implementation, although some attempts were made to collect data on gender basis. The need for gender specialist as part of PCU team need to be given consideration, the role of such a position, among others, will include incorporating and facilitating gender issues in all aspect of the project. Also important recommendation regarding gender made in page 26-28 of the Aide Memoire of December 2012 between the Government and the World Bank reports, need to be given close consideration to enhance gender issues in the implementation of the second phase of WAAPP 1A.

Cross-border exchange and Trade:

The successful harmonization of protocols regarding (i) Procedures for release and Registration of Crop Genetic Materials; (ii) Harmonized Protocol for Bio-Efficacy Trials(details in Attachment 5); and (iii) Harmonized Pesticides Protocol (Pesticides Registration Manual), among other activities, have started yielding results. A platform/environment for regional integration in technology generation and dissemination within the sub-region with common guidelines/framework regarding
technology/innovation registration and release has been created. These have resulted in close collaboration between scientist, research and project partners within the sub-region to learn and share experiences, avoid duplication of efforts leading to effective application of scarce resources, and avoid duplication of registration of same variety under different names within the sub-region. The project recorded 28 exchange/scientist visit and 3 study tours made within the sub-region. These deserve commendation and measure to ensure sustainability is required.

Also, prospect for cross-border exchange and trade of improved varieties has been established and requires further strengthening to ensure sustainability to enhance gains in the sub-region. The project has resulted in the exchange of improved technologies in the sub-region. They include three (3) varieties of sorghum (varieties: Dalado; Kadaga and Kapaala) sent to Senegal; two (2) varieties of cassava (varieties: CSIR-Sika bankye; CSIR-Ampong) sent to Mali; and also tree(3) varieties of Maize (varieties: Okumkom, Abrohemma and Omankwa) sent to Mali. Ghana has also received 30 sorghum and 60 cowpea breeding lines from Mali for further evaluation in Ghana.

**Level of acceptability of developed technologies:**

Interactions with beneficiaries (producers/farmers and processor) indicate that the developed technologies have high level of acceptability among beneficiaries. For example some farmers mentioned desirable characteristic of cassava variety: Bankye-hemaa to be early maturing (1 year as compared to 1.5-2years of what farmers used to cultivate), productivity level is 50% higher, easy to maintain due to large canopy formation (making it possible for only 2X weeding as again 4-5x on farmers varieties), and the diverse use of the produce to include the use for gari, fufu, starch for plywood industry and bread. They also added that it also withstands the weather condition. Other highly preferred cassava varieties indicated by farmers include Ampong and sika bankye. Interaction with some Farmer Based Organization member who are into processing of cassava into gari indicated that they obtain more output of gari form the WAAPP varieties compared to what they used to cultivate.

Farmers who have adopted the improved cassava varieties, however, complained about lack of market for their produce of the productivity gain resulting from the adoption of the technology.

In all, the developed WAAPP technologies have high level of acceptability among beneficiaries.

3.2.4 Conformity of the Processes / Procedures of released Technologies to Regional Standards

- The process and procedure for release of technologies established in conformity to regional standards.
- Also modalities including responsibility of agencies established. They include a common application form to be used for application for registration in the national crop/species catalogue; format for recording candidate variety(ies)/specie(s);
format for recording information on varieties used in the development of the
variety; format for recording received applications; format for verifying reports;
format for requesting additional information; technical reporting format; format for
non-approval notification; format for approval notification; format for publishing of
variety information in an official bulletin, among others.

- As already indicated, the formation of the National Seed Council (which is the focal
agency to ensure implementation) has reached advance stage and efforts to ensure
its establishment and effective operations required.

3.2.5 Effectiveness of the Procedures for the Release of Crop Technologies in the Country

- The process and procedure for release of technologies established in conformity to
regional standards. Also modalities including responsibility of agencies established
- The established procedure is more effective than what used to exist. This procedure
when fully implemented will be very effective in that:
  - (i) Registered crop variety in the country will be recognized by others and prevents
duplication in registration; (ii) Individuals/organizations could organized varietal
released forum, after registration, to inform the general public, even before the
general forum organized by the Varietal Release Committee/National Seed Council;
(iii) The prospect for cross-border exchange of varieties will be enhance through
the publication of the registered crop varieties, and (iv) Transparent system of
registration and release of varieties among others.
- In addition to the aforementioned suggestions to enhance the effective release of
crop varieties, the availability of germ-bank to serve as reserve for the registered
varieties need to be given greater considerations. The capacity of existing germ-
bank needs to be assessed and improved where necessary to preserve registered
crop varieties.
- Also the need for a common web-base platform for the sub-region to host registered
varieties, aside providing other information, would be preferred to the paper
information of the partners in the sub-region on the registration of new varieties as
per the modalities.

3.2.6 Extent of Compliance of the Environmental Management Component

- The project triggered 2 of the World Bank safeguards policy on Environmental
Assessment, OP 4.01 and the Pests Management, OP 4.09. – i.e. category B. In
response to the triggered policies an Environmental and Social Management
Framework (ESMF), an Environmental and Social Management Plan (ESMP) and a
Pest management Plan (PMP) has been prepared.
- The EPA with support from other stakeholders and WAAPP has produced and
published harmonized protocol for the biological evaluation of pesticides and
pesticide registration manual for use by all stakeholders.
- Regarding implementation, however, not much has been done to implement the
ESMP and the PMP. This has been explained by the project team as due to minimal
to negligible issues with safeguards.
Overall Rating

The effectiveness of the project is rated SATISFACTORY. Most of the project development / intermediate indicators were attained; most of the planned activities under the components were completed or near completion (i.e. the biotechnology laboratory – 95%). There were however some glaring gaps – the dissemination of new technologies, the implementation of the EMP and the PMP, foundations seeds etc were not completed / attained.

3.3 Efficiency

Evaluation of the efficiency of project implementation is organized along four main lines: project management, efficiency improvements generated by project outcomes, economic / efficiency analysis of some project interventions and Partner Obligations.

3.3.1 Project Management

Organizational efficiencies / Staff Capacity / Productivity

Staff Capacity for project management is viewed from three hierarchical levels. At the apex is the PCU, followed by the macro implementer, the CSIR who coordinated the implementation at the micro level. The micro level implementers include the CSIR-CRI, FRI, EPA, PPRS, DADUs, Crop Services, etc

At the PCU Level

The PCU has a set of five functional professionals with the Coordinator at the top. The functional areas are accounting (1), monitoring ad evaluation (1), procurement (1), communications (1) and a Technical expert (1). Since the project’s commencement there has been some staff turnovers. The inception project coordinator was replaced by the deputy in 2010. The procurement officer left in 2011 and had to be replaced. The finance officer left in 2012 and had to be replaced. Two Monitoring and Evaluation officer left and had to be replaced in 2012. These staff turnovers tended to affect the work in the functional areas during the period when the positions became vacant and the learning period for those who replaced them. Some of the problems created by the turnovers – delays in central project execution, effective monitoring etc – could have been mitigated if the programme had an e-base systems anchored on web based application for the functional areas, especially in the areas of monitoring and evaluation and financial management. (Attachment 10 shows M&E structure of WAAPP). These notwithstanding, the new recruits who were employed to fill the vacant positions have successfully adjusted and contributed effectively to the attainment of overall objectives of the programme.

An aspect of the programme worthy of note is its regional nature. A focal point at the PCU level to identify, promote, monitor interventions relevant for regional integration across the various programme components was missing and as result the monitoring reports are
deficient on issues related to regional integration. It must be remembered that Ghana contributes to the fund for coordinating regional integration through CORAF and the project efficiency could have been increased if benefits from the integration were maximized. For example, paragraph 16 of the Aide Memoire of December 2012 between the Government and the World Bank reports.

“The mission however noted Ghana’s low participation in the collaborative research under Regional CARGS, and therefore recommends that Ghanaian scientists should be well sensitized and capacitated to actively participate in the regional CARGS. Furthermore, the countries participation in planning meetings organized by other WAAPP countries has not resulted in the implementation of any collaborative regional research activities in Ghana.”

Programme efficiency could be enhanced if the PCU takes the leadership in prodding the CSIR into ensuring that Ghana’s participation in regional / integrative issues are maximized.

**At the CSIR Level**

The operational structure of the CSIR comprises 13 research institutes 8 of which are agricultural biased. Each of the institute has a director who reports to the DG of the CSIR. Within the context of the project, the Directors of the Crop Research Institute and the Food Research Institutes were the coordinating links between the Focal Units at the micro level and the CSIR headquarters, the macro implementer. While the chain of relationship was rational per the way the government operates, it created some inefficiencies in project implementation. For example, the Head of R&T Division, who is the WAAPP Coordinator, works under the supervision of the Director for the NCOS. WAAPP issues have (i.e. budget approvals / request for re-imbursement) to go through that chain before it gets to the PCU. There were considerable delays in project implementation because of this chain, especially with respect timely release of funds – this was a contributory factor to the fact that of the 31 research / technology driven projects, only 17 had been completed at the end of 2012.

In terms of staffing for project work, the Deputy Director CSIR who is in charge of Research Coordination over saw the work of the programme administrative officers, the M&E Officer, the procurement officer, an accountant, three technical specialists (crops and horticulture, natural resources which was vacant and post harvest losses). There was six administrative support staff to accounting, procurement, monitoring and evaluation. The numbers and the mix were found to be adequate for the project. A limited work load analysis done, revealed that almost every staff member was fully occupied with project work – this staff configuration contributed to the timely generation of monitoring / progress reports. All the project staff are on the direct payroll of the CSIR. It is expected that their salaries etc will be seen as part of Government’s contribution to the project and any sequel of it.

All the functional areas – accounting and finance, / procurement / monitoring and evaluation were all integral part of the system wide CSIR functional processes. This was a major source of efficiency in project execution- there was no need to re-invent new accounting / procurement systems and processes; the existing internal auditing framework was used; the expenditure incurring and accounting processes were done as part of the CSIR batch processing and lastly these contributed to savings in time and money.
**Micro Level**

The micro entities involved in the implementation of the project were the Crop Research Institute, the Food Research Institute, the Environmental Protection Agency, Crops Services Directorate- MoFA, Plant Protection and Regulatory Services- MoFA and Agricultural Extension and Advisory Services, also of MoFA.

The generalized model for project management was: (i) Focal Team with a head reporting to the head / director of the entity (ii) focal team prepares the AWP-Budget for approval through the CSIR before it goes to the PCU (iii) focal team implements with funds released directly to it via CSIR - using existing institutional systems and procedures with respect to accounting and procurement including internal and external auditing and (iv) focal team preparing and submitting monitoring / expenditure reports. All team members are on the government payroll which could be counted as government contribution to the project.

Review/observation of the team dynamics, especially the PPRS Directorate, National Centre of Specialization, Crop Research and the Food Research Focal Teams revealed the following efficiency factors (i) improved time management and coordination (general management) skills as a result of the training in / use of development of AWP-Budgets, preparation of monitoring reports and (ii) enhanced group cohesion in implementation of the project – resulting from the participatory processes that were used in the development / implementation of the AWP/Budgets. These factors contributed to the timely attainment of most of the PDO / intermediate indicators as per the results framework.

The above efficiency gains could be enhanced if at the micro level an integrated / abridged operational manual, consistent with the PIM was in place. It will reduce search time for information relevant for project implementation and reduction in search time could contribute to timely completion of activities.

3.3.2 Adherence to Plans and Budgets / Financial Performance

**Plans and Budgets**

A review of the plan / budget formats indicate the existence of a framework to capture what needs to be done within the project context and how much resources are required to attain the objectives at the PCU, CSIR/ macro and micro levels. The level of adherence to the plans and budget could not be determined because there was no documented system for approving / authorizing plan / budget variations by the COSMAC / PCU. This is a major deficiency, which diminishes the level of efficiency of the project implementation.

**Financial Performance**

Financial performance is viewed from two angles, the overall performance at the end of the project period in the context of budget/ actuals (variances) and at the micro operational level in terms of the rate / level of funds utilization.
Macro Level Performance

Overall Budget Performance

Overall Table 4.1 below presents overall project financial performance as per the PAD/expenditure returns.

Provisionally as of December 2012, 99% of the project funds had been spent (table 3.1). An interesting feature of the budget performance is the re-allocations in the budget which affected civil works, research grants and goods going up whilst that of training and consultancy went down. Allocations to CORAF and operations remained unchanged.

The funds utilization pattern observed review the following issues bordering of programme design / management efficiencies: 99% of the funds were utilized, which could be said to be commendable. Despite this (based on discussions and review of the reports) it is felt that the level of utilization was more likely to be influenced by reactive processes – which could be explained by inadequate programme planning/implementation capacity of the program management at both macro and micro levels and deficiencies in project design with respect to the magnitudes of the programme interventions. Programme design should have taken cognizance of the differences between the countries involved with respect to the nature and scope of the interventions in the allocation of resources.

Secondly, the revisions in the budget allocations affecting 5 of the seven categories reinforce the issue raised in the last paragraph. These revisions against the background that some budget lines were over spent as per table 4.1 may indicate inadequate programming efforts during the project design period and implementation.

Thirdly, since the programme was on enhancing agricultural productivity, it is noteworthy that research grants, civil works (bio-technology laboratory) and goods (science equipment) and training took more than 65% of the budget and the actual expenditures. This outturn is a plus in terms of programme efficiency in the design and the implementation.

Component Budget Performance

The discerning features of table 3.2 include (i) the under disbursement of 57% for the enabling conditions for regional cooperation component and the (ii) huge over disbursement – 61%, under project coordination, management and monitoring and evaluation. The under / over disbursement in these two areas appears to be underpinned by inadequate programming interventions for the former and reactive programming interventions for the later. Both outcomes diminish the level of project design / management efficiency. What is observed under component performance reinforces what were observed under the overall performance. The next phase of the project should enhance take cognizance of the need to improve programming capacities at both the design and implementation stages.
Table 3.1: Over All Budget Performance as at December 2012  
In USD Millions

<table>
<thead>
<tr>
<th>Description</th>
<th>Original Amount (USD)</th>
<th>Revised Budget</th>
<th>Cumulative Expenditure to Date (USD)</th>
<th>Funds Utilization Rate</th>
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</thead>
<tbody>
<tr>
<td>1. Civil works</td>
<td>1.10</td>
<td>1.18</td>
<td>1.87</td>
<td>158%</td>
</tr>
<tr>
<td>2. Research Grants</td>
<td>4.23</td>
<td>4.67</td>
<td>5.10</td>
<td>109%</td>
</tr>
<tr>
<td>3. Goods</td>
<td>2.27</td>
<td>2.35</td>
<td>1.67</td>
<td>71%</td>
</tr>
<tr>
<td>4. Training</td>
<td>1.76</td>
<td>1.3</td>
<td>1.07</td>
<td>82%</td>
</tr>
<tr>
<td>5. Consultancy services</td>
<td>0.612</td>
<td>0.29</td>
<td>0.47</td>
<td>162%</td>
</tr>
<tr>
<td>6. Operating Costs</td>
<td>2.83</td>
<td>2.83</td>
<td>3.76</td>
<td>133%</td>
</tr>
<tr>
<td>7. Support to CORAF</td>
<td>1.0</td>
<td>1.0</td>
<td>0.94</td>
<td>94%</td>
</tr>
<tr>
<td>8. Unallocated Funds</td>
<td>1.4</td>
<td>0.669</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. TOTAL</td>
<td>15</td>
<td>14.98</td>
<td>99.00%</td>
<td></td>
</tr>
</tbody>
</table>

Source: PCU Internal Records. The figures are provisional for 2012. The 2008/2011 figures have been audited.

Table 3.2 Component Budget Performance as at December 2012

<table>
<thead>
<tr>
<th>COMPONENTS</th>
<th>AMOUNT ALLOCATED USD MILLIONS</th>
<th>TOTAL DISBURSEMENTS TO 31 DECEMBER 2012</th>
<th>AMOUNT UNDISBURSED USD</th>
<th>% DISBURSED</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Enabling Conditions for Regional Cooperation in Technology Generation and Dissemination</td>
<td>1.152</td>
<td>0.505</td>
<td>0.647</td>
<td>43%</td>
</tr>
<tr>
<td>2. National Centre of Specialization (NCOS)</td>
<td>6.461</td>
<td>6.595</td>
<td>-0.134</td>
<td>102%</td>
</tr>
<tr>
<td>3. Funding of Demand-driven Technology Generation and Adoption</td>
<td>4.887</td>
<td>4.448</td>
<td>0.438</td>
<td>91%</td>
</tr>
<tr>
<td>4. Project Coordination, Management, Monitoring and Evaluation.</td>
<td>1.500</td>
<td>2.414</td>
<td>-0.914</td>
<td>161%</td>
</tr>
<tr>
<td>CORAF/WECARD</td>
<td>1,000,000.00</td>
<td>943,402.99</td>
<td>56,597.01</td>
<td>94.3%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>15</td>
<td>14.902</td>
<td>0.037</td>
<td>99%</td>
</tr>
</tbody>
</table>

Source: Internal Project financial reports as of December 2012. The 2012 figures included are unaudited

**Micro Level Performance**

Micro level operators provide financial reports to the CSIR for aggregation into a global reporting framework. The report reflects budget/actual but with no explanations for variations. The CSIR/PCU do not pursue variance analysis to proactively intervene in the micro level operations.

A major area of concern in micro level performance is the financial management of the research grants. Funds area released in bulk to the research scientists based on their global request and availability. This does not contribute to project efficiency. Every project should
have a projected cash flow statement based on the number of quarters in the project cycle. Funds should be released based on the cash flow provided. Release of funds in bulk to researchers is not efficient - first they could be having balances in their accounts, earning interest, which could have been earned by the project, and secondly it denies researchers who need the funding when project funds are exhausted temporarily.

3.3.3 Monitoring and Evaluation

Forms and formats have been designed by the project for use by the macro and the micro implementers. These forms and formats collect information on the progress at each operational level and the CSIR headquarters is expected to coordinate and submit a monitoring report to the PCU. Over the past two years considerable progress has been made electronically for the creation of a monitoring data base for analysis and generation of report writing. The framework underpinned by the e-base system appears to have reduced monitoring costs in terms of time for field visits from the centre and search for information.

While these efficiency gains are commendable, it appears considerable monitoring work needs to be done at the micro level - considering the fact that most of the funded projects are not completed on time. To enhance research / grant outcome efficiency, every proposals accepted for funding should provide a monitoring framework - the major activities, their sequencing, major milestones, reporting times etc. There should be a corresponding CSIR framework to monitor all the funded programmes based on their monitoring plans. The net effect of these measures could be (i) increase in the timely completion rates (ii) reduction in costs attributable to maximum / continuous utilization of resources and (iii) timely availability of research results as input into other aspects of the project

Design / implementation of semi-annual field monitoring plans by the CSIR headquarters and an annual field monitoring plan by the PCU independent of the monitoring visits of the World Bank, could have enhanced project implementation efficiency. For example, field visits – with monitoring team including research scientists, could critically assess the work of the micro implementers – continuing relevance, value for money prior to completion of the research projects.

3.3.4 Economic / Financial Efficiency Analysis

Economic / financial efficiency analysis had been planned on component by component basis, but data availability in terms of ease and quality has made it impossible for any computation to be done. Discussions here will focus on what could have been done / how the financial accounting /reporting could have been structured for macro operators to carry out efficiency analysis.

**Component 1: Enabling Environment**

- Average cost for each regulatory framework harmonized (Total project expenses – excluding staff costs, for generating all the outputs divided by the number of regulations harmonized)
Component 2: National Centre of Specialization

- Average cost per meeting of the centre of specialization management committee: based on the information provided (whose reliability could not be 100%), the average cost per meeting comes to GHC 21,660 over the project period (GHC 195,000 divided by 9 meetings)
- Sunk costs – programmes that were abandoned due to loss/ resignations of staff
- Average costs per dissemination of a technology
- Vertical distribution of extension cost per technology released – national, regional, district and farm level

Component 3: Demand Driven Technology Generation and Adaptation

- Average grantee selection costs: based on the information provided this comes to about GHC 5500. (Total costs of GHC 49,000 divided by 9 sessions)
- Average/range of actual expenditures per grant (completed)
- Average approval cycle for grants
- Research completion rates (as per the deadlines set in the grant proposals)
- Average cost for dissemination of technologies

Though there are no base line/ “industry” figures for comparisons, the computation of these efficiency measures could prod/guide management to constantly search for more value for money ways for the project interventions

3.3.5 Adherence to Obligations: Government of Ghana and the World Bank

The Government of Ghana adhered to all the required obligations (i) recruitment/payment for project staff at both the PIU, CSIR and the micro implementation levels (ii) provision of working space/offices (iii) adherence to the guidelines in the PIM with respect to procurement, financial management etc/as per the external audit reports for 2010 and 2011 and (iv) the timely preparation/submission of project progress reports to the stakeholders

Review of The World Bank Missions reports (Aide Memoires) etc reveal that the planned supervision missions were adhered to. Financial disbursements were complied within the Banks's operating procedures.

3.3.6 Efficiency Improvements Generated by Project Outcomes

Improved Technologies (including released varieties)

The project resulted in the development of improved varieties, agronomic practices and processing technology such as solar dryer for enhanced productivity. By the end of the project period (2012) 19 technologies had been released as compared to the target of 9. This is made up of 11 varieties and 8 technologies/innovations. These technologies are assessed to show an improvement in yield of at least 15% in farm level productivity over the control. For example, improved cassava varieties show average yield of 55 mt/ha as against 16.1 mt/ha of farmers’ yield; improved yam varieties show average yield of 20
mt/ha against 14.1 mt/ha of farmers yield; and improved cocoyam varieties show average yield of 8.2 mt/ha as against 6.2 mt/ha of farmers field. The improved technologies are more productive efficient comparatively.

Disseminated Technologies

The project has a dissemination system to reach out to end beneficiaries who are predominantly, farmers. Participatory approach used to development technologies involves farmers through experimental design, to compare the outcomes of the new technology being developed and that of farmer field outcomes right at the onset. Attachment 9 shows technology distribution/ dissemination system of the project intervention and its linkage with existing/traditional system.

The technologies developed and released at the CARGS/NCO are given to MoFA through the Directorate of Agricultural Extension (DAES) services and Directorate of Crop Services (DCS) for multiplication varieties and duplication of improved agronomic packages in a manner easily assimilated by farmers and for extension purposes. At the NCO/CARDS level farmers (FBO) who were involved in the development of the technology through field demonstration obtain some of the varieties (Attachment 9). At the DAES/DCS level farmers are involved in the multiplication of the varieties at the various demonstration sites to showcase the variety and distribute the varieties to the farmers.

The dissemination approach is effective as (i) most farmers tend to be risk averse regarding adopting new technologies and would want to see the performance of a technology before adoption; (ii) It offers the opportunity to demonstrate alongside the improved agronomic practices developed to farmers, among others, and efficient in that (iii) It is less costive as the multiplication is done at the community level and requires limited or no transportation cost to transport the technology to producers.; (iv) Also since it is developed at the community level with farmers involvement no special form of packaging (and associated costs) is required to boost the confidence of farmers in the technology, among others.

These notwithstanding, the dissemination of the developed technologies were not effectively in reaching many producers as expected (77.6% of the targeted 75000 were reached.

Overall Rating

The overall rating for project efficiency is **MODERATELY SATISFACTORY**. Though project outcomes – yields, technologies released, agronomic practices, aspects of the dissemination approaches which were farm level base all contributed to project efficiency, however, the fact that project made no conscious effort to generate management information to improve decision making either at the design stage of the implementation stage coupled with some inefficiencies cited make a moderately satisfactory rating the ideal.
4. **Sustainability**

Discussions on sustainability of both the processes and the outcome of the project are centered on three levels, namely the CSIR and the micro implementers and the farmer groups.

The question to be answered at the Central level is whether the CSIR will be able to ensure that the WAAPP process / goals are sustained into the future. Project design and implementation provided the CSIR with both institutional and human capacity to move the process forward.

Firstly, the governance framework of the project at the national level is anchored within the existing structures of the CSIR. Both the COSMAC and the CARGS Boards fall under the Deputy Director General, Research Coordination. The secretariat of the Deputy Director has three technical specialists – crops and horticulture, post harvest losses and natural resources. The first two specialists – permanent staff of the CSIR work fall within the domain of the project. There are support staff – accountant, monitoring and evaluation, procurement, administrative support staff who are dedicated to the WAAPP and all paid by the CSIR. Internal records of the CSIR indicate for the year 2012, the government paid seventeen professional / sub-professional staff working on the project and amount of GHC 619,103 as salaries. Secondly, the accounting, internal auditing, procurement, monitoring and evaluation systems and processes used by the project were integral part of the CSIR systems and procedures- even if the project were to be discontinued the systems and processes will continue to be used. A major constraint for sustainability will be funding to operate the CARGS / support the CRI and micro implementers.

At the CRI and micro implementer level (DAES, PPRD, FRI, EPA, DCS, etc) staff engaged in the work (all paid by the government) have incorporated the WAAPP work as part of their annual / routine work. Secondly the existing accounting, internal audit, procurement systems are being used to execute request made on the WAAPP. What is missing in terms of sustainability is the availability of funds to pay for the execution of their annual WAAPP related work plans.

Farmer level enthusiasm will continue beyond the project as they could be helped to translate the productivity increase into increase in their incomes. For those who are enrolled into the programme, they see the yield improvements in the crops as a potential for increasing their productivity which may not be translated into improved incomes if the increases in the yields are to create a glut in the market. To them, the key to sustainability is enhanced value addition to their products.

Another important aspect of sustainability at the farmer level is the free of charge distribution of the technologies developed under WAAPP. It is worth noting that some farmers already sell some of the yam obtained from their involvement in the project activities to other farmers who ask for the variety. Prospect of distributing the improved varieties (especially yam and cocoyam to begin with) at a price farmers are willing to pay should be assessed.

A rating scale of **SATISFACTORY** is assigned because the project was integrated seamlessly into the existing management systems and the staff involved at the implementation level
are all government employees. Financial sustainability issues could be postponed till the end of the phase 2 of the project by which time the government could be persuaded to absorb the operational costs over time. The farmers concerns could be addressed by integrating on farm support for agro-processing into phase 2 of the project.

5. **Project Risks**

Table 4.1 provides a summary of the risk appropriate / material to be reviewed. The application of rigorous standards and review mechanisms of CARGS are not applied it is therefore raised from low at MTR to medium at project closure because of the fact that most of the research projects had not been completed by the end of the period.

<table>
<thead>
<tr>
<th>Risks Identified at Appraisal</th>
<th>Risk Level at Appraisal</th>
<th>Risk Level at Mid Term Review</th>
<th>Risk Level at End of Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regional consensus on mechanisms for sharing technology knowledge products not developed</td>
<td>Moderate</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Rigorous standards and review mechanisms of CARGS are not applied</td>
<td>Moderate</td>
<td>Low</td>
<td>Medium</td>
</tr>
<tr>
<td>Linkages between CORAF and National M&amp;E Systems are weak</td>
<td>Moderate</td>
<td>Low</td>
<td>Low</td>
</tr>
</tbody>
</table>

Sources: PCD, March 2012 and Programme Completion Review Report, 2011

6. **Issues and Recommendations**

The issues arising out of the assessment are organized along the thematic areas regional integration, beneficiary concerns, project efficiency and effectiveness, performance accountability.

6.1 **Overall Project Rating**

The overall project rating is SATISFACTORY. In terms of the achievement level of the project, The PDO and the intermediate indicators / objectives were satisfactory rated. In terms of the design / implementation of the project, relevance, effectiveness and sustainability were each rated satisfactory; efficiency was rated moderately satisfactory.
6.2 Issues

Leveraging of Project Performance

In terms of the attainment of the project development objectives and the outputs, the investment which Ghana made in the project with World Bank funding support could be considered as very worthwhile. For example, about 87,000 people, comprising farmers, food processors, scientists, and professionals in the ministries, departments and agencies of government benefited from the project. Farmers were introduced to improved cassava, cocoyam, sweet potato etc varieties; research scientists were given grants to develop new varieties and technologies including the provision of a new bio technology laboratory; farmers, extension workers, research scientists and professionals were provided training; professionals in MoFA and EPA were trained to prepare and implement annual work plans and budgets; food processors were introduced to new uses of cassava, yams etc. The cost of all these outcomes at the end of the project in 2012, came to USD 10.5 million

The cost is quite considerable against the outcomes / achievements outlined. The PAD indicates that the likely return on investment from the project based on ex-post analysis / review of similar interventions could be in the region / average of 45%. While this gives considerable optimism on the benefits from the programme to Ghana, there is the need to build on/ leverage on the outcomes of the project to realize the maximum benefits likely to be attributable to it. The first is expanded adoption of the technologies / improved varieties developed by the farmers; the second, maximum utilization of the trained scientist and the biotechnology laboratory and the third utilization of the knowledge / skills gained by the professionals who participated in the micro implementation.

Against the background of measures that will be put in place to minimize price fluctuations on output, the level of adoption of the technologies, especially with respect to the improved varieties should be scaled up. Secondly, efforts should be made to ensure that the trained scientists continue to focus their areas of work in improving on the technologies they developed / new and better technologies other than those they developed. The biotechnology laboratory that has been built by the project must be fully utilized. Its offerings focusing on issues related to WAAPP objectives should be made known to scientists/ projects working in the area. Lastly the professionals in the MoFA, (Crops, Extension, Plant Protection and Regulation) who implemented the programme, should be made champions in the promotion of agricultural productivity ideas in Ghana- ensuring that some of the incremental government funding in agriculture goes towards productivity improvements.

Regional Integration

The core objective of the project was to promote regional integration through strategies to improve agricultural productivity. In this vein, the overall project implementer was assigned to a regional body – the CORAF. Ghana from its share of the loan, paid USD 1 million to CORAF – for management and organization of activities which Ghana could participate.

Programme assessment indicates that Ghana’s could have benefited more from the venture than alluded to in sections if conscious efforts were made by the project management. For
example, only two of the four researches expected to be funded regionally by CORAF materialized. While the selection process was outside the purview of the Project, conscious efforts could have been made through – enhanced advertising, presentation forums, promotion at relevant national scientific meetings, advocacy with secretariats of relevant scientific associations etc. A review of the PAD shows that there were minimal or no interventions / participation of Ghana in some of the integrative sub-component of the project- supporting regional advocacy, exchanges and networking of researchers, enhancement of regional knowledge management and linking national and regional project management at the level of the NARS, NCOS/RCOE and CORAF will go a long way to improve the situation.

A review of the work schedules of key staff at the PCU reveal that there is no dedicated position to design and promote / facilitate the implementation of activities related to regional integration. It is felt that the absence of such a focal position, contributed to the Ghana’s non-maximizing behavior towards integration activities.

**Beneficiary Concerns**

The Farmers Groups and the Micro implementers / Research grantees raised issues that are very pertinent. A focus meeting with a farmers group revealed that while they were very happy with the productivity of the new verities of cassava they had been introduced to, they were reluctant to promote its adoption by other farmers because it will create a glut in the market and that will depress their incomes. The project in anticipation of this problem supported research / technology improvements into post harvest losses and identification of new uses of the products by Food Research Institute. While the farmers appreciated these interventions, their concerns were immediate. They will want to be helped by the project to process the cassava into gari and other products to store during glut and sell during the lean period. This support will guarantee their income stability – which will propel them to expand their production and promote the adoption of the new improved varieties. They felt that the project interventions to manage any glut were not immediate, effective and also farfetched.

Project grantees / Micro implementers and also the CSIR raised concerns about the mismatch between their programme interventions and the funds flow. This issue was dwelt on extensively by the mid-term review of the project in September 2011. The MTR made some recommendations (i) once a project is approved 50% of the budget should be released (ii) if equipment is included in the budget, fund should be set aside for that and (iii) following the retirement of 30% of the funds, the remaining 50% should be released. The review found the following as the prime source of the problem: (i) micro level planning that links activities / outputs / costs and time – on a quarterly basis (ii) a central level integration of the various plans to outline the sequencing/ timing of the various activities, the associated costs / outputs and (iii) preparation of an integrated cash flow statement which will guide the project management in funds requisition from the World Bank and disbursement to the programme implementers. The cash flow projections could be revised on a monthly basis to cater for changes in the programming at the micro implementation levels.
**Efficiency Considerations**

Issues of project efficiency – the extent to which the project development objectives / intermediate indicators / outputs were attained have been addressed in section 3.4. This part covers efficiency – the extent to which there was value for money in the design / implementation of the project.

The project generated a number of outcomes that showed an improvement over the existing systems. For example, the improvements in the yields on cassava, yam, sweet potato and cocoyam varieties and agronomic practices which generated reduction in production costs. While these achievements are commendable, there are other areas efficiency improvements are required. The issues require attention cover four areas- dissemination of project outcomes, micro project implementation, research focus and cash flow alignment and funds allocation within the project.

The efficiency with respect to the dissemination of the developed technologies could be improved – considering the fact that only 77% of the targeted 75,000 farmers could be reached. There is diffusion of efforts in the dissemination of technologies. Analysis points to the lack of coordination in the dissemination process between DAES and DCS as well as Extension and Publication Unit of CSIR-CRI. The multiplication and extension as well as coordination role of each of these partners were not clearly delineated. For example printing of publication on characteristics of developed technologies and agronomic practices are done by both Extension and Publication Unit of CSIR-CRI and DAES, with limited collaborations. Also multiplication and extension of varieties were done by DAES and DCS with limited collaborations. These created non-convergence of messages sent, duplication of efforts and delays in the dissemination of developed technologies to the farmers.

To improve the efficiency in the processes for the promotion of adoption of improved technologies there will be the need to, among others (i) set a clear cut multiplication and extension role from that of coordination and publication. For instance the Extension and Publication Unit of CSIR-CRI could provide publications on the developed technologies and their characteristics as well as coordination role in the dissemination process (since they work more closely with scientist who developed the technologies) while the role of multiplication and extension are provided by DAES and DCS; and or (ii) these implementing agents (i.e. Publication Unit of CSIR-CRI, DAES and DCS) could come together in all activities, pull resources together and work as a team in all dissemination activities; and or (iii) better still the targeted area could be divided among these agents but with close collaborative planning, learning and execution of dissemination activities

Micro – project implementation that is at the level of the grantee researcher, technology developer, etc could be strengthened to avoid delays in project execution / ensure prompt re-focusing of micro project objectives in a reasonable time. Research / technology proposals that are submitted should have been accompanied by a monitoring framework to be reviewed and used by the CARG in monitoring that project if accepted. Secondly, every micro implementer should have developed quarterly / annual work plans with their associated cash flows. A central level entity should have integrated all these work plans and their associated cash flows to form the basis of funds request / replenishment and disbursement plan by the CSIR/PCU. The monitoring framework approved / accepted at the time of the award would be used as the monitoring tool by the CSIR. The robustness /
uniqueness of the tool will enable the CSIR to identify implementation challenges early and take corrective actions through an evaluation process.

The set guidelines for the selection award of grants / funds for research and generation of new technologies ensured that the outcomes could contribute to the overall project development objectives. The thrust of these research / improved technologies were focused on improved yields, better agronomic practices with the objective of reducing production costs, minimization of post harvest losses / new uses of the product. Within the context of the farmers’ expectations, there is the need to sharpen the focus. The farmer as per discussions with a farmers group want (i) a new variety with improved yield whose unprocessed shelf life is long to withstand market fluctuations – the varieties generated only showed yield improvements and (ii) on farm assistance to process the outputs (i.e. cassava into gari) into a product whose shelf life could withstand fluctuations in market demand. From the point of view of the farmer, the efforts by the project to enhance the value chain are not efficient. The work of the researchers to minimize post harvest losses, create new foods / packages out of the products generated but they have no immediate impact on them. This is an issue that has to be taken cognizance of in the design of phase 2 of the project; if it is not addressed any attempt to enhance the speed of adoption could be viewed with skepticism by the farmer.

The variations in pre-post project allocation of funds are quite considerable. For example civil works, research grants and goods had their budgets revised upwards while training and consultancy had theirs revised downwards in the course of the project implementation. While such a flexibility could be seen as virtue, it also a pointer that project conception / design could have been more efficient. If the revisions were driven by adhoc interventions / reactive interventions (i.e. provision of mini irrigation support to a seed multiplication farm; funding for the operation of the Bio-technology laboratory), it could signal that the selection of the seed multiplication site did not go through a more efficient process. The phase 2 of the project should incorporate a more efficient mechanism for making selection/ location decisions.

Management Analytics to Support Decision Making

The issues raised here emanate from the observations made in section 3.4.4 – economic / efficiency analysis of the project. A project of this nature that has to generate options over time in areas as (i) channels / modes for dissemination of technologies (ii) selection processes / mechanisms for award of research grants (iii) optimal distribution of resources for extension work by level etc, there is the need to structure the accounting / financial reporting system to generate the information required to make such decisions at the PCU level or the CSIR level. The use of the management analytics will aid in monitoring, enhance performance accountability and contribute to efficient use of project resources.
6.3 Recommendations

Based on the issues raised in section 5.2 and insights gained from the earlier sections, the following recommendations are made, especially within the context of the phase 2A of the project.

1. Maximization of the Benefits from Phase A-1

The technologies developed / crop varieties released as things stood at the end of the project had had minimal impact on the farmer considering the amount of investment made. In view of this, the Phase 2-A should focus relatively more on the adoption of these new varieties / technologies by the farmers.

2. Integration of Farmers Concerns in the Development of Dissemination Strategies

The key concern of the farmer with respect to the adoption of the improved varieties is the impact of increased production on his / her income, including stability of the income. They saw the phase 1-A solution as long term. In view of this, it is recommended that Phase 2-A develops a mechanism whereby (i) adopters will have access to capital to process their produce to enhance shelf life or (ii) have a focal point where their produce can be sent for processing with payment to be effected as their processed products are sold.

3. Research / Technology Focus

While the farmers appreciate the yield improvements in the varieties that have been released, they also would be appreciative if the research could concentrate on release of varieties that have improved yields and increased shelf lives. It is recommended that phase 2-A encourages the development of varieties that take cognizance of improved shelf lives.

4. Benefits from CORAF Deliverables/ Regional Integration Activities

A focal person be assigned (either though redistribution of work or creation of a new post) within project management to design/ implement programmes that will enhance Ghana's benefits from issues related to CORAF's deliverables / regional integration.

5. Mismatch between micro project implementation and cash flows

To ensure that delays in micro programmes are minimized as a result funds unavailability, project management / CSIR should develop a master work plan on a quarterly basis based on the work plans submitted by the micro-implementers. The work plan both the micro and consolidated should show (i) activities / outputs and their sequencing (ii) the start and end times of the activities (iii) the costs associated with each activity etc. The CSIR/PCU should prepare a cash flow based on the integrated work plan and use that to manage the request for funds / replenishment and disbarment process. Some start times of micro implementers could be delayed purposefully till the cash flow situation improves. In view of this recommendation, the present model where 50% of funding is granted upon approval should be discontinued.
It does not take cognizance of prioritization in funds allocation within an integrated work plan- which will ensure holding of optimum cash balances by micro project implementers; that is funds released should be based on the approved work plan / budget for the quarter and not 50% of the newly approved proposal which falls within the quarter.

6. Rationalization of Roles in Dissemination of Improved Varieties / Technologies

The role of micro-implementers in the dissemination process (i.e. Publication Unit of CSIR-CRI, DAES, DCS, etc.) should be clearly defined- i.e. A clear cut role of multiplication and extension from that of coordination and publication, among implementation partners. The Extension and Publication Unit of CSIR-CRI could provide publications on the developed technologies and their characteristics as well as coordination, while the role of multiplication and extension are provided by DAES and DCS; and or (ii) these implementing agents (i.e. Publication Unit of CSIR-CRI, DAES, DCS, etc.) could come together in all activities, pull resources together and work as a team in all dissemination activities. Also increasing the number of multiplication sites is recommended.

7. Analytics to Support Management Decision Making

To improve efficiency in project implementation, Phase 2-A should ensure that PCU/CSIR develop and implement a financial / operating reporting system which will enable them to do analytics in areas specified in section 3.4.4

8. Integration of gender and environmental concerns

A focal person be assigned (either through redistribution of work or creation of a new post) within project management to incorporating and facilitating gender issues in all aspect of the project. Also important recommendation regarding gender made in page 26-28 of the Aide Memoire of December 2012 between the Government and the World Bank reports, need to be given close consideration to enhance gender issues in the implementation of the second phase of WAAPP 1A.

Efforts should be made to educate and sensitize the implementing partners and the general public on environmental issues, as well as implementing the developed ESMP and the PMP.

9. Efficient implementation of procedure for registration of species and varieties

Measure to facilitate the inauguration of the National Seed Council need to be facilitated. A comprehensive assessment of existing germbank needs to be conducted to ensure effective preservation of registered species and genetic materials. A website should be designed to host registered species and varieties, as well as providing other information. This website must be linked with other counties in the sub-region.
## ATTACHMENT 1:
### Evaluation Framework

<table>
<thead>
<tr>
<th>Evaluation Criteria</th>
<th>Element/ Result Level</th>
<th>Scope of Assessment</th>
<th>Data Sources &amp; Tools</th>
</tr>
</thead>
</table>
| Relevance           | Project Design                                                                         | The extent to which WAAPP 1A activities are suited to the priorities and policies of the country / ECOWAS at the time of formulation  
  ● Did the project design properly address the issues of integration / agricultural productivity eminent in 2008/2012?  
  ● Did the project development objectives remain relevant throughout the project implementation phase, where a number of changes took place in the development scene globally and in Ghana? | ● Protocol  
  ● Logical framework  
  ● Monitoring reports  
  ● Interviews with stakeholders                                                                 |                                                                                                               |
| Effectiveness       | PDOS / outputs - Assessment of performance                                               | The extent to which programme development objectives / activities were attained  
  ● How many and which of the programme development objectives/ activities were attained as planned? | ● Protocol  
  ● Logical framework  
  ● Monitoring reports  
  ● Stakeholder interviews                                                                                      |                                                                                                               |
| Efficiency          | Project Management                                                                     | Measurement of the outputs in relation to the inputs  
  ● Was the project management structure appropriate to the objective and activities of the project?  
  ● Could a different type of intervention lead to similar results at a lower cost?  
  ● Where the funds utilized as planned? | ● Protocol  
  ● Logical framework  
  ● Monitoring reports  
  ● Interviews with stakeholders                                                                                      |                                                                                                               |
| Sustainability      | Outcome                                                                                 | The extent to which benefits of the project are likely to continue after the project funds have been exhausted  
  ● Will the outputs delivered through the projects be sustained by national capacities, after the end of the project duration?  
  ● To what extent did the project have catalytic effects on national actors to engage in further cooperation for the sustenance of the PDO etc  
  ● Has the follow up support after the project duration been discussed and formalized? | ● Interviews with project stakeholders  
  government& donors  
  ● Functional review                                                                                                  |                                                                                                               |
| Partnerships/Integration | Coordination, Harmonization and Simplification                                            | The extent to which the project brings together the relevant stakeholders to achieve the project objectives  
  ● Which partners did the project bring together to promote regional integration in area of agricultural productivity?  
  ● How effective was this partnership with respect to the continuity of the programme?  
  ● Were the resource mobilization/ allocation process processes smooth and in synch with the project requirement as per partner aspirations? | ● Interviews with project stakeholders  
  government& donors  
  ● Monitoring reports                                                                                                    |
**ATTACHMENT 2:**  
**Contact List**

<table>
<thead>
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<td>Takyiwa Elizabeth</td>
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<td>Benya Stephen</td>
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<tr>
<td>Yeboah Kingsley</td>
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</tr>
</tbody>
</table>

58
ATTACHMENT 3:
List of some major documents


2. Competitive Grant Projects granted by CARGS


8. Competitive Agricultural Research Grant Scheme Project, CSIR-WAAPP, Component Three.


ATTACHMENT 4:

Interview guide/Sample Questions

Procurement Officer
1. Planned procurement cycle (in weeks) against actual procurement cycle for each procurement for every year
2. Provide reasons for negative variations
3. Planned cost against actual cost for every procurement on yearly basis
4. Provide reasons for positive variations
5. Key findings of procurement audits on annual basis

Finance Manager
1. Planned expenditures against actual by sub component, budget head, and years
2. Percentage distributions of planned and actual expenditures by sub component, budget head and year
3. Provide reasons for variations both positive and negative
4. Planned disbursement and actual disbursement by source, subcomponent, by year
5. Provide explanations for both positive and negative variations in planned and actual disbursements
6. Provide key audit report findings/recommendations on an annual basis

Monitoring and Evaluation Officer
1. Provide information on planned deadlines for submission of monitoring reports by implementing units against the actual on annual basis
2. Provide information on planned deadlines for submission of monitoring reports to the WB, Steering Committee, CORAF, etc by PMU against the actual on annual basis
3. Provide reasons for the negative variations in 1 and 2 above
4. List at most 4 weaknesses of the monitoring and evaluation arrangements
5. List at most 4 strengths of the monitoring and evaluation arrangements

Efficiency Measures
Component 1
1. Cost for harmonizing each regulatory framework (registration / release procedures; crop protection; etc
2. Average variable costs-improved crop varieties; improved agronomic practices; crop protection and post harvest technologies

Component 2
1. Cost per meeting of the centre of specialization management committee
2. Sunk cost -programmes that were abandoned (due to loss of staff - project on cassava agronomy; sweet potato programmer
3. Average duration of visiting scientist
4. Cost per average duration of visiting scientist
5. Average cost per dissemination of a technology

Component 3
1. Average grantee selection cost
2. Average / range of grant
3. Average approval cycle
4. Research completion rates (as per the deadline set in the grant
proposals)
5. Average cost for dissemination of technologies

Assess the processes and procedures of released technologies whether they conform to sub-regional standards.

- What are the processes for releasing technologies in Ghana?
- What are the procedures for release of technologies in Ghana?
- Which agencies are involved?
- What activities are incorporated in the process?
- What challenges are faced in ensuring/following the process and procedure for technology release?
- What are the advantage of the process and procedures?
- What the disadvantage of the process and procedures?
- Recommendation of improvement?

Assess the effectiveness and efficiency of released technologies ready for dissemination by CARGS and NCOS.

- What forms of handling/packaging are given to technologies (yam, cassava, sweet potatoes, etc) ready for dissemination?
- Do you store technologies ready for dissemination?
- If yes, what is the cost of storage of technologies ready for dissemination?
- Are there some associated losses?
- If yes, quantify per crop variety?
- How are the released technologies distributed to beneficiaries? channels, distribution networks, processes, etc.
- What agencies are involved?
- What are the advantages of the process and procedures distribution?
- What the disadvantages of the process and procedures distribution?
- Are these processes needed appropriate or necessary? Could the process be shortened or augmented?
- Recommendation of improvement?

Measure the level of acceptability of released technologies by end beneficiaries.

- Farmers
  - Have you ever tried the following varieties…………………………………
  - Do you still cultivate …………………………………….? Why and Why not?
  - Compared to other varieties what are the yields per acre?

- Processors
  - What varieties of cassava, cocoyam, yam sweet potatoes etc are most preferred?
  - Why and why not?
  - Comparison of output per variety

Examine the efficiency of improved technologies (including new varieties) that have been released in the country's priority areas and comparative productivity levels attained.

- What is the cost of producing an acre of improved technology (yam, cassava, cocoyam, sweet potato, etc)
- What is the output level per acre of each variety?
- Does it cost high/low to production as compared to other local non-WAAPP varieties? Why and why not?
What are the cost differentials per variety?
Any documentation on production cost-benefit analysis of released varieties?

Identify adopted regulations for the registration of genetic materials and pesticides (according to ECOWAS protocols) that are common to those of Mali and Senegal.

What are the regulations for registration of genetic materials and pesticides in Ghana?
Which agencies are involved?

What are the challenges involved in registering genetic materials and pesticides in Ghana?

Any documents on ECOWAS protocol on regulations for registration of genetic materials and pesticides?

Assess effectiveness of procedures for release of crop varieties in the country and their levels of operational efficiency.

What are the processes and procedure for releasing technologies in Ghana?
Which agencies are involved?
What activities are incorporated in the process?
What challenges are faced in ensuring/following the process and procedure for technology release?
What are the advantage of the process and procedures?
What are the disadvantage of the process and procedures?
Recommendation for improvement

Measure funded project related sub-project compliance with World Bank-triggered environmental and safeguard policies.

Documents on environment and safeguard policies and implementation status

Measure effectiveness and efficiency of disseminating technology

What are the stages involved in disseminating releasing technologies to beneficiaries from CARGS and NCOS?
Which agencies are involved?
By what means are the varieties transferred to beneficiaries?
What are the costs involved in transporting varieties to beneficiaries, if any?
What are the losses incurred during transportation?
What are the advantages of current disseminating process?
What are the disadvantages of current dissemination process?
Is there a better means of disseminating varieties to beneficiaries/farmers?
What challenges are involved in current disseminating system?
In what ways can the current dissemination process be improved?
ATTACHMENT 5:
List of harmonized protocols for bio-efficacy trials developed by Ghana under WAAPP

1. Specific protocol for biological evaluation of insecticides to control the oil palm leaf miner

2. Specific protocol for biological evaluation of insecticides against major pests of vegetables

3. Specific protocol for biological evaluation of insecticides against cocoa (theobroma cacao) pests.

4. Specific protocol for biological evaluation of fungicides to control black sigatoka disease of banana/plantain

5. Specific protocol for biological evaluation of fungicides against mango anthracnose.

6. Specific protocol for biological evaluation of insecticides against sweet pot weevils and sweet pot butterflies of sweet potatoes.

7. Specific protocol for biological evaluation of fungicides against the root rot of cocoyam.

8. Specific protocol for biological evaluation of fungicides against fungal diseases (tuber rot, leaf spot and anthracnose) of cassava.

9. Specific protocol for biological evaluation of insecticides against pests and diseases of yam.

10. Specific protocol for biological evaluation of pesticides to control sorghum, millet and maize stem borers

11. Specific protocol for biological evaluation of pesticides to control sugar cane stem borer pest

12. Specific protocol for biological evaluation of insecticides against fruit flies.

13. Framework protocol for biological evaluation of fungicides and bactericides

14. Framework protocol for biological evaluation of herbicides

15. Framework protocol for biological evaluation of insecticides and acaricides

16. Specific protocol for biological evaluation of pesticides to control sorghum, millet and maize stem borers

17. Specific protocol for biological evaluation of pesticides to control sugar cane stem borer pest

18. Specific protocol for biological evaluation of insecticides against fruit flies.

19. Framework protocol for biological evaluation of fungicides and bactericides

20. Framework protocol for biological evaluation of herbicides

21. Framework protocol for biological evaluation of insecticides and acaricides
ATTACHMENT 6:
List of released technologies/varieties

- 4 high yielding cassava such as CRI-Sika banye (56mt/ha), CRI-Broni bankye (40mt/ha), CRI-Ampong (59mt/ha) and CRI-Otuhia (65mt/ha) released compared to a current national average of 16.01mt/ha (2011).

- 3 cocoyam varieties released, the first of its kind in Africa, namely; CRI-Gye me di (8.2mt/ha), CRI-Akyede (5.2mt/ha) and CRI-Maye yie (7.6mt/ha) compared to current national average of 6.3mt/ha (2011) were bred and released.

- 4 sweet potato varieties were inspected and released on the 18th of December 2012 namely; CRI-‘Patron’ (20mt/ha), CRI-‘Bohye’ (22mt/ha), CRI-‘Ligri’ (22mt/ha) CRI-‘Dzila Danynuie ’(18mt/ha)

- No yam variety have been released under WAAPP, instead existing released varieties such as Kukrupa and Dente are disseminated to producers. These varieties show an average 20mt/ha as against the current yield of 20mt/ha

- Three improved varieties of cocoyam (Xanthosoma sagittifolium, Linn, Schott) released: CSIR-CRI “Gye Me Di” (Trust me), CSIR-CRI”Akyede” (Gift), CSIR-CRI “Ma Aye Yie” (I am better off)
ATTACHMENT 7:
List of grant, budget, amounts disbursed and expected completion period

<table>
<thead>
<tr>
<th>Project title</th>
<th>Budget</th>
<th>Amount disbursed</th>
<th>Start date</th>
<th>Expected end date</th>
</tr>
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<tbody>
<tr>
<td>1.Screening Cassava genotypes for effective management of tuber rot (polyporus sulphurous attacking cassava in Greater Accra Region)</td>
<td>GHC 150,000</td>
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<td>01-Jan-2010</td>
<td>12-Dev-2012</td>
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<td>2.Determining Mineral fertilizer for Yam on Benchmark Soil in Northern and Upper West Regions of Ghana</td>
<td>GHC1 12500</td>
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<td>01-Nov-2009</td>
<td>01-Oct-2012</td>
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<td>3.Integrated Pest Management strategies of field and post harvest practices to expend shelf life of yam</td>
<td>GHC1 09500</td>
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<td>01-Oct-2009</td>
<td>30-Sep-2012</td>
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<td>5.Investigations into the effect of herbicide application on cocoyam production</td>
<td>GHC4 5000</td>
<td></td>
<td>01-May-2009</td>
<td>30-Apr-2012</td>
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<tr>
<td>6.Long term storage of yam tubers under farmers conditions using Gibberellic Acid</td>
<td>GHC3 7500</td>
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<td>01-Sep-009</td>
<td>31-Aug-2012</td>
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<td>7.Developing an integrated nutrient management for yam production in Northern region of Ghana</td>
<td>GHC1 50000</td>
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<td>01-Oct-2009</td>
<td>30-Sep-2012</td>
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<tr>
<td>9.Etomology of a vine browning and die-back disease of water yam (Dioscorea alata) in the Volta region and screening of yam genotypes for resistance to diseases</td>
<td>GHC4 2000</td>
<td></td>
<td>03-Nov-2011</td>
<td>03-Oct-2013</td>
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<td>10.Integrated Pest Management for cassava production to enhance livelihood of farmers in the Western region of Ghana</td>
<td>GHC4 2500</td>
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<td>01-Jan-2012</td>
<td>31-Dec-2012</td>
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<tr>
<td>Project title</td>
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<td>Sekyeredumasi and Wenchi districts of Ghana</td>
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<td>12. Generation of disease free cassava and sweet potato planting material</td>
<td>GHC72000</td>
<td>01-Jun-2009</td>
<td>31-May-2012</td>
<td></td>
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<tr>
<td>13. On-farm evaluation of improved yam (Dioscorea rotundata) genotypes from the International Institute of Tropical Agriculture (IITA) breeding programme</td>
<td>GHC53500</td>
<td>01-May-2009</td>
<td>30-Apr-2012</td>
<td></td>
</tr>
<tr>
<td>18. Yam fertilizer response on some benchmark soil in the interior savanna zone of Ghana: Calibrating the QUEFTS model for yam fertilization in Ghana</td>
<td>GHC60000</td>
<td>01-Feb-2010</td>
<td>31-Mar-2012</td>
<td></td>
</tr>
<tr>
<td>20. Development of value-added convenience product from yam, sweet–potato and cocoyam for urban markets</td>
<td>GHC63500</td>
<td>01-Sep-2010</td>
<td>28-Feb-2012</td>
<td></td>
</tr>
<tr>
<td>21. Effects of climate change on survival and growth of agricultural tree crops in Ghana</td>
<td>GHC10300</td>
<td>01-May-2010</td>
<td>30-Jun-2011</td>
<td></td>
</tr>
<tr>
<td>22. Solar drying technology of cassava and yam and their by-</td>
<td>GHC76000</td>
<td>01-Jul-2010</td>
<td>30-Jun-2013</td>
<td></td>
</tr>
<tr>
<td>Project title</td>
<td>Budget</td>
<td>Amount disbursed</td>
<td>Start date</td>
<td>Expected end date</td>
</tr>
<tr>
<td>------------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>23. Developing appropriate fertilizer management options for sweet potato production in the coastal agro-ecological (central region) of Ghana</td>
<td>GHC75600</td>
<td></td>
<td>01-Apr-2010</td>
<td>31-Mar-2013</td>
</tr>
<tr>
<td>24. Analysis of farmers’ preference for cassava variety traits: Implications for breeding and technology adoption in Ghana</td>
<td>GHC20000</td>
<td></td>
<td>01-Oct-2010</td>
<td>13-Sep-</td>
</tr>
<tr>
<td>25. Promoting efficient uptake of cassava processing technologies for enhanced market access and increased productivity for cassava farmers and processors</td>
<td>GHC16000</td>
<td></td>
<td>01-May-2010</td>
<td>30-Mar-2012</td>
</tr>
<tr>
<td>27. Soil map digitization and report production for soil survey regions and districts in Ghana</td>
<td>GHC30000</td>
<td></td>
<td>01-May-2010</td>
<td>30-Mar-2012</td>
</tr>
<tr>
<td>28. Use of alternative food flour for baking-capacity and capacity building of local bakers and educational institutions in Coastal communities</td>
<td>GHC</td>
<td></td>
<td>01-mar-2011</td>
<td>38-Feb-2012</td>
</tr>
<tr>
<td>29. New product development with root and tuber crops and their bi-products as feed for livestock improvement</td>
<td>GHC30000</td>
<td></td>
<td>01-Mar-2011</td>
<td>28-Feb-2012</td>
</tr>
<tr>
<td>30. Soil facility management in yam production through integration of multipurpose tree as live stake and cover cropping</td>
<td>GHC52035</td>
<td></td>
<td>01-Mar-2010</td>
<td>28-Feb-2012</td>
</tr>
<tr>
<td>31. Development of appropriate condition for dried peper for improved income and sustainable rural development</td>
<td>GHC52500</td>
<td></td>
<td>09-Nov-2011</td>
<td></td>
</tr>
</tbody>
</table>
ATTACHMENT 8:
List of publication (journals (international and Ghana, magazines)


ATTACHMENT 9:
Technology distribution system
Released Technologies
(Planting materials/agronomic practices)

Introduction of WAAPP technologies into Agricultural system

Traditional seed distribution system
Farmers usually use their own seed/
obtain it from neighbours, friends/
from local wholesale market

CARGS/NCOS
(Note Research package
technologies for MoFA to disseminate)

FBO (farmers)
(Through: Community Demos-Farmers learn
from Demos/get varieties to establish individual/groups)

MoFA (DAES/DCS)
(Note DAES- Establish Demos and transfer tech.
through AEAs
Crops Services-
Establish Primary Multiplication Sites at
the Agric Stations)

Some traders at the wholesale market

Farmer (retain own seed and give out (sell) surplus
(Through: Community Demos-
Farmers learn from Demos/get varieties to establish individual/groups)
ATTACHMENT 10:
M&E Structure of WAAPP

- M & E (CORAF)
- PCU/Coord. Unit

M & E (PCU)

- Focal Person (DAES)
  - RAOs/DOs/MIS/AEAs
- Focal Person (DCS)
  - RAOs/Station Mgt/MIS/AEAs
- Focal Person (EPA/PPRS)
  - Field Officers
- Focal Persons (CARGS/Non CARGS)
- M & E - CRI (NCOs)
  - Research Scientists
- Focal Person (SARI)
  - Research Scientists

M & E (CSIR HQ)

- Universities Field staff
ATTACHMENT 11:
Terms of Reference(s)

WEST AFRICA AGRICULTURAL PRODUCTIVITY PROGRAMME (WAAPP 1A)

IMPLEMENTATION COMPLETION REPORT OF WAAPP 1A

Terms of Reference for Research/Social Scientist
## TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>Background</td>
<td>2</td>
</tr>
<tr>
<td>2.0</td>
<td>Objective of Mid-Term Review</td>
<td>2</td>
</tr>
<tr>
<td>3.0</td>
<td>Scope of the Assignment</td>
<td>3-4</td>
</tr>
<tr>
<td>4.0</td>
<td>Expected Outputs/Deliverables</td>
<td>4</td>
</tr>
<tr>
<td>5.0</td>
<td>Consultant’s Input</td>
<td>4</td>
</tr>
<tr>
<td>6.0</td>
<td>Client’s Input</td>
<td>4</td>
</tr>
<tr>
<td>7.0</td>
<td>Financing the ICR</td>
<td>5</td>
</tr>
<tr>
<td>8.0</td>
<td>Timing and Duration of the ICR</td>
<td>5</td>
</tr>
<tr>
<td>9.0</td>
<td>Reporting</td>
<td>5</td>
</tr>
</tbody>
</table>
1.0 BACKGROUND

The World Bank on March 21, 2008 approved an Adaptable Program Loan (APL) credit of 10,100,000.00 SDR (16,321,398.00 USD) for the implementation of the West Africa Agricultural Productivity Program (WAAPP).

The objective of this Support Project is to generate and disseminate improved technologies in the participating countries' top priority areas that are aligned with the region's top priorities, as identified by Central Africa Counsel for Agricultural Research (CORAF). These include roots and tubers in Ghana; rice in Mali; and cereals in Senegal.

The programme has four main components. The first component is enabling conditions for regional cooperation in technology generation and dissemination. This aims at strengthening the mechanisms and procedures for the dissemination of technology, as to allow countries to benefit fully from the regional cooperation in technology generation that is being promoted. This component targets: common regulations related to genetic materials, pesticides and other crop protection products; national registration committees for genetic materials and pesticides in the participating countries; and information system on agricultural technologies and research skills at the regional level. The second programme component is the national centres of specialization; this aims at strengthening the alignment of national priorities with regional priorities within participant countries’ national agricultural research systems (NARS). The third programme component is funding of demand driven technology generation and adoption, which aims at strengthening priority-focused, transparent funding mechanisms for demand-driven agricultural R&D within participating countries. The fourth and final component is the programme coordination, management, monitoring and evaluation. This aims at establishing an effective coordination, management and M&E system at the national and regional levels.

The Ministry of Food and Agriculture (MOFA) and the Council for Scientific and Industrial Research (CSIR) like all other government ministries, departments and agencies (MDA) follows the government system of accounting. This involves the preparation of ministry’s budgets within an overall government guideline, which are consolidated by the Ministry of Finance and submitted to parliament for approval.

2.0 OBJECTIVE OF THE IMPLEMENTATION COMPLETION REPORT

The Implementation Completion Report serves to meet the World Bank project cycle management requirements. The objective of the assignment is to collect and analyse information that assesses the achievements and impact of the project. Among the key tasks include:

- Identify key factors affecting implementation and outcomes with specific focus on (i) preparation, design, and quality of entry; (ii) implementation; (iii) M&E design, implementation and utilization; (iv) safeguards and fiduciary compliance; and (v) thoughts of the consultant on the way forward

- Assess implementation achievements against project development objective by analyzing results achieved at project’s closure and identifying any difficulties and / or
weaknesses, whether they are technical, institutional/organizational or socio-
economical;

- Assess other project outcomes. In particular access its impact on poverty, gender and
  social development.
- Conduct an ex-post financial/economic analysis, similar to the one prepared at
  appraisal, to confirm whether investments made under the program are justified and
  properly implemented, and that they have led to a judicious use of available resources.
- Draw lessons learned from the project’s implementation and document in particular all
  good results, good practices and any possible improvements to be considered in such a
  project.

3.0 SCOPE OF THE ASSIGNMENT

The assignment will entail the collection, review, compilation and verification of information in
project progress reports, in addition to other relevant project monitoring and information
management systems for the borrower and the Bank. The consultant is therefore expected to
undertake field visits to the project sites, consult all project stakeholders including the executing
agency, all implementing agencies/partners, beneficiaries and leaders at local and central level,
civil society and project services providers in Ghana. The consultant will in due course, carry out
the following tasks among others:

- Generally the Research Scientist is expected to assess adequacy and effectiveness of
  Research institutions in terms of the organizational, human resources and logistical
  capacities to undertake the key research functions in addition to any other relevant
  responsibilities.

  Specifically;
  - Assess the processes and procedures of released technologies whether they conform to
    sub-regional standards.
  - Assess the effectiveness and efficiency of released technologies ready for dissemination
    by CARGS and NCOS.
  - Measure the level of acceptability of released technologies by end beneficiaries.
  - Examine the efficiency of improved technologies (including new varieties) that have
    been released in the country’s priority areas and comparative productivity levels
    attained.
  - Identify adopted regulations for the registration of genetic materials and pesticides
    (according to ECOWAS protocols) that are common to those of Mali and Senegal.
  - Assess effectiveness of procedures for release of crop varieties in the country and their
    levels of operational efficiency.
  - Work with the M&E specialist in the conduct of economic analysis of the project
    investments to confirm the efficiency of project interventions
• Assess prospects for cross-border exchange and trade in improved technology.

• Measure funded project related sub-project compliance with World Bank-triggered environmental and safeguard policies.

• Measure effectiveness and efficiency of disseminating technology.

• Identify constraints related to the foregoing and formulate recommendations for solutions in a participatory manner, in addition to cataloguing any prior interventions to address constraints.

The consultant is therefore expected to meet stakeholders’ to corroborate and consolidate findings and recommendations.

4.0 EXPECTED OUTPUTS/DELIVERABLES

The Consultant will coordinate with the consulting M&E Specialist to prepare and submit the ICR report. In addition, the consultant will prepare the proceedings of the stakeholders’ and any other consultative meetings that would have been convened during the course of undertaking the ICR, including a catalogue of photographs that illustrate the achievements of the project and issues that need special attention where applicable.

5.0 CONSULTANT’S INPUTS

The consultant is expected to have:

   Research/social Scientist with a minimum of MSc./M.Phil degree and a field experience of at least 8 years

The total time duration for this assignment shall not exceed Four calendar weeks. The consultant will provide all equipment and logistical facilities required for completion of the assignment including transport.

A counterpart team from WAAPP will be commissioned to work along with the consultant.

6.0 CLIENT’S INPUT

Project Management will facilitate the work of the consultant by making available the necessary documentations.

7.0 FINANCING THE ICR

The ICR would be financed under two separate categories as follows:

• Contract Fees payable to Consultant to cover consultancy charges, travel and accommodation and report writing.
Implementation Completion Report De-brief Session to be funded and organized by WAAPP from its operational budget

8.0 TIMING AND DURATION OF THE ICR

The Implementation Completion Report is tentatively scheduled to commence during the Second week of December 2012 and to be completed within 1-month (4) weeks.

Coordination

It will be responsibility of the Lead Consultant, under the present ToRs, to ensure the overall sharing of the tasks between the two consultants and coordination of work accordingly. The Lead Consultant will have the responsibility of the deliverable vis à vis the Coordination unit.

9.0 REPORTING

The Consultant is expected to coordinate with the consulting M&E Specialist to present a report on finding and achievement within 1-month (4) weeks from the date of commencement of the assignment, to WAAPP management at a de-briefing session with the key stakeholders and the Bank.

The final report, revised in accordance with the outcome of the de-brief session and prepared in conformity with Bank’s format, in addition to other reports of the proceedings and meeting shall be submitted to the WAAPP management for onward transmission to the Bank not later than one (1) week after completion of the de-brief session. Five (5) soft copies and six (6) hard copies of the reports shall be submitted.

To the National WAAPP Coordinator for onward submission to the Hon. Minister of Food and Agriculture, World Bank and the chief Director of MOFA.
WEST AFRICA AGRICULTURAL PRODUCTIVITY PROGRAMME (WAAPP 1A)

IMPLEMENTATION COMPLETION REPORT OF WAAPP 1A

*Terms of Reference for Monitoring & Evaluation Specialist*
## IMPLEMENTATION COMPLETION REPORT OF WAAPP 1

### TERMS OF REFERENCE (TOR)

#### TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>Background</td>
<td>3</td>
</tr>
<tr>
<td>2.0</td>
<td>Objective of Mid-Term Review</td>
<td>3</td>
</tr>
<tr>
<td>3.0</td>
<td>Scope of the Assignment</td>
<td>4</td>
</tr>
<tr>
<td>4.0</td>
<td>Expected Outputs/Deliverables</td>
<td>5</td>
</tr>
<tr>
<td>5.0</td>
<td>Consultant’s Input</td>
<td>5</td>
</tr>
<tr>
<td>6.0</td>
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<td>5</td>
</tr>
<tr>
<td>7.0</td>
<td>Financing the Review</td>
<td>6</td>
</tr>
<tr>
<td>8.0</td>
<td>Timing and Duration of the MTR</td>
<td>6</td>
</tr>
<tr>
<td>9.0</td>
<td>Reporting</td>
<td>6</td>
</tr>
</tbody>
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- Identify key factors affecting implementation and outcomes with specific focus on (i) preparation, design, and quality of entry; (ii) implementation; (iii) M&E design, implementation and utilization; (iv) safeguards and fiduciary compliance; and (v) thoughts of the consultant on the way forward

- Assess implementation achievements against project development objective by analyzing results achieved at project’s closure and identifying any difficulties and / or
weaknesses, whether they are technical, institutional/organizational or socio-
    economical;
  - Assess other project outcomes. In particular access its impact on poverty, gender and
    social development.
  - Conduct an ex-post financial/economic analysis, similar to the one prepared at
    appraisal, to confirm whether investments made under the program are justified and
    properly implemented, and that they have led to a judicious use of available resources.
  - Draw lessons learned from the project’s implementation and document in particular all
    good results, good practices and any possible improvements to be considered in such a
    project;

12.0 SCOPE OF THE ASSIGNMENT

The assignment will entail the collection, review, compilation and verification of information in
project progress reports, in addition to other relevant project monitoring and information
management systems for the borrower and the Bank. The consultant is therefore expected to
undertake field visits to the project sites, consult all project stakeholders including the executing
agency, all implementing agencies/partners, beneficiaries and leaders at local and central level,
civil society and project services providers in Ghana. The consultant will in due course, carry out
the following tasks among others:

  - Verify quality and consistency, of annual work plans and budgets/disbursement
    schedule and procurement plans, with the appraisal report and adherence to plans and
    budgets during implementation.
  - Assess physical progress of project activities and out puts
  - Review implementation and effectiveness of cross-cutting interventions (environmental
    mitigation measures, HIV/AIDS and livestock related diseases.
  - Assess the quantity and timeliness of project inputs from the Bank and Government.
  - Assess the current financial performance of the project, in addition to cost
    effectiveness.
  - Establish whether project objectives continue to be relevant and assess the status of
    risks and assumptions.
  - Assess the performance of implementation partners/institutions.
  - Review performance of project contractors and/or service providers in terms of
    quantity, quality and value for money.
  - Assess adequacy and effectiveness of project management in terms of the
    organizational, human resources and logistical capacities to undertake the key functions
    of general administration and coordination of project activities, planning, financial
    management, procurement and contract management, and monitoring and evaluation,
    in addition to any other relevant responsibilities.
  - Together with the Consulting Social Scientist conduct economic analysis of the project
    investments to confirm the efficiency of project interventions
  - Assess the performance of the Bank with respect to the obligations and responsibilities
    in implementing the project.
  - Assess the adherence to credit conditions and covenants by the Bank and the borrower.
  - Identify constraints related to the foregoing and formulate recommendations for
    solutions in a participatory manner, in addition to cataloguing any prior interventions to
address constraints. The consultant is therefore expected to meet stakeholders’ to corroborate and consolidate findings and recommendations.

13.0 EXPECTED OUTPUTS/DELIVERABLES

The consultant will coordinate with the consulting social scientist to prepare and submit the ICR report. In addition, the consultant will prepare the proceedings of the stakeholders’ and any other consultative meetings that would have been convened during the course of undertaking the ICR, including a catalogue of photographs that illustrate the achievements of the project and issues that need special attention where applicable.

14.0 CONSULTANT’S INPUTS

The consultant is expected to have:

- Monitoring and Evaluation specialist with proven track record in project design, monitoring and evaluation, with a minimum of MSc./M.Phil degree and a field experience of at least 12 years.

The total time duration for this assignment shall not exceed Four calendar weeks. The consultant will provide all equipment and logistical facilities required for completion of the assignment including transport.

A counterpart team from WAAPP will be commissioned to work along with the consulting team.

15.0 CLIENT’S INPUT

Project Management will facilitate the work of the consultant by making available the necessary documentations.

16.0 FINANCING THE ICR

The ICR would be financed under two separate categories as follows:

- **Contract Fees** payable to Consultant to cover consultancy charges, travel and accommodation and report writing
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Coordination
It will be responsibility of the Lead Consultant, under the present ToRs, to ensure the overall sharing of the tasks between the two consultants and coordinate of work accordingly. The Lead Consultant will have the responsibility of the deliverable vis à vis the Project Coordination Unit.

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The Consultant is expected with the consulting Social Scientist to present a report on finding and achievement within 1 month (4) weeks from the date of commencement of the assignment, to WAAPP management at a de-briefing session with the key stakeholders and the Bank.

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