**The World Bank**

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Report No: PAD5571

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT PAPER

ON A

PROPOSED ADDITIONAL GRANT

IN THE AMOUNT OF SDR 30.1 MILLION
(US$40 MILLION EQUIVALENT)

TO THE

INTERNATIONAL CENTER FOR TROPICAL AGRICULTURE (CIAT)

FOR THE

ACCELERATING IMPACTS OF CGIAR CLIMATE RESEARCH FOR AFRICA PROJECT

February 14, 2024

Agriculture and Food Global Practice
Western and Central Africa Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective January 31, 2024)

| Currency Unit | = | |
|---|---|---|
| SDR 0.75 | = | US$1 |
| US$1.33 | = | SDR 1 |

FISCAL YEAR
January 1 - December 31

| | |
|---|---|
| Regional Vice President: | Ousmane Diagana |
| Country Director: | Boutheina Guermazi |
| Regional Director: | Chakib Jenane |
| Practice Manager: | Abel Lufafa |
| Task Team Leader: | Katie Kennedy Freeman |

# ABBREVIATIONS AND ACRONYMS

| | |
|---|---|
| AEZ | Agroecological Zones |
| AF | Additional Financing |
| AGRHYMET | Regional Training and Application Center in Agrometeorology and Operational Hydrology |
| AICCRA | Accelerating Impacts of CGIAR Climate Research for Africa |
| AM | Accountability Mechanism |
| ASARECA | Association for Strengthening Agricultural Research in Eastern and Central Africa |
| BCR | Benefit - Cost Ratio |
| BMGF | Bill & Melinda Gates Foundation |
| CCAFS | CGIAR Research Program on Climate Change, Agriculture and Food Security |
| CCARDESA | Centre for Coordination of Agricultural Research and Development for Southern Africa |
| CGIAR | Consultative Group on International Agricultural Research |
| CIAT | International Center for Tropical Agriculture |
| CIMMYT | International Wheat and Maize Improvement Center |
| CIS | Climate Information Services |
| COP | Conference of Parties |
| CORAF | West and Central African Council for Agricultural Research and Development |
| CRMA | Climate Risk Management in Agriculture |
| CRMAE | Climate Risk Management in Agricultural Extension |
| CSA | Climate-Smart Agriculture |
| CV | Coefficient of Variation |
| E&S | Environmental and Social |
| ECOWAS | Economic Community of West African States |
| EFA | Economic and Financial Analysis |
| EMBE | Enabling Market Intelligence and Building Engagement |
| ESRM | Environment and Social Risk Management |
| FAO | Food and Agriculture Organization of the United Nations |
| FARA | Forum for Agricultural Research in Africa |
| FM | Financial Management |
| FSRP | Food Systems Resilience Program |
| GDP | Gross Domestic Product |
| GHACOF | Greater Horn of Africa Climate Outlook Forum |
| GHG | Greenhouse Gas |
| GRS | Grievance Redress Service |
| IBRD | International Bank for Reconstruction and Development |
| ICRAF | World Agroforestry Center |
| ICRISAT | International Crops Research Institute for the Semi-Arid Tropics |
| ICPAC | Climate Prediction and Applications Centre |
| IDA | International Development Association |
| IFPRI | International Food Policy Research Institute |
| IFR | Interim Financial Report |
| IGAD | Intergovernmental Authority on Development |
| IITA | International Institute of Tropical Agriculture |
| ILRI | International Livestock Research Institute |
| IPF | Investment Project Financing |
| IPI | Intermediate Progress Indicator |

| | |
|---|---|
| IRR | Internal Rate of Return |
| ISFM | Integrated Soil Fertility Management |
| IWMI | International Water Management Institute |
| LMP | Labor Management Procedures |
| M&E | Monitoring and Evaluation |
| MIA | Arid-semiarid irrigated mixed crop-livestock systems |
| MRA | Arid-semiarid rainfed mixed crop-livestock systems |
| MRH | Humid-subhumid rainfed mixed crop-livestock systems |
| MRT | Tropical highland rainfed mixed crop-livestock systems |
| NAIPs | National Agricultural Investment Plans |
| NARES | National Agricultural Research and Extension Systems |
| NDC | Nationally Determined Contribution |
| NPV | Net Present Value |
| OCP | *Office Chérifien des Phosphates* |
| PDO | Project Development Objective |
| PPAs | Partnership Performance Agreements |
| PRESASS | Regional Climate Outlook Forum For Sudano-Sahelian Africa (*Prévision Saisonnière pour zone soudano-sahélienne et pour le bassin de la Volta*) |
| R&D | Research and Development |
| RUFORUM | Regional Universities Forum for Capacity Building in Agriculture |
| SDR | Special Drawing Rights |
| SEP | Stakeholders Engagement Plan |
| SMEs | Small and Medium Enterprises |
| SSA | Sub-Saharan Africa |
| USD | United States Dollar |
| WB | World Bank |

**Western and Central Africa**

**Accelerating Impacts of CGIAR Climate Research for Africa Additional Financing**

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## BASIC INFORMATION – PARENT (Accelerating Impacts of CGIAR Climate Research for Africa (AICCRA) - P173398)

| Country | Product Line | Team Leader(s) | | |
|---|---|---|---|---|
| Western and Central Africa | IBRD/IDA | Katie Kennedy Freeman | | |
| **Project ID** | **Financing Instrument** | **Resp CC** | **Req CC** | **Practice Area (Lead)** |
| P173398 | Investment Project Financing | SAWA4 (10130) | AFWRI (7960) | Agriculture and Food |

Implementing Agency: International Institute of Tropical Agriculture (IITA), International Livestock Research Institute (ILRI)

| Is this a regionally tagged project? |
|---|
| No |

| Bank/IFC Collaboration |
|---|
| No |

| Approval Date | Closing Date | Expected Guarantee Expiration Date | Environmental and Social Risk Classification |
|---|---|---|---|
| 10-Dec-2020 | 31-Jul-2024 | | Moderate |

### Financing & Implementation Modalities

| | |
|---|---|
| [ ] Multiphase Programmatic Approach [MPA] | [ ] Contingent Emergency Response Component (CERC) |
| [ ] Series of Projects (SOP) | [ ] Fragile State(s) |
| [ ] Performance-Based Conditions (PBCs) | [ ] Small State(s) |
| [ ] Financial Intermediaries (FI) | [ ] Fragile within a Non-fragile Country |
| [ ] Project-Based Guarantee | [ ] Conflict |
| [ ] Deferred Drawdown | [ ] Responding to Natural or Man-made disaster |
| [ ] Alternate Procurement Arrangements (APA) | [ ] Hands-on Expanded Implementation Support (HEIS) |

### Development Objective(s)

The Project Development Objective is to strengthen the capacity of targeted CCAFS (CGIAR Research Program on Climate Change, Agriculture and Food Security) partners and stakeholders, and to enhance access to climate information services and validated climate-smart agriculture technologies in IDA-eligible countries in Africa.

### Ratings (from Parent ISR)

| | Implementation | | | | | Latest ISR |
|---|---|---|---|---|---|---|
| | 19-Oct-2021 | 11-Apr-2022 | 07-Oct-2022 | 14-Mar-2023 | 28-Sep-2023 | 14-Feb-2024 |
| Progress towards achievement of PDO | S | S | S | HS | HS | HS |
| Overall Implementation Progress (IP) | S | S | S | HS | HS | HS |
| Overall ESS Performance | S | MS | MS | MS | HS | HS |
| Overall Risk | M | M | M | M | M | M |
| Financial Management | S | S | S | S | S | S |
| Project Management | S | S | S | S | S | S |
| Procurement | S | S | S | S | S | S |
| Monitoring and Evaluation | S | HS | HS | HS | HS | HS |

### BASIC INFORMATION – ADDITIONAL FINANCING (Accelerating Impacts of CGIAR Climate Research for Africa Additional Financing - P181150)

| Project ID | Project Name | Additional Financing Type | Urgent Need or Capacity Constraints |
|---|---|---|---|
| P181150 | Accelerating Impacts of | Scale Up | No |

| | | | |
|---|---|---|---|
| | CGIAR Climate Research for Africa Additional Financing | | |
| Financing instrument<br>Investment Project Financing | Product line<br>IBRD/IDA | Approval Date<br>08-Mar-2024 | |
| Projected Date of Full Disbursement<br>27-Feb-2026 | Bank/IFC Collaboration<br>No | | |
| Is this a regionally tagged project?<br>No | | | |

### Financing & Implementation Modalities

| | |
|---|---|
| [ ] Series of Projects (SOP) | [ ] Fragile State(s) |
| [ ] Performance-Based Conditions (PBCs) | [ ] Small State(s) |
| [ ] Financial Intermediaries (FI) | [ ] Fragile within a Non-fragile Country |
| [ ] Project-Based Guarantee | [ ] Conflict |
| [ ] Deferred Drawdown | [ ] Responding to Natural or Man-made disaster |
| [ ] Alternate Procurement Arrangements (APA) | [ ] Hands-on Expanded Implementation Support (HEIS) |
| [ ] Contingent Emergency Response Component (CERC) | |

### Disbursement Summary (from Parent ISR)

| Source of Funds | Net Commitments | Total Disbursed | Remaining Balance | Disbursed |
|---|---|---|---|---|
| IBRD | | | | % |
| IDA | 60.00 | 57.03 | 0.01 | 100 % |
| Grants | | | | % |

**PROJECT FINANCING DATA – ADDITIONAL FINANCING (Accelerating Impacts of CGIAR Climate Research for Africa Additional Financing - P181150)**

## FINANCING DATA (US$, Millions)

### SUMMARY (Total Financing)

| | Current Financing | Proposed Additional Financing | Total Proposed Financing |
|---|---|---|---|
| **Total Project Cost** | 60.00 | 40.00 | 100.00 |
| **Total Financing** | 60.00 | 40.00 | 100.00 |
| **of which IBRD/IDA** | 60.00 | 40.00 | 100.00 |
| **Financing Gap** | 0.00 | 0.00 | 0.00 |

### DETAILS - Additional Financing

**World Bank Group Financing**

| | |
|---|---|
| International Development Association (IDA) | 40.00 |
| IDA Grant | 40.00 |

### IDA Resources (in US$, Millions)

| | Credit Amount | Grant Amount | SML Amount | Guarantee Amount | Total Amount |
|---|---|---|---|---|---|
| **Western and Central Africa** | 0.00 | 40.00 | 0.00 | 0.00 | 40.00 |
| Regional | 0.00 | 40.00 | 0.00 | 0.00 | 40.00 |
| **Total** | **0.00** | **40.00** | **0.00** | **0.00** | **40.00** |

## COMPLIANCE

### Policy

Does the project depart from the CPF in content or in other significant respects?

[ ] Yes [✓] No

Does the project require any other Policy waiver(s)?

[✓] Yes [ ] No

Explanation

A waiver is required for Bank Policy – Financial Terms and Conditions of Bank Financing (the "Policy")– Section III paragraph 2(b)(i)(C)(1) in connection with the proposed AICCRA Additional Financing (AF). The AICCRA parent project previously received a similar waiver on December 10, 2020. This request is submitted pursuant to Bank Policy, "Operational Policy Waivers," and Bank Procedure, "Operational Policy Waivers and Waivers of Other Operational Requirements." Concurrence for this Waiver was received by the OPCS Vice President on January 24, 2024.

Has the waiver(s) been endorsed or approved by Bank Management?

Approved by Management [ ] Endorsed by Management for Board Approval [✓] No [ ]

Explanation

This waiver was Cleared/concurred/advised: by the Senior Vice President and General Counsel, LEGVP, Managing Director and Chief Financial Officer, MDCFO, Ousmane Diagana, Regional Vice President, AFW, Chakib Jenane, Regional Director, SAWDR, Boutheina Guermazi, Director, AFWRI. Final Concurrence for this Waiver was received by the OPCS Vice President on January 24, 2024.

### Environmental and Social Standards Relevance Given its Context at the Time of Appraisal

| E & S Standards | Relevance |
|---|---|
| Assessment and Management of Environmental and Social Risks and Impacts | Relevant |
| Stakeholder Engagement and Information Disclosure | Relevant |
| Labor and Working Conditions | Relevant |
| Resource Efficiency and Pollution Prevention and Management | Relevant |
| Community Health and Safety | Relevant |
| Land Acquisition, Restrictions on Land Use and Involuntary Resettlement | Not Currently Relevant |
| Biodiversity Conservation and Sustainable Management of Living Natural Resources | Not Currently Relevant |
| Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities | Relevant |
| Cultural Heritage | Not Currently Relevant |
| Financial Intermediaries | Not Currently Relevant |

**NOTE**: For further information regarding the World Bank's due diligence assessment of the Project's potential environmental and social risks and impacts, please refer to the Project's Appraisal Environmental and Social Review Summary (ESRS).

## INSTITUTIONAL DATA

### Practice Area (Lead)

Agriculture and Food

### Contributing Practice Areas

### Climate Change and Disaster Screening

This operation has been screened for short and long-term climate change and disaster risks

## PROJECT TEAM

### Bank Staff

| Name | Role | Specialization | Unit |
|---|---|---|---|
| Katie Kennedy Freeman | Team Leader (ADM Responsible) | Team Leader | SAWA4 |
| Ibrah Rahamane Sanoussi | Procurement Specialist (ADM Responsible) | Procurement Specialist | EAWP1 |
| Josue Akre | Financial Management Specialist (ADM Responsible) | Financial Management Specialist | EAWG1 |
| Eloise Sophie Fluet | Social Specialist (ADM Responsible) | Social Specialist | SAWS4 |
| Ruma Tavorath | Environmental Specialist (ADM Responsible) | Environmental Specialist | SAWE4 |
| Aissatou Seck | Counsel | Councel | LEGAM |
| Bharti Solanky | Environmental Specialist | Environmental Specialist | CEGIA |
| Edith Ruguru Mwenda | Counsel | Councel | LEGAM |
| George Amoasah | Environmental Specialist | Environmental Specialist | SAWE4 |
| Ines Melissa Emma Attoua Etty | Team Member | Finance Officer | WFACS |
| Ioannis Vasileiou | Team Member | Team Member | SAGGL |
| Loraine Ronchi | Team Member | Team Member | SAGDR |
| Nikolai Alexei Sviedrys Wittich | Procurement Team | Procurement Specialist | EAWP2 |
| Waleska Magalhaes Pedrosa | Team Member | Legal Analyst | LEGAM |

### Extended Team

| Name | Title | Organization | Location |
|---|---|---|---|

## I. BACKGROUND AND RATIONALE FOR ADDITIONAL FINANCING

***Background***

1. **This Project Paper seeks the approval of the World Bank Board of Directors to provide an International Development Association (IDA) grant in the amount of US$40 million as Additional Financing (AF) to the Accelerating Impacts of CGIAR (Consultative Group on International Agricultural Research) Climate Research for Africa (AICCRA) project.** This would be the first AF to the project and would be allocated to the International Center for Tropical Agriculture (CIAT). The proposed AF would go towards validating additional climate-smart agriculture (CSA) technologies and methods and making these available for use by AICCRA partners and stakeholders. The AICCRA project was approved on December 10, 2020, and became effective on August 6, 2021. The Project Development Objective (PDO) is to strengthen the capacity of targeted CGIAR partners and stakeholders, and to enhance access to climate information services (CIS) and validated CSA technologies in IDA-eligible countries in Africa. The project is organized around three technical components as summarized below:

**Component 1: Knowledge Generation and Sharing (US$17.4 million equivalent):** This component supports generation and sharing of knowledge products and tools designed to address critical gaps in the design and provision of agricultural climate and soil health and fertility services, enables climate-informed investment planning, and contributes to the design of policies to promote uptake of CSA practices at the regional, sub-regional and national levels.

**Component 2: Strengthening Partnerships for Delivery (US$13.2 million equivalent):** Support under this component goes towards strengthening the capacities of key regional and national institutions in Sub-Saharan Africa (SSA) along the research-to-development continuum for anticipating climate effects and accelerating identification, prioritization, and uptake of best-bet adaptive measures.

**Component 3: Validating Climate-Smart Agriculture Innovations through Piloting (US$23.7 million equivalent):** Under this component, the project supports testing and validation of CSA technologies in research stations and in farmers' fields; linking of validated CSA technology packages to technology transfer systems; and improving access by farmers and other value chain actors to climate-informed agricultural advisory services so as to inform decision-making about choice of technology and enterprise management.

**Component 4: Project Management (US$5.7 million equivalent):** This component supports day-to-day implementation, coordination, supervision and overall communication and management (including, procurement, financial management (FM), monitoring and evaluation (M&E), carrying out of audits and reporting) of project activities.

2. **Both progress towards achievement of the PDO and overall implementation progress are rated Highly Satisfactory.** The number of AICCRA partners and stakeholders in the project area who are increasingly accessing enhanced climate information services and/or validated CSA technologies has increased from a baseline of zero at appraisal to 76 and has already surpassed the end of project target of 60. The total number of AICCRA beneficiaries (predominantly farmers) in the project area who are increasingly accessing enhanced climate information services and/or validated CSA technologies now stands at 2,960,433 (1,142,168 of whom are women), almost double the number expected by the end of the project. These services and technologies have helped farmers to increase their yields, incomes, and resilience. For example, rice farmers using recommendations generated by the project had on average, 0.9t higher yield per hectare and US$320 higher income per hectare than their peers without access to

the recommendations. Additionally, the number of enhanced climate information services and/or validated CSA technologies originating in one SSA country and made accessible in other SSA countries has reached 31 compared to an end of project target of 6, a more than 500 percent increase relative to the target. AICCRA has also added value to the World Bank portfolio, including providing inputs into project designs (e.g. for the Food Systems Resilience Program Phase III – P180244) and implementation support (e.g. to the Kenya Agriculture and Livestock Research Organization under P176758) -that resulted in the upgrading of the climate information system previously financed by the World Bank. Financial Management and Procurement performance are both rated Satisfactory, while Safeguard performance is rated Highly Satisfactory. As of December 12, 2023, disbursement stood at US$57.03 million (99.99 percent).

***Rationale***

3. **Agriculture is and will continue to be of utmost importance in Africa due to its significant impact on food security, economic development, and poverty reduction.** Yet, performance of the sector continues to be sub-optimal. For example, partly due to limited production and productivity, the number of people in need of food and nutritional assistance on the continent has risen from around 53.2 million in 2019 to over 100 million people in 2023. In West Africa alone, during the lean season of June-August 2023, about 42.5 million people were estimated to be in food crisis or emergency (i.e., Integrated Food Security Phase Classification 3+)[1]. In general, climate variability, including extreme events such as droughts and floods, accounts for among the most severe impacts in the sector. Climate change further exacerbates climate variability and poses serious threats to crop productivity in many countries in the region that are already food insecure, thus exerting additional pressures on food security[2]. Further significant climate change- induced productivity losses are projected across Africa, hitting West Africa the most and affecting the most important crops for smallholders. Major climate change related risks include changes in temperature, precipitation patterns, severity and frequency of extreme weather events, and the ways that pests and diseases affect crops and livestock. Climate change as it is projected, will reduce crop yields by 8 percent on average for all of Africa by 2050, including reductions of 11 to 15 percent on average for West, Central and Southern Africa[3]. The impact is projected to be highest in maize, millet, sorghum, and wheat, which are key food security crops in many countries. Climate change and variability also affect productivity in Africa's livestock sector, influencing water scarcity that in turn impacts the productivity of pastures, yields of milk and meat, and the incidence of diseases.

4. **Addressing these climate-related challenges and strengthening the resilience of African agriculture will depend critically on the ability of governments and their partners to scale-up actions to improve climate risk management and climate change adaptation of Africa's food systems.** Key among these actions will be the generation of appropriate climate information services (CIS) and CSA technologies and innovations - as public goods - and facilitating their adoption across relevant segments of agriculture value chains. CIS tools and practices have seen rapid development over the past two decades and have been a focus of numerous programs and initiatives, particularly in the agricultural sector. At this stage there exists a considerable body of evidence demonstrating the potential of targeted and tailored CIS combined with CSA practices and technologies, to enhance climate resilience and improve agricultural risk management practices. Recent developments also point to increasing interest in climate

[1] Cadre Harmonise 2024, https://www.ipcinfo.org/ch/
[2] Climate-Smart Agriculture Profiles (CIAT and World Bank); https://ccafs.cgiar.org/resources/publications/csa-country-profiles
[3] Intergovernmental panel on climate change (IPCC) 2022, https://www.ipcc.ch/report/ar6/wg2/chapter/chapter-9/

change adaptation in Africa's agriculture. Indeed, pledges at COP 28 demonstrate the emerging primacy of this agenda and the growing consensus for the need to identify successful and efficient pathways to scale-up innovation for climate change adaptation. However, given the generally low current levels of financing for innovation and generation of both CSA and CIS technologies across Africa (including support through the parent project), even if a significant share of the above pledges were to materialize, the uncovered gaps would still be enormous. Financing for example is still needed to fund continuous innovation and to validate more technologies, so these become available for use, hence a clear need for continued assistance to Africa to increase CSA technology and CIS generation and their use by farmers. This continued need for generation and use of CSA and CIS in support of climate change adaptation of Africa's food systems provides a rationale for this additional financing (AF) to the ongoing AICCRA project.

## II. DESCRIPTION OF ADDITIONAL FINANCING

5. **The AF will target the same six focus countries as the parent project – Zambia, Kenya, Ethiopia, Ghana, Senegal and Mali.** These six target countries were selected to represent three agro-ecological zones in Africa, among the most vulnerable in the world to the impacts of climate change: Western African and Sahelian drylands, Eastern African dry lowlands to highlands, and Southern African drylands. Compared to the parent project, the AF will increase spill-over impacts on additional countries in Africa. The AF will finance the scaling-up of parent project activities across all project components, working with select CGIAR centers through the already established mechanism of Partnership Performance Agreements (PPA)[4]. The AF will also finance the establishment of a Regional Hub for Fertilizer and Soil Health in West Africa as a mechanism to improve long-term soil health and climate resilience across the sub-region. The scale-up reflects the ambition to provide more validated technologies to government programs and an emphasis on partnerships with regional organizations to enable them to better serve their beneficiaries and member countries.

6. ***Changes to PDO and key performance indicators:*** The original PDO statement *"to strengthen the capacity of targeted CGIAR partners and stakeholders, and to enhance access to climate information services and validated climate-smart agriculture technologies in IDA-eligible countries in Africa"* will be changed. While the overall intent of the project remains unchanged, the proposal is to revise the wording of the PDO to reflect an increased focus on the use of CSA and CIS by the ultimate beneficiaries, which further reenforces the outcome orientation of the project. The restated PDO is thus *"to strengthen the capacity of governments, regional organizations, farmers and other relevant stakeholders and enhance access to—**and use[5] of**—climate information services and validated climate-smart agriculture technologies in IDA- eligible countries in Africa."* In this context, a new PDO indicator is also proposed to assess project achievement with respect to "use" of CIS and validated CSA technologies. This new indicator is: *"number of beneficiaries in the project area that are using enhanced climate information services and/or validated climate-smart agriculture technologies"*. All other PDO-level indicators will be unchanged as they are still relevant to the proposed scale-up, but targets for these indicators will be changed to reflect the increased scale of the project (see Table 2 indicators, and the updated Results Framework) resulting from the AF.

7. ***Changes to project activities and costs:*** Component 1 (Knowledge Generation and Sharing) costs

[4] A PPA is a contract between the AICCRA project and a CGIAR center or a regional or local organization to deliver capacity building, technical assistance and/or resources to national and regional entities.
[5] Use is defined in the Results Framework and the Project Implementation Manual.

will increase by US$13.20 million. The additional resources will mainly go towards scaling-up the same set of activities as currently designed under the parent project, including: (i) strengthening provision of agro-climatic services in East, South and West Africa by national and regional agricultural and meteorological agencies and CSA investment planning by continental and regional institutions and national Ministries, Departments and Agencies and private firms; and (ii) supporting provision of soil health and fertility services in East, South and West Africa. The AF will however increase the focus on gender-responsive climate agro-climatic services and based on requests from national partners and key stakeholders, on just-in-time policy-relevant knowledge products, and tailoring of knowledge products and tools, including those that can help national governments and other stakeholders track adaptation progress related to CSA/CIS implementation.

8. The AF will also extend CGIAR collaboration to other relevant World Bank-financed operations, including a dedicated support mechanism for task teams in target countries to provide technical ballast to project implementation as well as a CGIAR-backed technical assistance platform that would be available to clients and tasks teams, throughout the project cycle. Among others, this would include assistance on policy-relevant science for the design of World Bank operations. Finally, under this component, the AF will support the West Africa Fertilizers and Soil-Health Roadmap[6] through establishment of a Regional Hub for Fertilizers and Soil Health as a mechanism to strengthen soil health monitoring, research and other related services necessary to build the long-term resilience of soils in West Africa. The hub will be established at the International Institute for Tropical Agriculture (IITA) and will serve as the regional leader on soil information and dissemination, soil fertility knowledge management and sharing, agronomic recommendations, capacity development, policy support, advocacy and awareness creation, and collective resource mobilization. The AF will finance the provision of goods, consulting services, non-consulting services, training and workshops, operating costs and payment of staff salaries for the purpose. Annex 3 provides more information and background on the Hub.

9. The cost of Component 2 (Strengthening Partnerships for Delivery) will increase by US$11.00 million, all of which will go towards scaling-up parent project support to strengthening the capacities of key regional and national institutions in SSA along the research-to-development continuum for anticipating climate effects and accelerating identification, prioritization, access and use of best-bet adaptive measures. The focus will continue being on: (i) strengthening analytical, priority setting and stakeholder engagement capacities of regional and sub-regional institutions through enhancing collaboration among Africa-wide and regional institutions, to generate relevant and inclusive knowledge products, tools, advisory services, and educational and training curricula; and (ii) strengthening partnerships for sustained delivery and use of inclusive agro-climatic services in East, South and West Africa. Based on need as assessed during implementation, there will be potential to launch an additional number of partnerships with the additional resources. The AF will also place greater emphasis on: (i) technical assistance and capacity building to existing partners, especially key regional institutions; (ii) strengthening established data platforms, particularly with relevant CIS and CSA decision support tools; (iii) promoting use of information in decision making; (iv) training-of-trainer approaches (with support to downstream training efforts); (v) supporting curriculum development in CIS and CSA within university, research and extension networks; (vi) building partner capacity in gender- and socially-inclusive

[6] In 2023, ECOWAS member countries, endorsed the “Fertilizers and Soil-Health Roadmap for West Africa and the Sahel: Investing in the Future by Nourishing the Soil” to guide soil health. One of the actions of the road map calls for implementation and coordination of subregional programs for the continuous monitoring of soil fertility and soil health with national and regional research bodies through the establishment of a regional hub.

approaches; and (vii) supporting regional organizations around soil health and fertility agenda.

10. An additional US$12.00 million in AF resources will be committed to Component 3 (Validating Climate-Smart Agriculture Innovations through Piloting) for incremental work to support testing and validation (including gender and social inclusion) of CSA technologies in research stations and in farmers' fields; linking of validated CSA technology packages to technology transfer systems; and improving access by farmers and other value chain actors to climate-informed agricultural advisory services so as to inform decision-making about choice of technology and enterprise management. The AF will: (i) place a stronger focus on combined CSA/CIS bundles; (ii) further accelerate the validation of technologies; (iii) promote access and use of gender-smart CSA/CIS bundles; (iv) increase cataloging of validated CSA/CIS bundles at the continental scale; (v) place an increased focus on developing and implementing scaling strategies to go beyond validating and piloting the interventions; (vi) place additional focus on informing public and private policy and investment decisions; and (vii) decrease focus on developing CSA investment plans. In line with the revised PDO, significant effort will go towards facilitating the use of CSA and CIS by the ultimate beneficiaries.

11. Finally, US$3.80 million of the AF will go towards Component 4 (Project Management) to defray the costs of day-to-day implementation, coordination, supervision and overall communication and management (including, procurement, financial management (FM), monitoring and evaluation (M&E), carrying out of audits and reporting) of project activities and results. Table 1 below shows the revised project costs.

**Table 1: Revised project costs**

| Component | Costs (US$ million) | | |
|---|---|---|---|
| | Original | Changes with AF | Revised |
| 1. Knowledge Generation and Sharing | 17.40 | 13.20 | 30.60 |
| 2. Strengthening Partnerships for Delivery | 13.20 | 11.00 | 24.20 |
| 3. Validating Climate-Smart Agriculture Innovations through piloting | 23.70 | 12.00 | 35.70 |
| 4. Project Management | 5.70 | 3.80 | 9.50 |
| Total | 60.00 | 40.00 | 100.00 |

12. The Bill & Melinda Gates Foundation intends to commit, subject to standard internal Foundation review and approval processes, US$18.8 million in parallel financing in support of investments that help catalyze AICCRA impact. Subject to such approval, the investments associated with this commitment could comprise awards of up to US$8.3 million made to CIAT, US$4 million to the Ethiopian Agricultural Transformation Institute as well as US$3.5 million to the International Wheat and Maize Improvement Center (CIMMYT) and other partners as parallel support complementary to new Soil Fertility and Health Hub to be based at IITA. In addition, *Office Chérifien des Phosphates* (OCP) will provide US$5 million in parallel financing to support the Soil Fertility and Health Hub. Annex 5 describes these parallel financings in detail.

13. ***Results Framework:*** As indicated earlier, two new PDO level indicators are proposed. At the intermediary level, new indicators are added to capture new activities (those related to establishment of the Hub), others are reworded to reflect a changed focus (e.g., enhancing the gender focus towards CIS and CIS reaching farmers). Additionally, indicator targets have been adjusted to reflect the scale-up of activities and enhanced priorities. The below table shows new and revised indicators at the PDO level and new or reformulated indicators at the intermediary level.

**Table 2: Changes to key PDO Level and Select Intermediary Results Indicator Targets**

| Indicator | Original Target | Revised target |
|---|---|---|
| PDO-level (Outcome) Indicators | | |
| PDO 2: Beneficiaries in the project area are increasingly accessing enhanced climate information services and/or validated climate-smart agriculture technologies. **REVISED** | 1,500,000 | 5,200,000 |
| PDO 3: Beneficiaries in the project area that are using enhanced climate information services and/or validated climate-smart agriculture technologies. **NEW, disaggregated by gender, CIS and CSA** | 1,480,173 | 1,896,122 |
| PDO 4: Enhanced climate information services and/or validated climate-smart agriculture technologies originating in one SSA country are increasingly being made accessible in other SSA countries. **REVISED** | 6 | 69 |
| PDO 5: Beneficiaries with enhanced resilience to climate risk. **NEW, corporate scorecard indicator** | N/A | 15,600,000 |
| Intermediary Program Indicator Targets | | |
| Establishment of a Regional Hub for Fertilizer and Soil Health (Y/N) | n/a | Y |
| New soil information generated and presented as digital soil maps by the Regional Hub for Fertilizer and Soil Health (Number Ha) | n/a | 3,000,000 |
| Appropriate fertilizer nutrient requirements developed for specific crop and soil combinations within prioritized target areas (Number Ha) | n/a | 500,000 |
| Capacity of regional organizations with PPAs to generate climate-relevant knowledge products, decision making tools and advisory services strengthened (Percentage) | n/a | 25 |
| Gender-smart climate information services and gender-smart climate-smart agriculture technologies reaching women through customized programs targeting their interests (Number) (The title of this indicator was changed to enhance the gender aspects) | 36 | 95 |

14. ***Institutional Arrangements – Move to Africa:*** CIAT will remain the recipient, but all operations of the project will shift so that they operate out of CIAT's legally incorporated office in Kenya. In addition to the central office in Kenya, the other focus countries will also host an in-country office of smaller-scale. Primary centers receiving support through PPAs include: (i) Africa Rice Center (AfricaRice); (ii) International Institute of Tropical Agriculture (IITA); (iii) International Livestock Research Institute (ILRI); and (iv) and International Water Management Institute (IWMI). Since CIAT is an international organization and not a regional organization, a waiver is required under the IDA Regional Window. The Waiver received Concurrence from the Operations Policy and Country Services Vice-President on January 24, 2024. In the case of non-CGIAR partners, such as universities, national agricultural research organizations, and non-governmental organizations (NGOs), due diligence will be exercised to ascertain that they are working only for the benefit of IDA eligible countries.

15. ***Closing date:*** The closing date of the project will be extended from July 31, 2024, to July 31, 2026, to allow the effective completion of the scaled-up activities. The Grant Agreement for the original financing will be amended to reflect the new closing date.

## III. KEY RISKS

16. **Overall project risk is rated Moderate.** Key risks are consistent with those under the parent project.

17. **Political and Governance risk is rated Moderate**, due to the political turmoil and periodic episodes of insecurity in some of the target countries. These risks are real, but their incidence is relatively limited considering the regional scope of the project and the focus on research hosted by a non-Government entity, which limits their potential to impede achievement of the overall PDO.

18. **Macroeconomic risk is rated Moderate**, due to policy weaknesses in several target countries that are constraining growth, creating fiscal pressures, and inflating debt levels. These macroeconomic risks are unlikely to impact the project to any great extent, since the project will be financed entirely through an IDA grant, with no counterpart funding, and it will support research, piloting, capacity building and scaling activities that do not depend directly on circumstances in the larger surrounding economy.

19. **Sector Strategies and Policies risk is rated Moderate**, due to agriculture continuing to be a priority in focus countries, but still reflecting underinvestment or inefficient use of resources in the agriculture sectors in the focus countries.

20. **Technical Design of project risk is rated Low**, due to the rooting in the previous CGIAR program on Climate Change and Agriculture (CCAFS) and strong performance of the parent project.

21. **Institutional Capacity for Implementation and Sustainability risk is rated Low**, due to the strong relationships built with regional organizations and partners under the parent project and the proposed emphasis of the AF on developing pathways to scale.

## IV. APPRAISAL SUMMARY

### A. Economic and Financial Analysis

22. For estimating the returns on investment for the AICCRA project, the Net Present Value (NPV), Internal Rate of Return (IRR), and the Benefit to Cost Ratio (BCR) were calculated for a range of conservative adoption rates and yield impacts, on the assumption that the investment is allocated to the indicator crop alone. The impacts evaluated are made up of three elements: (i) the direct yield benefits arising from the adoption of CSA technologies; (ii) the yield losses avoided from the use of CIS; and (iii) an additional benefit arising from the operation of a new regional hub for fertilizers and soil-health onwards.

23. Table 3 shows the results of the investment analysis for the six AICCRA anchor countries to 2030 in 2020 dollars, based on the original US$60 million investment in 2020 and an additional US$40 million investment under the AF. The project net benefits accounted for the increased costs of implementation at the farm level, and a discount rate of 5 percent was used. Results are shown in Table 3 for two levels of impact: 15 percent and 30 percent direct yield benefits from the adoption of CSA practices. The yield losses avoided, and the soil fertility benefits were kept constant between the two impact levels. The yield losses avoided were estimated at 3.3 percent per year and kept constant across the two impact levels. The full analysis is included in Annex 2.

**Table 3. Investment criteria to 2030 using a discount rate of 5 percent for different plausible yield benefits and adoption rates per year for maize in the mixed crop-livestock systems of the AICCRA anchor countries and spillover countries.**

**ANCHOR COUNTRIES**

| | Lower impact level | | | Higher impact level | | |
|---|---|---|---|---|---|---|
| Annual adoption rate (%) | 1.5 | 2.5 | 3.5 | 1.5 | 2.5 | 3.5 |
| Total adoption by 2030 (%)) | 14 | 22 | 30 | 14 | 22 | 30 |
| NPV (2020 US$ million) | -28.6 | 8.5 | 43.6 | 6.7 | 65.8 | 121.5 |
| IRR (%) | -2.3 | 6.9 | 13.5 | 6.5 | 17.1 | 25.1 |
| B-C ratio | 0.68 | 1.10 | 1.49 | 1.08 | 1.74 | 2.37 |

**SPILLOVER COUNTRIES**

| | Lower impact level | | | Higher impact level | | |
|---|---|---|---|---|---|---|
| Annual adoption rate (%) | 0.7 | 1.12 | 1.75 | 0.75 | 1.12 | 1.75 |
| Total adoption by 2030(%) | 7 | 11 | 16 | 7 | 11 | 16 |
| NPV (2020 US$ million) | 11.3 | 58.9 | 137.7 | 70.0 | 145.8 | 271.0 |
| IRR (%) | 7.4 | 15.9 | 26.7 | 17.6 | 27.7 | 41.0 |
| B-C ratio | 1.13 | 1.67 | 3.41 | 1.79 | 3.56 | 4.06 |

Lower impact level: 15% direct yield benefit for maize + 3.3% avoided loss + 3% additional yield benefits from increased project expenditure on soil fertility practices and capacity development from 2024 onwards.

Higher impact level: 30% direct yield benefit for maize + 3.3% avoided loss + 3% additional yield benefits from increased project expenditure on soil fertility practices and capacity development from 2024 onwards.

## B. Paris Alignment

24. In line with its PDO, the project activities focus on improving the climate change adaptation of Africa's food systems. By doing so, they are also consistent with, and often exceed the climate commitments of the six focus countries, as specified in the Nationally Determined Contributions (NDC) and other national strategies[7], while they also respond to similar priorities for the entire region[8]. In this context, and as part of the African Leaders' Nairobi Declaration on Climate Change and Call for Action (2023), countries have committed to accelerate implementation of the African Union Climate Change and Resilient Development Strategy and Action Plan (2022-2032), which includes several strategic intervention axes including on climate- smart agriculture. Besides, considering that all project activities either constitute adaptation options, or alternatively facilitate and enable adaptation, those activities are expected to significantly reduce risks from climate hazards both in the target countries, but also with

[5] Mali CSAIP: https://hdl.handle.net/10568/106808, Ghana CSAIP: https://documents.worldbank.org/en/publication/documents-reports/documentdetail/300161592374973849/climate-smart-agriculture-investment-plan-for-ghana, Zambia CSAIP: https://openknowledge.worldbank.org/entities/publication/802ad03c-4b45-5c4a-bb14-a8bb0954864f

[6] NDC registry: https://unfccc.int/NDCREG, Africa Union Climate Change and Resilient Development Strategy and Action Plan (2022-2032): https://au.int/sites/default/files/documents/42276-doc-CC_Strategy_and_Action_Plan_2022-2032_23_06_22_ENGLISH-compressed.pdf, African Leaders' Nairobi Declaration on Climate Change and Call for Action (2023): https://au.int/sites/default/files/decisions/43124-Nairobi_Declaration_06092023.pdf

significant spill-over effects in the whole region. On mitigation, none of the activities are significant greenhouse gas (GHG) emitters, and they otherwise do not expect to have a negative impact on any of the target countries' low- GHG emissions pathways. Critically, all project activities also fall under the eligible operation types "Professional, scientific, research and development (R&D), and technical activities" and "Education", which are included in the list of activities that are considered Universally Aligned with the Paris Agreement's mitigation goals. In sum, the operation is fully aligned with the goals of the Paris Agreement on both mitigation and adaptation.

### C. Technical

25. The latest data on the impact of climate change on food and nutrition insecurity in Africa underscores the need for urgent investments in climate adaptation in African agriculture. As the number of food and nutrition insecure people rise across Africa and the impacts of climate change worsen, it is clear that R&D must play a role in accelerating African agriculture's adaptation to climate change. As the leading international consortium of research institutions on agriculture, the CGIAR will necessarily play a role in this. The CGIAR and partners already have a large repository of CSA and CIS options to increase adaptation that can be leveraged within country programs to scale the adoption of CSA technologies and practices by farmers. Indeed, AICCRA has already been critical in supporting regional organizations to access enhanced CSA and CIS knowledge and capacity and has been instrumental in adding value to the World Bank portfolio. The AF will leverage these comparative strengths to accelerate access to these needed technologies in focus countries in Africa.

### D. Gender

26. The parent project is gender tagged and the AF will continue to raise the ambition on closing gender gaps in women's access to climate-smart tools and technologies. While continuing to drive inclusion in policy, deeper engagement on gender in agriculture research, and women's leadership, the AF will increase efforts in design and provision to meet the specific needs and interests of women smallholders in gender-responsive CSA/CIS bundles. The results of this targeting in design remain captured in a more concentrated fashion in the indicator "Gender smart climate information services and gender-smart climate-smart agriculture technologies reaching women through customized programs targeting their interests".

### E. Citizen Engagement

27. Because the success of the AF depends on the use of CIS and CSA technologies, mechanisms to solicit feedback are hard-wired into project activities. The AF will also systematically apply the citizen engagement mechanisms proposed under the Stakeholder Engagement Plan (SEP) that was developed for the parent project. The SEP provides clear guidance on actions for a participatory decision-making approach throughout the program's implementation. For example, surveys will be carried out to identify the unique technology needs of farmers and livestock keepers; efforts to design and validate CIS and CSA technologies will take those unique needs into account; some dissemination activities intended to improve access to CIS and CSA technologies will be targeted specifically to women; and impact evaluations will systematically document the impacts on women. These mechanisms will ensure local, national and regional information disclosure on the Environmental and Social (E&S) risks and benefits of the pilot technologies, selection of adequate pilot sites; equitable targeting of vulnerable people and communities as beneficiaries of pilot technologies, responsive grievance management, and the promotion of social acceptance and sustainability of the AF's investments while mitigating related risks.

## F. Financial Management (FM)

28. The AF will follow the same arrangements as the parent project. If relevant, changes to these arrangements would be discussed during implementation. The following five action points have been agreed upon with the CIAT: (i) no separate Designated Account dedicated for the AF resources will be opened (the existing Designated account will also be used for the AF resources); (ii) the project FM Manual has been updated to reflect the specificities of the AF; (iii) the format of the bi-annual interim financial report (IFR) will be revised to include the activities under the AF; (iv) the parameters of the existing accounting software will be adjusted to include the activities under the AF; and (v) the Terms of References and contract of the external auditing firm will be updated to also cover the AF. There are no overdue audits nor overdue IFRs. Following the last FM supervision mission carried out in October 2023, the FM performance and FM risk are rated as Satisfactory and Moderate, respectively.

## G. Procurement

29. The parent project has acceptable procurement arrangements and capacity for the implementation of the proposed AF. The existing arrangements will therefore continue and the existing Project Implementation Unit at CIAT will oversee procurement activities under the AF. The AF will be executed in accordance with the World Bank's Procurement Regulations for Investment Project Financing *(IPF) Borrowers*, dated July 2016 and revised in November 2017, August 2018, November 2020 and September 2023; and the "Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants", dated October 15, 2006 and revised in January, 2011 and as of July 1, 2016 and other provisions stipulated in the Grant Agreement, using the Standard Procurement Documents accompanying the Regulations. All entities shall observe the highest standard of ethics during the procurement and execution of contracts financed under the project in accordance with paragraph 3.32 and Annex IV of the Procurement Regulations.

30. The AF aims to scale up the activities initiated and being executed under the parent project rated satisfactory. Most of the PPAs and contracts during the life of the project were procured through direct contracting and relevant prior review. Therefore, the project has updated the Procurement Strategy for Development and the procurement plan to consider the adjustments needed for the current activities. The AF will continue to be implemented using STEP, a planning and tracking system, in accordance with clause 5.9 of the procurement regulations. Procurement plans and their updates, requests for prior reviews will be sent to the World Bank for clearance.

31. The overall procurement risk is Moderate. A detailed procurement description can be found in the Project Implementation Manual.

## H. Legal Operational Policies

| | Triggered? |
|---|---|
| Projects on International Waterways OP 7.50 | No |
| Projects in Disputed Areas OP 7.60 | No |

## I. Environmental and Social (E&S)

32. The E&S performance of the parent project is rated Highly Satisfactory due to excellent implementation and monitoring of E&S mitigation measures, comprehensive consultation,

communication and outreach of project benefits and grievance monitoring and reporting. The project has also effectively used an approved exclusion list to screen and exclude activities which could have higher risks or adverse impacts (such as activities involving genetically modified organisms, economic and physical displacement, adverse impacts on biodiversity and cultural heritage, unsustainable practices that may introduce invasive alien species, etc.). Under the AF, E&S risks continue to be rated as moderate given the type and scale of activities which are neither large nor complex and can be adequately managed through well-established mitigation measures. The Environment and Social Risk Management (ESRM) Guide, Labor Management Procedures (LMP) and SEP prepared under the parent project have been updated to include the activities of the AF and consulted and disclosed on January 11, 2023.

## V. WORLD BANK GRIEVANCE REDRESS

33. ***Grievance Redress.*** Communities and individuals who believe that they are adversely affected by a project supported by the World Bank may submit complaints to existing project-level grievance mechanisms or the Bank's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the Bank's independent Accountability Mechanism (AM). The AM houses the Inspection Panel, which determines whether harm occurred, or could occur, as a result of Bank non-compliance with its policies and procedures, and the Dispute Resolution Service, which provides communities and borrowers with the opportunity to address complaints through dispute resolution. Complaints may be submitted to the AM at any time after concerns have been brought directly to the attention of Bank Management and after Management has been given an opportunity to respond. For information on how to submit complaints to the Bank's Grievance Redress Service (GRS), please visit http://www.worldbank.org/GRS. For information on how to submit complaints to the Bank's Accountability Mechanism, please visit https://accountability.worldbank.org.

## VI SUMMARY TABLE OF CHANGES

| | Changed | Not Changed |
|---|---|---|
| Implementing Agency | ✓ | |
| Project's Development Objectives | ✓ | |
| Results Framework | ✓ | |
| Components and Cost | ✓ | |
| Loan Closing Date(s) | ✓ | |
| Cancellations Proposed | | ✓ |
| Reallocation between Disbursement Categories | | ✓ |
| Disbursements Arrangements | | ✓ |
| Legal Covenants | | ✓ |
| Institutional Arrangements | | ✓ |
| Financial Management | | ✓ |
| Procurement | | ✓ |

## VII DETAILED CHANGE(S)

### IMPLEMENTING AGENCY

| Implementing Agency Name | Type | Action |
|---|---|---|
| International Institute of Tropical Agriculture (IITA) | Country/Regional Organization | Marked for Deletion |
| International Livestock Research Institute (ILRI) | Academia/Research Institute/Think Tank | Marked for Deletion |

## PROJECT DEVELOPMENT OBJECTIVE

### Current PDO

The Project Development Objective is to strengthen the capacity of targeted CCAFS (CGIAR Research Program on Climate Change, Agriculture and Food Security) partners and stakeholders, and to enhance access to climate information services and validated climate-smart agriculture technologies in IDA-eligible countries in Africa.

### Proposed New PDO

The Project Development Objective is to strengthen the capacity of governments, regional organizations, farmers and other relevant stakeholders and enhance access to—and use of—climate information services and validated climate-smart agriculture technologies in IDA- eligible countries in Africa

## COMPONENTS

| Current Component Name | Current Cost (US$, millions) | Action | Proposed Component Name | Proposed Cost (US$, millions) |
|---|---|---|---|---|
| Knowledge Generation and Sharing | 17.40 | Revised | Knowledge Generation and Sharing | 30.60 |
| Strengthening Partnerships for Delivery | 13.20 | Revised | Strengthening Partnerships for Delivery | 24.20 |
| Validating Climate-Smart Agriculture Innovations through Piloting | 23.70 | Revised | Validating Climate-Smart Agriculture Innovations through Piloting | 35.70 |
| Project Management | 5.70 | Revised | Project Management | 9.50 |
| **TOTAL** | **60.00** | | | **100.00** |

## LOAN CLOSING DATE(S)

| Ln/Cr/Tf | Status | Original Closing | Current Closing(s) | Proposed Closing | Proposed Deadline for Withdrawal Applications |
|---|---|---|---|---|---|
| IDA-D7540 | Effective | 31-Jul-2024 | 31-Jul-2024 | 31-Jul-2026 | 30-Nov-2026 |

## Expected Disbursements (in US$)

| Fiscal Year | Annual | Cumulative |
|---|---|---|
| 2021 | 0.00 | 0.00 |
| 2022 | 20,000,000.00 | 20,000,000.00 |
| 2023 | 20,000,000.00 | 40,000,000.00 |
| 2024 | 20,000,000.00 | 60,000,000.00 |
| 2025 | 20,000,000.00 | 80,000,000.00 |
| 2026 | 20,000,000.00 | 100,000,000.00 |

## SYSTEMATIC OPERATIONS RISK-RATING TOOL (SORT)

| Risk Category | Latest ISR Rating | Current Rating |
|---|---|---|
| Political and Governance | Moderate | Moderate |
| Macroeconomic | Moderate | Moderate |
| Sector Strategies and Policies | Moderate | Moderate |
| Technical Design of Project or Program | Moderate | Moderate |
| Institutional Capacity for Implementation and Sustainability | Low | Low |
| Fiduciary | Moderate | Moderate |
| Environment and Social | Moderate | Moderate |
| Stakeholders | Moderate | Moderate |
| Other | Moderate | Moderate |
| Overall | Moderate | Moderate |

## LEGAL COVENANTS – Accelerating Impacts of CGIAR Climate Research for Africa Additional Financing (P181150)

| Sections and Description |
|---|
| No information available |

### Conditions

| Type | Financing source | Description |
|---|---|---|
| Effectiveness | IBRD/IDA | The Recipient has updated the Project Implementation |

| | | |
|---|---|---|
| | | Manual in accordance with the provisions of Section I.B.1 of Schedule 2 to this Agreement. |
| Type<br>Effectiveness | Financing source<br>IBRD/IDA | Description<br>The Recipient has amended and executed the existing Partnership Performance Agreements with CGIAR partners, all in form and substance satisfactory to the Association |

## VIII. RESULTS FRAMEWORK AND MONITORING

s

### Results Framework

COUNTRY: Western and Central Africa

Accelerating Impacts of CGIAR Climate Research for Africa Additional Financing

### Project Development Objective(s)

The Project Development Objective is to strengthen the capacity of governments, regional organizations, farmers and other relevant stakeholders and enhance access to—and use of—climate information services and validated climate-smart agriculture technologies in IDA- eligible countries in Africa

### Project Development Objective Indicators by Objectives/ Outcomes

| Indicator Name | PBC | Baseline | Intermediate Targets | | End Target |
|---|---|---|---|---|---|
| | | | 1 | 2 | |
| **Access and use increased to climate-relevant knowledge, technologies, and decision-making tools *(Action: This Objective has been Revised)*** | | | | | |
| PDO 1: Partners and stakeholders in the project area are increasingly accessing enhanced climate information services and/or validated climate-smart agriculture technologies (Number) | | 91.00 | 124.00 | 157.00 | 157.00 |
| ***Action: This indicator has been Revised*** | | | | | |
| Of which are new (Number) | | 0.00 | | | 12.00 |

| Indicator Name | PBC | Baseline | Intermediate Targets | | End Target |
|---|---|---|---|---|---|
| | | | 1 | 2 | |
| ***Action: This indicator is New*** | | | | | |
| PDO 2: Beneficiaries in the project area are increasingly accessing enhanced climate information services and/or validated climate-smart agriculture technologies (Number) | | 3,700,433.00 | 4,450,000.00 | 5,200,000.00 | 5,200,000.00 |
| ***Action: This indicator has been Revised*** | | | | | |
| Of which are CSA (Percentage) | | 0.00 | 25.00 | | 30.00 |
| ***Action: This indicator is New*** | | | | | |
| Of which are CIS (Percentage) | | 0.00 | 75.00 | | 70.00 |
| ***Action: This indicator is New*** | | | | | |
| Of which are women (Percentage) | | 0.00 | 30.00 | | 30.00 |
| ***Action: This indicator is New*** | | | | | |
| PDO 3. Beneficiaries in the project area are using enhanced climate information services and/or validated climate-smart agriculture technologies (Number) | | 1,480,173.00 | 1,777,630.00 | 1,896,122.00 | 1,896,122.00 |
| ***Action: This indicator is New*** | | | | | |
| Of which are CSA (Percentage) | | 0.00 | 25.00 | | 30.00 |

| Indicator Name | PBC | Baseline | Intermediate Targets | | End Target |
|---|---|---|---|---|---|
| | | | 1 | 2 | |
| ***Action: This indicator is New*** | | | | | |
| Of which are CIS (Percentage) | | 0.00 | 75.00 | | 70.00 |
| ***Action: This indicator is New*** | | | | | |
| Of which are women (Percentage) | | 0.00 | 30.00 | | 30.00 |
| ***Action: This indicator is New*** | | | | | |
| PDO 4: Enhanced climate information services and/or validated climate-smart agriculture technologies originating in one SSA country are increasingly being made accessible in other SSA countries (Number) | | 41.00 | 55.00 | 69.00 | 69.00 |
| ***Action: This indicator has been Revised*** | | | | | |
| PDO 5: Beneficiaries with enhanced resilience to climate risks (Number) | | 11,101,315.00 | 13,350,000.00 | 15,600,000.00 | 15,600,000.00 |
| ***Action: This indicator is New*** | | | | | |

## Intermediate Results Indicators by Components

| Indicator Name | PBC | Baseline | Intermediate Targets | | | End Target |
|---|---|---|---|---|---|---|
| | | | 1 | 2 | 3 | |
| **1. Knowledge Generation and Sharing** | | | | | | |

| Indicator Name | PBC | Baseline | Intermediate Targets | | | End Target |
|---|---|---|---|---|---|---|
| | | | 1 | 2 | 3 | |
| IPI 1.1: Climate-relevant knowledge products, decision-making tools and advisory services created or enhanced including a proportion targeting gender and social inclusion dimensions (Number) | | 245.00 | 325.00 | 405.00 | | 405.00 |
| ***Action: This indicator has been Revised*** | | | | | | |
| IPI 1.2: AICCRA-funded peer-reviewed research papers made available in open access format (Number) | | 0.00 | 5.00 | 16.00 | 32.00 | 32.00 |
| ***Action: This indicator has been Marked for Deletion*** | | | | | | |
| IPI 1.3: Satisfaction with the quality and usefulness of climate–relevant knowledge products, decision-making tools and services received under AICCRA expressed by surveyed partners and stakeholders (Percentage) | | 0.00 | 75.00 | 75.00 | | 75.00 |
| ***Action: This indicator has been Marked for Deletion*** | | | | | | |
| IPI 1.2 Regional Hub for Fertilizer and Soil Health Established (Yes/No) | | No | No | Yes | | Yes |
| ***Action: This indicator is New*** | | | | | | |
| IPI 1.3 New soil information generated and presented as digital soil maps by the Regional Hub for Fertilizer and Soil Health | | 0.00 | 1,000,000.00 | 2,000,000.00 | | 3,000,000.00 |

| Indicator Name | PBC | Baseline | Intermediate Targets | | | End Target |
|---|---|---|---|---|---|---|
| | | | 1 | 2 | 3 | |
| (Hectare(Ha)) | | | | | | |
| ***Action: This indicator is New*** | | | | | | |
| IPI 1.4 Appropriate fertilizer nutrient requirements developed for specific crop and soil combinations within prioritized target areas (Hectare(Ha)) | | 0.00 | 200,000.00 | | | 500,000.00 |
| ***Action: This indicator is New*** | | | | | | |
| **2. Strengthening Partnerships for Delivery *(Action: This Component has been Revised)*** | | | | | | |
| IPI 2.1: Climate advisory platforms/hubs launched/ strengthened, including their focus on gender and social inclusion (Number) | | 18.00 | 24.00 | 30.00 | | 30.00 |
| ***Action: This indicator has been Revised*** | | | | | | |
| IPI 2.2: Partnerships launched/ strengthened between AICCRA-funded CGIAR and NARS scientists, universities, public sector stakeholders, farmer organizations, NGOs and private sector (Number) | | 0.00 | 5.00 | 18.00 | 35.00 | 35.00 |
| ***Action: This indicator has been Marked for Deletion*** | | | | | | |
| IPI 2.2 Capacity of regional organizations with PPAs to generate climate-relevant knowledge products, decision- | | 0.00 | 25.00 | 25.00 | | 25.00 |

| Indicator Name | PBC | Baseline | Intermediate Targets | | | End Target |
|---|---|---|---|---|---|---|
| | | | 1 | 2 | 3 | |
| making tools and advisory services strengthened (Percentage) | | | | | | |
| ***Action: This indicator is New*** | | | | | | |
| IPI 2.3: People engaged in AICCRA-funded capacity development activities (Number) | | 8,984.00 | 12,000.00 | 15,000.00 | | 15,000.00 |
| ***Action: This indicator has been Revised*** | | | | | | |
| Of which are women (Number) | | 0.00 | | | | 1,800.00 |
| ***Action: This indicator is New*** | | | | | | |
| IPI 2.4: Satisfaction with the effectiveness of the partnerships under AICCRA expressed by surveyed partners and stakeholders (Percentage) | | 0.00 | 75.00 | 75.00 | | 75.00 |
| ***Action: This indicator has been Marked for Deletion*** | | | | | | |
| **3. Validating Climate-Smart Agriculture Innovations through Piloting *(Action: This Component has been Revised)*** | | | | | | |
| IPI 3.1: Validated climate information services and climate-smart agriculture technologies disseminated / made accessible (Number) | | 59.00 | 79.00 | 99.00 | | 99.00 |
| ***Action: This indicator has been Revised*** | | | | | | |
| IPI 3.2: Gender-smart climate information services and gender- | | 57.00 | 76.00 | 95.00 | | 95.00 |

| Indicator Name | PBC | Baseline | Intermediate Targets | | | End Target |
|---|---|---|---|---|---|---|
| | | | 1 | 2 | 3 | |
| smart climate-smart agriculture technologies reaching women through customized programs targeting their interests (Number) | | | | | | |
| ***Action: This indicator has been Revised*** | | | | | | |
| IPI 3.3: Use or adaptation of AICCRA-funded climate-relevant knowledge products, decision-making tools and services stated and confirmed by surveyed partners and stakeholders (Percentage) | | 25.00 | 40.00 | 40.00 | | 40.00 |
| ***Action: This indicator has been Revised*** | | | | | | |
| IPI 3.4: Discussions in Africa-wide and regional events informed by AICCRA funded project outputs (Number) | | 0.00 | 3.00 | 10.00 | | 20.00 |
| ***Action: This indicator has been Marked for Deletion*** | | | | | | |
| IPI 3.4: Policy and investment decisions influenced by engagement and information dissemination by AICCRA funded partnerships and capacity building activities (Number) | | 38.00 | 51.00 | 64.00 | | 64.00 |
| ***Action: This indicator has been Revised*** | | | | | | |

| Monitoring & Evaluation Plan: PDO Indicators | | | | | |
|---|---|---|---|---|---|
| **Indicator Name** | **Definition/Description** | **Frequency** | **Datasource** | **Methodology for Data Collection** | **Responsibility for Data Collection** |
| PDO 1: Partners and stakeholders in the project area are increasingly accessing enhanced climate information services and/or validated climate-smart agriculture technologies | PDO Indicator 1 will monitor the effect of strengthened systemic capacity for different value chains by looking at accessing of CIS and CSA technology packages by AICCRA partners and stakeholders. The number of partners and stakeholders increasingly accessing CIS and CSA technology will contribute to the achievement of this indicator. | Continuously collected, annually compiled | Website, cell phone, or similar statistics | Statistical analysis of available access data from the different dissemination channels used. Potentially some sample surveys to further understand about social inclusion dimensions being fed by data collection on IPI 3.2. | AICCRA Clusters will report national and regional level data and package findings into outcome impact case reports.<br>Alliance Bioversity International and CIAT Central M&E Unit will aggregate where possible. |
| Of which are new | | | | | |
| PDO 2: Beneficiaries in the project area are increasingly accessing enhanced climate information services and/or validated climate-smart agriculture technologies | Project beneficiaries are defined as the universe of farmer organizations and individuals that access the knowledge, decision-making tools, and CSA technologies generated and/or disseminated and transferred by the project, in AICCRA anchor countries as well as in other countries in Africa or | Continuously collected, annually compiled. | Website, cell phone or similar statistics, household surveys | Statistical analysis of available access data from the different dissemination channels used. Data collection will be done in new geographic locations compared to AICCRA Phase 1 to be able to capture only new beneficiaries. Potentially some sample surveys to | AICCRA Clusters will report national and regional level data and package findings into outcome impact case reports-<br>Alliance Bioversity International and CIAT Central M&E Unit will aggregate where possible. |

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| | beyond that experience spillover benefits. Access means that there is evidence that the end users were reached and had access to CSA technologies and climate advisories.<br><br>PDO 2 will report on the number of new beneficiaries reached through AICCRA AF. New beneficiaries will be captured by adopting survey designs that focus on different geographic regions compared to surveys conducted in previous years (2021-2023). | | | further understand about social inclusion dimensions being fed by data collection on IPI 3.2. | |
| Of which are CSA | | | | | |
| Of which are CIS | | | | | |
| Of which are women | | | | | |
| PDO 3. Beneficiaries in the project area are using enhanced climate information services and/or validated climate-smart agriculture technologies | Project beneficiaries are defined as the universe of farmer organizations and individuals that access the knowledge, decision-making tools, and CSA | Continuously collected, annually compiled. | Website, cell phone or similar statistics, household surveys. | Statistical analysis of available access data from the different dissemination channels used. We will use a mixed methods | AICCRA Clusters will report national and regional level data and package findings into outcome impact case reports. |

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| | technologies generated and/or transmitted by the project, in AICCRA anchor countries as well as in other countries in Africa or beyond that experience spillover benefits. Use of climate information services and/or validated climate-smart technologies means that there is evidence that beneficiaries were reached by and have subsequently used AICCRA-funded CSA technologies and CIS at least once.<br><br>In PDO 3, we allow to double count beneficiaries in subsequent years (2025 onwards) to capture sustained use. Data collected will inform whether a farmer is adopting an innovation for the first time or has used the innovation in previous years (2021-2023). For CSA, data should capture the size (ha) of plots where an innovation is being used. If possible, we should | | | approach with a gender lens. Evidence will be obtained from project M&E documents as well as primary data obtained via household surveys, focus group discussions (FGDs), key informant interviews (KIIs), expert elicitation, etc. Potentially some sample surveys to further understand about social inclusion dimensions being fed by data collection on IPI 3.2. | Alliance Bioversity International and CIAT Central M&E Unit will aggregate where possible. |

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| | capture % relative to the total farmer plot area. | | | | |
| Of which are CSA | | | | | |
| Of which are CIS | | | | | |
| Of which are women | | | | | |
| PDO 4: Enhanced climate information services and/or validated climate-smart agriculture technologies originating in one SSA country are increasingly being made accessible in other SSA countries | Every instance of spillover of CSA/CIS counts towards this indicator. The numbers reported under this indicator combine countries and services or technologies.<br><br>Reported in the form of an outcome impact case report validated through key informant interviews. Outcome impact case reports are part of the CGIAR corporate reporting, see https://www.cgiar.org/impact/results-dashboard/, complemented where possible by surveys of organizations that make CSA technologies and climate services accessible in SSA countries other than the countries in which they | Continuously collected, annually compiled. | AICCRA team. | Reported in the form of key results stories validated through key informant interviews. Potentially some sample surveys to further understand about social inclusion dimensions being fed by data collection on IPI 3.2. | AICCRA Clusters will report national and regional level data and package findings into outcome impact case reports.<br>Alliance Bioversity International and CIAT Central M&E Unit will aggregate where possible. |

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| | originated. | | | | |
| PDO 5: Beneficiaries with enhanced resilience to climate risks | Number of people benefitting directly and indirectly from improved climate risk management and increased climate resilience due to investments and activities. | Once per year | MALIA | | |

| Monitoring & Evaluation Plan: Intermediate Results Indicators | | | | | |
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| **Indicator Name** | **Definition/Description** | **Frequency** | **Datasource** | **Methodology for Data Collection** | **Responsibility for Data Collection** |
| IPI 1.1: Climate-relevant knowledge products, decision-making tools and advisory services created or enhanced including a proportion targeting gender and social inclusion dimensions | Knowledge products are research findings that have been packaged for use by specific identified groups of users.<br><br>Decision-making tools bring together different research findings to provide criteria that can be used to make recommendations or decisions in a given context and value system.<br><br>Advisory services are tailored advice through forecasting systems. | Continuously collected, annually compiled. | Management Information System (MIS). | Outputs covering a wide range of different categories including the category of knowledge products are recorded in CGIAR standard repository spaces library systems which are harvestable and linked through an interoperable online web service with the MIS that AICCRA has built and is using. The project is using the DAC policy markers on Gender and Social | Alliance Bioversity International and CIAT Central M&E for aggregation; AICCRA Clusters to report at national and regional level. |

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| | Data will be disaggregated by % of knowledge products, which (i) are gender-sensitive, (ii) address other social inclusion dimensions, and (iii) are policy relevant analytics. | | | inclusion (0=not targeted, 1 = significant and 2 = principal). | |
| IPI 1.2: AICCRA-funded peer-reviewed research papers made available in open access format | AICCRA produced 37 peer reviewed open access papers in 2022, nine of which had gender and social inclusion dimensions. This includes the paper by Hansen et al. that examined what climate information delivery models bring equity to resource poor famers. Other papers published built new frameworks for the assessment of CSA progress. For example, the paper from the West Africa cluster developed a systematic approach for adaptation stocktaking, while East Africa analysed the Gender Empowerment Index for Climate Resilient Agriculture. There were | Collected continually, compiled annuallly | Management Information System | Outputs covering a wide range of different categories including peer reviewed papers are to be recorded in CGIAR standard repository spaces and library systems which are harvestable and linked through an interoperable online web service with the MIS that CCAFS has built and is using. | CIAT Central M&E for aggregation;<br>Lead Centers to report national and regional level. |

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| | also technical papers on climate science, water management, livestock data collection, and more. | | | | |
| IPI 1.3: Satisfaction with the quality and usefulness of climate–relevant knowledge products, decision-making tools and services received under AICCRA expressed by surveyed partners and stakeholders | The 2022 target for satisfaction on the quality and usefulness of AICCRA's products, tools, and services was exceeded and even surpassed the 2021 score of 80 percent. Mali and Ghana had the top five services and products as scored by survey respondents. RiceAdvice, a drought and flooding tolerant rice variety, daily and 10-day weather forecasts, smart maize seeds, and a direct seeder, were all rated 94 percent or higher. | Collected continually, compiled annually. | Partners and engaged stakeholders | Standardized perception survey across the AICCRA focus countries and regions with a mix of quantitative ratings and qualitative open feedback, which allow for national and regional specifications with keeping comparability across in sight. The survey is disaggregated by sex and age. | CIAT Central M&E for aggregation;<br>Lead Centers to report at national and regional level. |
| IPI 1.2 Regional Hub for Fertilizer and Soil Health Established | This indicator will describe the establishment of a Regional Hub for Fertilizer and Soil Health which will operationalize a set of key functions, including: (i) | Collected continually, compiled annually. | Quarterly reports from the Regional Hub for Fertilizer and Soil Health. | A narrative of the progress towards the establishment of the Regional Hub will have to be supported by evidence of progress in | Coordinator of the Regional Hub for Fertilizer and Soil Health. |

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| | coordination and coherence of soil condition assessment initiatives in order to fill gaps in current knowledge; (ii) establishment and publication in Soil Information Systems of regional fertility maps taking into account soil specificities in different countries; (iii) regular soil health assessments, capitalizing on data and existing tools; (iv) making policy recommendations to improve soil health; (v) developing scientific studies; (vi) advocating topics related to soil health in the region; (vii) strengthening the capacity of national fertility and soil health institutions; and (viii) mobilizing funding resources for the operation of the Regional Center and its programs to improve soil health and fertility. | | | the form of, for example, staff contacts, assignments, legal agreements, reports of completion/purchase of facilities and equipment. | |
| IPI 1.3 New soil information generated and presented as digital soil maps by the Regional Hub for Fertilizer and Soil Health | This indicator will describe the area of new soil information generated and | Collected continually, compiled | Management Information System (MSI). | Based on the areas that require new soil information, existing | Staff and Coordinator of the Regional Hub for Fertilizer and Soil Health. |

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| | presented as digital soil maps by the Regional Hub, measured in number of hectares. | annually. | | data sources will be complemented by new soil sampling and/or validation campaigns at a scale appropriate for the intended purposes and presented as digital soil maps. | |
| IPI 1.4 Appropriate fertilizer nutrient requirements developed for specific crop and soil combinations within prioritized target areas | | | | | |
| IPI 2.1: Climate advisory platforms/hubs launched/ strengthened, including their focus on gender and social inclusion | New platforms and hubs launched under AICCRA will be counted. Existing platforms and hubs will be counted when it can be shown they have been strengthened and/or expanded through AICCRA-funded activities. There is no disaggregation by gender, but a qualitative description of the inclusion of gender aspect. | Collected continually, compiled a nnually. | Management Information System (MIS). | Results, evidence, and documents are collected and aggregated through the MIS in place. Summary results and details evidencing document of such exercises are captured and recorded in CGIAR standard repository spaces library systems, which are harvestable and linked through an interoperable online web service with the MIS that AICCRA has built and is using. | Alliance Bioversity International and CIAT Central M&E for aggregation. AICCRA Clusters to report at national and regional level. |

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| IPI 2.2: Partnerships launched/ strengthened between AICCRA-funded CGIAR and NARS scientists, universities, public sector stakeholders, farmer organizations, NGOs and private sector | Partnerships to be counted include formally documented partnerships, as evidenced for example through Memoranda of Understanding (MoUs), Letters of Agreement (LoAs), or contracts, or other documentation of agreed partnership and collaboration efforts. Examples include: (i) Letter of agreement between WMO Regional office for Africa and country program lead to enhance and align NFCS with GFCS; (ii) Letters of collaboration with regional climate prediction centers and agricultural research networks, national partners, NGOs, private sector to contextualize and enhance CIS and Ag-advisories in Ethiopia; (iii) CGIAR, SADC-CSC, IRI, NMS, MoA partnership for enhanced NFCS in Zambia; (iv) CGIAR, MoA, NARES, CORAF, private sector partnership on CSAIP in Mali; (v) CGIAR, | Collected continually, compiled annually | Management Information System | Evidence and documents of formalization of partnerships are asked for in contracting systems of the Lead Centers, collected and aggregated through the MIS in place | CIAT Central M&E for aggregation;<br>Lead Centers to report at national and regional level. |

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| | NMS, ESOKO for scaling CIS via private sector ICT platform in Ghana; (vi) CGIAR RUFORUM, ACE partnership to build capacity on CSA in Ethiopia; (vii) CGIAR, WMO, ICPAC, AGN in Kenya for articulating Africa's position in at COP; (viii) CGIAR, ICPAC, SADC-CSC, AGRHYMET regional partnership for cross-region spill over and south-south knowledge exchange on CIS; (ix) CGIAR, Green Dream Technology, Safaricom partnership to increase awareness about and to enhance the effectiveness and reach of the iCow ICT-platform for disseminating climate services and advisories to livestock keepers in Kenya | | | | |
| IPI 2.2 Capacity of regional organizations with PPAs to generate climate-relevant knowledge products, decision-making tools and advisory services strengthened | This is the proportion of all knowledge products (IPI 1.1) reported by AICCRA Regional Clusters (West Africa and East and South Africa) that are led by regional partners as | Collected continually, compiled annually. | Management Information System (MIS). | This is a proportion of IPI 1.1 and will be compiled by the central M&E team. Submissions in the MIS will flag knowledge products reported under IPI 1.1 | AICCRA Clusters to conduct at national and regional level. Alliance Bioversity International and CIAT Central M&E for aggregation. |

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| | evidence that capacity has successfully been transferred to non-CGIAR partners with PPAs. Regional partners with PPAs are AGRHYMET, ASARECA, CCARDESA, CORAF, ICPAC, and RUFORUM. | | | led by regional partners. Appropriate evidence should be added if it is not possible to determine the leading role of regional organizations by looking at the authors of the knowledge product. | |
| IPI 2.3: People engaged in AICCRA-funded capacity development activities | People participating are those who come into direct contact with the AICCRA-funded activities, including activities carried out by formal partners. This includes individuals who receive technical assistance or participate in training events (one-off, long-term training courses, placement, training visits, knowledge exchange, co-creation events). | Collected continually ; compiled annually. | Management Information System (MIS). | Output level: tracking numbers of individuals trained and engaged with (long-term/ short-term) number of capacity building / engagement events. | Alliance Bioversity International and CIAT Central M&E for aggregation. AICCRA Clusters to report national and regional level. |
| Of which are women | | | | | |
| IPI 2.4: Satisfaction with the effectiveness of the partnerships under AICCRA expressed by surveyed partners and stakeholders | A satisfaction survey was sent to project partners to assess this indicator. Respondents were asked to rate AICCRA in terms of (i) vision, (ii) accountability, | Annuallly | Partners and engaged stakeholders | Standardized perception survey across the partners, engaged stakeholders, countries, and regions with a mix of quantitative ratings | CIAT Central M&E for aggregation; Lead Centers to conduct at national and regional level. |

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| | (iii) communication, (iv) collaboration, and (v) impact. Respondents answered according to their engagement with the various clusters. The overall average score for the project was 85 percent – the same as for 2021 and exceeding the target of 75 percent. Individual cluster scores ranged from 77 percent (Theme 4) to 90 percent (Ghana), all exceeding the target. | | | and qualitative open feedback, which allow for national and regional specifications with keeping comparability across in sight.<br>The survey is disaggregated by sex and age. | |
| IPI 3.1: Validated climate information services and climate-smart agriculture technologies disseminated / made accessible | Validated climate information services and climate-smart agriculture technologies (see PDO 2) are proactively shared and made accessible following Findable, Accessible, Interoperable, and Reusable (FAIR) principles. | Collected continuously; compiled annually. | Project teams. | Continuous reporting into the management information system (MIS). Products need to be stored in repositories that generate a unique identifier.<br>**Evidence should be provided in relation to Clusters proactively giving access to / disseminating CIS and CSA technologies**. There should be evidence that farmers are accessing technologies and | Alliance Bioversity International and CIAT Central M&E for aggregation. AICCRA Clusters to report national and regional level. |

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| IPI 3.2: Gender-smart climate information services and gender-smart climate-smart agriculture technologies reaching women through customized programs targeting their interests | This indicator captures the number of CIS and CSA technologies that are gender-smart and that are reaching women through customized programs targeting their interests. | Collected continuously, compiled annually. | Project teams. | Continuous reporting into the management information system (MIS) tagged with the DAC markers for gender. | Alliance Bioversity International and CIAT Central M&E for aggregation. AICCRA Clusters to report at national and regional level. |
| IPI 3.3: Use or adaptation of AICCRA-funded climate-relevant knowledge products, decision-making tools and services stated and confirmed by surveyed partners and stakeholders | Evidencing use or adaptation of AICCRA-funded climate-relevant knowledge products, decision-making tools, and services. The data is disaggregated by the gender of the respondent. | Annually. | Partners and involved stakeholders. | Standardized survey across the partners, engaged stakeholders, countries and regions with a mix of quantitative ratings and qualitative open feedback, which allow for national and regional | Alliance Bioversity International and CIAT Central M&E for aggregation; AICCRA Clusters to report national and regional level. |

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| IPI 3.4: Discussions in Africa-wide and regional events informed by AICCRA funded project outputs | The 2022 target was exceeded with AICCRA activities and outputs informing 19 Africa-wide discussions and regional events such as: AGNES pre-COP27 workshop where the common African positions on agriculture and gender were written. A meeting of the Eastern Africa Farmers Federation where AICCRA evidence on agriculture and climate change, and policy advocacy were presented to help share their call-to-action. Several side events at COP27. The Kick-off meeting of the Pan-African Regional Green Climate | Collected continually, compiled annually | Project team | Continuous reporting into the management information system (MIS). | CIAT Central M&E for aggregation;<br>Lead Centers to report at national and regional level. |

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| | Fund Readiness Program. A marketplace event at the Greater Horn of Africa Climate Outlook Forum (GHACOF) jointly organized with ICPAC. Regional Climate Outlook Forum for Sudano-Sahelian Africa (PRESASS). CORAF symposium on agricultural research in West Africa. FARA bi-annual CSA conference. The IGAD Regional Ministerial Meeting on Strengthening, Adapting, and Accelerating National and Regional Efforts in East Africa. | | | | |
| IPI 3.4: Policy and investment decisions influenced by engagement and information dissemination by AICCRA funded partnerships and capacity building activities | Number of policies/ strategies/ laws/ regulations/ budgets/ investments/ curricula (and similar) at different scales (international to local) that were modified in design or implementation, with evidence that the change | Collected continuously, compiled annually. | Project team. | Continuous reporting into the management information system (MIS)<br>Reported policies and investment decisions are reported and evidenced through outcome impact case reports that ask for | Alliance Bioversity International and CIAT Central M&E for aggregation.<br>AICCRA Clusters to report at national and regional level. |

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| | was informed by CGIAR research. This IPI is disaggregated by % of investments and % of policies. | | | increasingly rigorous evidence as they grow in the level of maturity. CGIAR cross-cutting markers are being tagged for gender, youth, and climate change. | |

## Annex 1. Detailed Component Description

1. While the AICCRA parent project placed significant focus on CIS (under Component 1), the AF will prioritize the development of CSA knowledge and tools. The project will also expand its direct collaboration with governments and regional organizations. This new orientation will be reflected in the new intermediate progress indicator (IPI), 'just-in-time' scientific evidence and knowledge that responds to the requests from regional organizations and countries. The new direction places greater emphasis on scaling up the validation and use of CSA, CIS and bundled technology packages, strengthening regional organizations to provide direct support to beneficiaries for long-term sustainability, and expanding AICCRA support to align with government and World Bank programs and priorities. This shift in the priorities is also reflected in the adjusted budget under the AF, which allocates additional resources to activities under Component 3 to accommodate the new focus of AICCRA.

2. **Component 1: Knowledge Generation and Sharing.** This component will generate and share tailored knowledge products and tools designed to address critical gaps in the design and provision of gender-responsive agro-climatic services, enable climate-informed investment planning that is inclusive of gender and social inclusion concerns, and contribute to the development of policies and strategies to promote uptake and use of CSA practices and technologies and their bundling with CIS. This component will also include knowledge generation and sharing in relation to soil fertility, at the regional, sub-regional and national levels. Activities include:

- *Strengthening provision of agro-climatic services in East, South and West Africa* by national and regional agricultural and meteorological agencies and CSA investment planning by continental and regional institutions and national Ministries, Departments and Agencies, and private firms, through:

  (i) Co-development and sharing of decision support tools and tailored knowledge products, including participatory assessment of tools that provide cost-benefit analyses of CSA/CIS bundled options under different climate and socio-economic scenarios and products and tools that support implementation of agricultural data hubs and decision support systems in each focus country;

  (ii) Strengthening digital gender-responsive climate agro-advisory services through integration of tailored CIS and digital agro-advisories into national extension systems and development of gender and socially-inclusive scaling strategies for rollout of bundled CSA and CIS solutions with public and private sector engagement, including, inter alia, identification of sustainable delivery models, including commercially viable business models, design of appropriate financing mechanisms and delivery channels for accelerating deployment of public and private capital; and

  (iii) Provision of just-in-time and policy-relevant knowledge products based on requests from national and regional partners and key stakeholders. This will include development of indicators and metrics for tracking adaptation progress resulting from CSA/CIS technologies and practices[9], analyses of climate, agricultural, environmental, gender and social inclusion policies to understand bottlenecks to CSA/CIS implementation, assessments of agriculture intensification and impact on crop suitability and responses to other requests coming from partners.

[9] This activity will be potentially co-financed by a grant from BMGF which is currently under assessment.

- *Strengthening provision of soil health and fertility services in East, South and West Africa* through: Investment in a Regional Hub to strengthen soil health monitoring in West Africa. The Hub will be hosted at IITA and designed together with a consortium of core partners, including , OCP and others, under the guidance of the Economic Community for West Africa States (ECOWAS). The Hub will fill a critical gap in soil health and fertility in West Africa. It will generate and consolidate soil information and mapping; provide soil fertility knowledge management and sharing; generate and disseminate agronomic recommendations; provide capacity development for regional organizations, national institutions and other stakeholders; create policy recommendations and provide policy support; engage in advocacy and awareness creation related to soil health and fertility in the subregion and in collective resource mobilization for these issues across the region. In collaboration with the Hub, the AF will also engage in co-development of tailored knowledge products that provide information on the linkages between soil health and fertility and climate change adaptation and mitigation efforts. A more detailed description of this proposed Hub is included in Annex 3.

3. **Component 2: Strengthening Partnerships for Delivery.** This component will strengthen the capacities of key regional and national institutions in Sub-Saharan Africa along the research-to-development continuum for anticipating climate effects and accelerating identification, prioritization, access and use of best-bet adaptive measures, through:

- *Strengthening analytical, priority setting and stakeholder engagement capacities* of regional and sub-regional institutions through enhancing collaboration among Africa-wide and regional institutions, to generate relevant and inclusive knowledge products, tools, advisory services, and educational and training curricula. This activity will include, for example, capacity building and peer learning events offered through the Climate Outlook Forums, capacity building and partnerships with downstream actors for scaling adoption of CIS/CSA bundles, and training and support for incorporating elements of the Climate Risk Management in Agriculture (CRMA) and Climate Risk Management in Agricultural Extension (CRMAE) curriculum, including gender and social inclusion content within RUFORUM curriculum resources. This component includes support to women's leadership in agriculture and climate research and implementation.

- *Strengthening partnerships for sustained delivery and use of inclusive agro-climatic services* in East, South and West Africa, through:

  (i) Technical assistance and capacity building to national meteorological services and other public institutions in decision support tools and the delivery of real-time climate services and agro-advisories. This activity will include, for example, support for enhancing early warning systems (e.g., Agricultural Watch, Hazard Watch), further development of Ag-data hubs, addition of new decision tools relating to drought and flood forecasting, soil water balance, irrigation, crop modeling/assessment, support for advancing National Framework for Weather, Water and Climate Services, and training and piloting of the CIS elements of CRMA and CRMAE curricula with universities, extension and other downstream actors;

  (ii) Strengthening of public and private sector next users for effective adoption and implementation of gender-smart CSA technologies and practices at scale in various value chains. This activity will include, for example, training and guidance resources on various gender-smart CSA practices involving drought tolerant varieties, mechanization, bio-fertilizers, bio-pesticides, alternate wetting/drying, feed and forage innovations, small ruminant technologies; promotion of management tools including RiceAdvice, irrigation scheduling, SmartValleys (water management); dissemination of gender-targeted CSA advice through private and public sector

platforms, incorporation of CSA elements of CRMA/CRMAE in national university and extension training curricula, and promotion of gender-smart CSA technologies in spillover countries through research networks of CORAF, ASARECA, and other partners; and

(iii) Investing in regional and national research institutions in West Africa to strengthen their capacity to improve soil fertility and soil health. This will include direct PPAs with at least three regional organizations working in West Africa (CORAF, AGHRYMET and RUFORUM) in particular to support them to contribute to the West Africa Soil Health and Fertility Roadmap towards "Priority action 10: Strengthen the capacity of research bodies to improve soil fertility and soil health in the region, Sub-action 1: Strengthen agricultural research institutions, particularly through activity (ii) (above) capacity building and training of new researchers." This activity will include, for example, establishing guidance and protocols on soil monitoring and assessment based on continental best practice, capacity building with national agricultural research and extension systems (NARES) on fertilizer management, sustainable agriculture, and soil-health monitoring methods.

4. **Component 3: Validating Climate-Smart Agriculture Innovations through Piloting.** This component will support the tailoring, testing and validation (including for gender and social inclusion) of CGIAR and partner CSA/CIS technology bundles[10] for scaling through AICCRA partnerships; development of gender and socially-inclusive scaling strategies for validated CSA/CIS technology bundles; linking of validated CSA/CIS bundled technology packages to technology transfer systems and scaling mechanisms; improving access to and use of validated CSA/CIS bundles that improve farm and enterprise management; and use of AICCRA knowledge products, engagement, and capacity building to influence policy/investment decision-making, in particular:

- *Accelerating scale-up of validated CSA/CIS technology bundles Africa-wide,* through:

(i) Making validated gender-smart CSA/CIS technology bundles, including soil information and soil fertility practices, available to partners for scaling and spillover, through the use of scaling mechanisms and customized programs targeting women working across multiple countries including public research and extension systems, digital delivery models of advisory services (including TV, radio and mobile phones), private sector business models, Small and Medium Enterprises (SME) acceleration programs[11], value chain financing models, and smallholder farmer microfinance. Strategies will include development of approaches to ensure sustainability and gender/social inclusion of regional and continental initiatives, including through partnerships with SROs (CORAF, ASARECA, CCARDESA), World Bank operations (e.g., FSRP) and public-private partnerships; and

(ii) Using AICCRA knowledge products and services and fostering dialogue among stakeholders to promote dissemination of climate research results across the region to inform and provide technical assistance to policy (e.g., NDCs, National Action Plans, etc.) and investment decisions (e.g., Financing Locally-led Climate Action, African Enterprise Challenge Fund[12], etc.). This will include supporting national and regional partners use of decision support tools, AgData

[10] CSA/CIS technology bundles refer to both individual CSA or CIS technologies and services, as well as bundled CSA and CIS technology packages.
[11] *https://aiccra.cgiar.org/news/catalyzing-impact-investment-climate-smart-agriculture-zambia-and-beyond*
[12] *https://www.cgiar.org/research/publication/science-based-investment-due-diligence-screening-methodology-co-developed-africa-enterprise-challenge-fund-aecf-assess-csa-impact-20-million-agribusiness-africa-window-round/*

platforms, measurement and tracking frameworks and systems for adaptation[13], gender and climate hotspot mapping, agribusiness support programs, investment technical assistance, investor matchmaking platforms, among others. This will promote best practices, common standards and protocols for access and use of CSA/CIS technology bundles at scale, including gender and social inclusion considerations, including through fora such as the AGRA Food Systems Forum, the State of the Climate for Africa Report, Africa-wide and regional events organized by African Union Commission (AUC), African Development Bank (AfDB), United Nations Economic Commission for Africa (UNECA), Regional Economic Communities (e.g. IGAD, ECOWAS, SADC), specialized regional organizations -SROs (CORAF; ASARECA; CCARDESA), the African Group of Negotiators Expert Support (AGNES), among others.

- *Supporting accelerated access and use at scale of validated CSA/CIS bundles across the anchor countries,* through:

  (i) Carrying out assessments and development of identification and implementation of gender-inclusive scaling strategies, mechanisms, and action plans for uptake and use of best-bet validated gender-smart CSA/CIS bundles at scale, including through public research and extension systems, digital delivery models of advisory services (including TV, radio and mobile phones), private sector business models, small and medium enterprises (SME) acceleration programs, producer organizations,, smallholder farmer microfinance, Centers for Mechanized Agriculture, and pasture rangeland management approaches. Examples of bundled technologies include climate-resilient crop/livestock/fish varieties, agronomic approaches (e.g., mechanization), soil health/fertility interventions, digital advisory systems, solar powered irrigation, microfinance products, system of rice intensification, participatory rangelands management, among others;

  (ii) Development and use of public and private business models, investment plans, and financing mechanisms that foster access and use of gender-responsive CSA/CIS bundles at scale, including through village savings and loans associations, inclusive producer associations, gender-smart accelerators acceleration and technical assistance provided to SMEs to deliver gender-smart CSA/CIS bundles, soil fertility and soil information bundles, and access finance; and

  (iii) Use of AICCRA knowledge products, decision support tools and consolidated soil mapping to inform policies and to provide technical support to investment decisions at the sub-regional and national levels. This will contribute to NDC implementation, national climate investment plans, locally led development finance (e.g., Financing Locally-led Climate Action), international climate finance mechanisms (e.g., Green Climate Fund), catalyzing private investment (e.g. impact investors, private climate funds, challenge funds), among others.

5. **Component 4: Project Management.** This component will provide financial support for the day-to-day implementation, coordination, supervision, and overall communication and management of project activities and results. This support covers various aspects, including procurement, financial management (FM), monitoring, evaluation, learning and impact assessment, safeguards requirements, conducting audits, and data management and reporting of project activities.

[13] This activity will be potentially co-financed by a grant from BMGF which is currently under assessment.

## Annex 2. Financial and Economic Analysis

1. AICCRA is expected to generate several types of benefits. Primary benefits generated mainly during the project life:

a) Strengthened human and institutional capacity to generate, assess, and make use of climate smart agriculture (CSA) technologies and climate information services (CIS) among CGIAR Centers, CGIAR partners, African regional organizations, national agriculture research and extension organizations, civil society organizations, and private firms, among others.

b) Bridged gap between CGIAR-led science partnerships on the one hand and technology generation organizations and extension services on the other hand, resulting in faster and more extensive scaling-up of innovative technologies and improved availability of short-term and seasonal climate forecasts to service providers and to end users (e.g., farmers, livestock keepers, other food system actors, policy makers).

c) Enhanced regional integration of research for development activities, paving the way for more extensive dissemination of climate advisory services and more widespread scaling-up of innovative technologies through cross-border spillovers.

2. Secondary benefits generated mainly after the project has ended:

a) Increased productivity and enhanced climate resilience (reduced production variability) at farm-level, including positive outcomes for women;
b) More widespread adoption of CSA technologies due to regional spillovers; and
c) Climate benefits in the form of reduced greenhouse gas (GHG) emissions.

3. Estimating the economic value of the primary benefits as described above would be difficult (costly, time consuming, and conceptually challenging), and was not attempted. Nevertheless, the meta-analysis done by Pardey et al. (2016) provides compelling evidence that investments in food and agriculture research and development made in sub-Saharan Africa (SSA) over the last 40-50 years have generated attractive returns.

4. Since the primary benefits described above are “enablers” of the secondary benefits, the economic and financial analysis (EFA) focuses on the benefits described under the latter. Caveat: the secondary benefits fall under the sphere of influence of the project, but not under the sphere of control, because they depend in part on factors beyond the control of the project (e.g., price incentives, availability of purchased inputs, weather conditions, etc.).

5. The EFA is carried out in four stages. In the first stage, the area that could potentially benefit from AICCRA is calculated (including both the target countries and the extrapolation domain). In the second stage, the value is calculated of the benefits that would result from a 1 percent increase in crop and livestock productivity over this entire area. In the third stage, the value of the benefits is adjusted in recognition of the fact that adoption will occur gradually over time and will not reach the entire area. In the fourth stage, measures of project worth are calculated recognizing that the investments to be made under AICCRA will make up only a very small share of investments to increase uptake of CSA technologies and use of CIS.

6. The increased productivity and enhanced climate resilience expected to result from AICCRA activities (i.e., resulting from greater use of CIS and more widespread adoption of CSA technologies) were estimated as follows.

7. The six anchor countries and the regions in which they are located were stratified based on agroecological zone (AEZ) and the prevailing production system. The classification of Seré and Steinfeld was used (FAO, 1996), as described in Robinson et al. (2011).

8. Areas, human population numbers (from CIESIN, 2018), crop areas, production, yields and value of production (from HarvestChoice, 2017), and livestock numbers, production, and value of production (from Herrero et al., 2013) were calculated for all systems. For both crops and livestock products, the prices used in the HarvestChoice (2017) and the updated Herrero et al. (2013) data sets relate to 2005 international dollars. For crops, combined totals were calculated for all food crops, and separate totals were calculated for maize as a widely grown indicator crop. Maize was used as an indicator crop to provide indicative estimates of CSA benefits, rather than benefits from all food crops. Maize has several characteristics that make it a good indicator crop: it is sensitive to climate, and it is grown across a wide range of smallholder farm types. It is also important for food and nutrition security: in the six AICCRA anchor countries, maize supplies on average 20 percent of daily calorie requirements (in Zambia, 42 percent) (FAOSTAT, 2020). Maize was also used as the indicator crop to estimate the benefits of avoided yield losses because of reduced climate variability. Depending on the country, maize accounts for between 8 percent and 34 percent of the total food-crop value of production. For livestock, cattle were used as the indicator species, so productivity gains attributable to adoption of CSA technologies were based on productivity gains that have been observed in bovine meat and milk production. These data were all for 2005, nominally.

9. This information was generated for the six target countries and for 20 additional countries in the three regions, to make up the “extrapolation domain” including spillovers. For all three regions, the mixed crop-livestock production system was used for extrapolation. In the Seré and Steinfeld classification (FAO, 1996), the mixed crop-livestock systems are broken down into rainfed (MR) and irrigated (MI). The rainfed and irrigated categories are each further broken down into three AEZs: arid-semiarid, defined as a length of growing period (LGP) ≤180 days per year (MRA, MIA); humid-subhumid, with LGP >180 days per year (MRH, MIH); and tropical highland, defined as areas with a daily mean temperature during the growing period of 5-20 °C (MRT, MIT). In West Africa, much of the CGIAR-related work with climate-smart villages (CSVs) has been carried out in the drier mixed rainfed systems (MRA), and so for estimating regional spillovers in West Africa, the MRA system (and the small amounts of MIA system) was used as the extrapolation domain. For Zambia, much of the cropland is located in the MRA system, and to a much lesser extent in the MIA system, and so these systems were used for extrapolation purposes in the southern Africa region too. In most countries of both West and southern Africa, there are only small amounts of the MRT system. For East Africa, CGIAR has been active across all mixed system types, so for the extrapolation domain for East Africa, the MRA, MRH and MRT systems were used (along with much smaller areas of MIA, MIH and MIT systems). All spatial variables were standardized to grids of 5 arcminute resolution. These domains include the countries with significant areas of the mixed crop-livestock systems in the appropriate AEZs, on the basis that CSA and CIS technologies that have been validated in particular AEZs in the target countries in each region may also have potential for being adopted in similar AEZs in other countries in the same region.

10. To estimate the net benefits of the AICCRA project, some estimate is needed of the direct costs per ha or per animal of implementing CSA and CIS technologies at the farm level. Harris and Orr (2014) provide benefit-cost ratios for a range of smallholder agricultural production technologies using many household-level datasets in countries throughout SSA (and India). Many of these technologies for different crops can be classed as CSA (e.g., conservation tillage, crop rotations and crop mixtures, fertilizer micro-dosing, and

others). For the 14 technologies in this data set that apply to food crops in sub-Saharan Africa, the baseline mean Benefit-Cost Ratio (BCR) is 1.63, and the mean BCR after adoption is 2.64. These are very much in line with agricultural development project BCRs from across SSA as reported in Ferrarese et al. (2016). Many of the studies in Harris and Orr (2014) imply a doubling or more of productivity per ha. The analyses that follow assume smaller productivity increments, as these were judged to be more realistic in view of the (often challenging) local contexts within which most small-scale farmers operate. Accordingly, in the calculation of net returns, costs per ha and per animal of adopting CSA and CIS technologies were increased to preserve the mean value of the BCR from Harris and Orr (2014).

11. Table A2.1 shows the estimated direct benefits of adoption of CSA practices in the six target countries, expressed as the increase in value of production per year per percentage point increase in crop, meat and milk yield: that is, assuming adoption over all the maize area and all cattle in the target systems of a technology that increases production per ha or per animal by 1 percent.

***Table A2.1. Increases in value of production (2005 US$ x 1000) in food crops, maize, bovine meat and bovine milk for a 1 percent increase in yield throughout the mixed crop-livestock systems in AICCRA anchor countries.***

| | Country and systems included | | | | | | Total |
|---|---|---|---|---|---|---|---|
| | Ethiopia | Ghana | Kenya | Mali | Senegal | Zambia | |
| | MRA, MRH, MRT, MIA, MIH, MIT | MRA, MIA | MRA, MRH, MRT, MIA, MIH, MIT | MRA, MIA | MRA, MIA | MRA, MIA | |
| Maize | 4,834 | 98 | 3,521 | 758 | 404 | 691 | 10,405 |
| Other food crops | 32,550 | 4,638 | 13,439 | 7,990 | 5,474 | 1,092 | 65,181 |
| Bovine meat | 9,594 | 119 | 2,200 | 792 | 546 | 44 | 13,294 |
| Bovine milk | 8,834 | 32 | 2,117 | 194 | 134 | 65 | 11,377 |
| Total | 55,813 | 4,986 | 21,276 | 9,734 | 6,557 | 1,891 | 100,258 |

*Systems based on Robinson et al. (2011): MR = mixed rainfed; MI = mixed irrigated; A = arid-semiarid; H = humid-subhumid; T = tropical highland.*

12. Table A2.2 converts the benefits in Table A2.1 to a range of plausible adoption rates and productivity increments at scale. The productivity increments in Table A2.2 are well within what has been observed in many situations for a range of single CSA practices as well as combinations (see text above). Regarding adoption, annual rates in the range 1 percent to 3 percent are shown. There are some examples of agricultural technology adoption rates at scale at the higher end of the range (see Thornton and Herrero, 2010, for example). The annual adoption rates used in Table A2.2 refer to the total area of crop and number of cattle that have not yet adopted over a ten-year period, so 2 percent adoption in year 8 is not the same number as 2 percent adoption in year 2, for example.

***Table A2.2. Marginal increases in value of production per year at year 10 (2005 US$, million) of maize, bovine meat and bovine milk for different plausible yield benefits and annual adoption rates in the mixed crop-livestock systems in AICCRA target countries (Ethiopia, Ghana, Kenya, Mali, Senegal, Zambia)***

| | 5% Productivity increment | | | 10% Productivity increment | | |
|---|---|---|---|---|---|---|
| Annual adoption rate (%) | 1 | 2 | 3 | 1 | 2 | 3 |
| Maize (US$) | 4.71 | 9.03 | 13.00 | 9.42 | 18.06 | 26.00 |
| Bovine meat (US$) | 5.76 | 11.08 | 15.98 | 11.53 | 22.16 | 31.96 |
| Bovine milk (US$) | 4.93 | 9.48 | 13.67 | 9.87 | 18.96 | 27.35 |
| Total | 15.40 | 29.59 | 42.65 | 30.82 | 59.18 | 85.31 |

13. Table A2.3 shows the estimated spillover benefits of adoption of CSA practices in the 20 “extrapolation domain” countries, expressed as in Table A2.1 in terms of the increase in value of production per year per

percentage point increase in crop, meat, and milk yield (i.e., assuming adoption over all the cropping areas and all cattle in the target systems). Table A2.4 shows the marginal benefits in value of production for plausible (but lower, given that these are spillover impacts) adoption rates and the same productivity increments as in Table A2.2.

***Table A2.3. Increases in value of production (2005 US$ x 1000) of maize, other food crops, bovine meat and bovine milk for a 1 percent increase in yield throughout the mixed crop-livestock systems in the 20 AICCRA spillover countries.***

| | Region, Countries, Systems | | | |
|---|---|---|---|---|
| | East Africa: Burundi, Rwanda, Tanzania, Uganda | West Africa: Benin, Burkina Faso, Chad, Cote d'Ivoire, Cameroon, Guinea, Gambia, Guinea-Bissau, Mauritania, Niger, Nigeria, Togo | Southern Africa: Botswana, Malawi, Mozambique, Zimbabwe | Total |
| | MRA, MRH, MRT, MIA, MIH, MIT | MRA, MIA | MRA, MIA | |
| Maize | 12,760 | 15,082 | 6,087 | 33,929 |
| Other food crops | 180,824 | 403,858 | 32,566 | 617,248 |
| Bovine meat | 8,477 | 13,184 | 1,802 | 23,463 |
| Bovine milk | 9,943 | 4,142 | 1,574 | 15,659 |
| Total | 212,004 | 436,266 | 42,029 | 690,299 |

*Systems based on Robinson et al. (2011): MR = mixed rainfed; MI = mixed irrigated; A = arid-semiarid; H = humid-subhumid; T = tropical highland.*

***Table A2.4. Marginal increases in value of production per year at year 10 (2005 US$ million) of maize, bovine meat and bovine milk for a range of plausible productivity benefits and adoption rates per year in the mixed crop-livestock systems in the 20 AICCRA "spillover" countries.***

| | 5 % Productivity increment | | | 10% Productivity increment | | |
|---|---|---|---|---|---|---|
| Annual adoption rate (%) | 0.1 | 0.2 | 0.3 | 0.1 | 0.2 | 0.3 |
| Maize (US$) | 1.53 | 3.06 | 4.57 | 3.07 | 6.12 | 9.14 |
| Bovine meat (US$) | 1.05 | 2.10 | 3.13 | 2.11 | 4.20 | 6.27 |
| Bovine milk (US$) | 0.70 | 1.40 | 2.09 | 1.40 | 2.80 | 4.18 |
| Total | 3.28 | 6.56 | 9.79 | 6.57 | 13.12 | 19.59 |

14. The benefits for farmers who use climate information services arise from their being able to adjust their management practices to likely imminent or future weather patterns. If the growing season is likely to be wetter than average, then it may be appropriate to increase the use of purchased inputs to increase production and net revenues, for example. For drier conditions, CIS can help farmers and herders reduce production losses via a range of management decisions (such as sale of animals or reducing cropping inputs). The long-term implications of a drought on vulnerable households may be profound, because

such a "system shock" can push farmers and their families into poverty from which it can be difficult to escape (Barrett et al., 2016).

15. The use of CIS will not only reduce production variability; it should also increase average yields. This latter effect is not included in the CIS analysis done here as it would double-count the benefits already estimated from CSA technology adoption. An assumption in the EFA is that CSA adoption leads to production benefits (increases in distribution means) and that CSI leads to reductions in yield losses in poorer seasons (reductions in production standard deviations). Thus, the target populations for CSA and CIS are essentially the same, which is judged to be appropriate in the AICCRA context in view of the fact that weather-related production variability in the arid-semiarid mixed systems of SSA can be considerable.

16. Annual national yield variability was calculated from FAOSTAT for each of the six target countries for the years 1989-2018. Maize yield CVs for the target and extrapolation countries are about 75 percent for southern Africa, 37 percent for East Africa, and 34 percent for West Africa.

17. Because CIS are still relatively new in SSA, information on the potential for the use of CIS to reduce yield variability is somewhat scarce. To the extent that use of CIS prompts changes in technology choice, the impacts can be significant; as noted above, Wossen et al. (2017) reported that yield variance in farmers' fields can be halved via the use of drought-tolerant maize.

18. One way to translate reduced yield variability into production benefits is to calculate the economic losses avoided for a percentage reduction in yield coefficient of variation (CV), measured with respect to the left-hand tail of the production distribution. A very approximate estimate is to assume that maize yields in farmers' fields are distributed normally and calculate the difference in the probability densities of two normal yield density curves, one with the observed mean and yield CV and another with the same mean but a reduced yield CV. For maize grown in the MRA systems in the target countries, average yield is 1.24 t/ha, and the yield CV is about 35 percent. This indicates a yield standard deviation of 0.43 t/ha. For example, if the CV is reduced to 30 percent with the same mean, the new standard deviation is 0.37 t/ha. The area between the probability density functions of these two normal distributions in the left-hand tails (i.e., the total of the yield loss foregone because of the reduction in CV from 35 percent to 30 percent), amounts to 3.3 percent of total production. Values of the loss avoided are shown in Table A2.5 for the same adoption rates used in Tables A2.2 and A2.4. In practice, mean yields will increase through the use of CIS, but as explained above the focus here is on the avoided losses, which may be extremely important for household food security.

***Table A2.5. Value of production losses avoided per year at year 10 (2005 US$ millions) via a reduction in the CV of annual maize production from 25 percent to 20 percent (through the use of CIS) in the MRA mixed crop-livestock systems.***

| | 3.3% maize productivity increment (loss avoided) | | | | | |
|---|---|---|---|---|---|---|
| Annual adoption rate (%) | 0.1 | 0.2 | 0.3 | 1 | 2 | 3 |
| AICCRA target countries (US$) | | | | 3.28 | 6.28 | 9.02 |
| Spillover countries (US$) | 1.11 | 2.22 | 3.31 | | | |

19. For estimating the returns on investment for the AICCRA project, the Net Present Value (NPV), Internal Rate of Return (IRR), and the BCR were calculated for a range of conservative adoption rates and yield impacts, on the assumption that the investment is allocated to the indicator crop alone (maize). The

impacts evaluated are made up of three elements:

- The direct yield benefits arising from the adoption of CSA technologies.
- The yield losses avoided from the use of CIS.
- An additional benefit arising from the operation of a new regional soil health and fertility research and development center from 2024 onwards. This is one of the activities implemented under the World Bank's soil health roadmap (World Bank, 2023). These benefits are difficult to estimate directly, but the assumption has been made that there will be increased AICCRA project expenditure on soil fertility practices as well as on capacity development of farmers and extension personnel, leading to an additional yield benefit from adoption.

20. Table A2.6 shows the results of the investment analysis for the six AICCRA anchor countries to 2030 in 2020 dollars, as a result of the original US$60 million investment in 2020 and an additional US$40 million investment made in 2024. The project net benefits accounted for the increased costs of implementation at the farm level as outlined above, and a discount rate of 5 percent was used. Results are shown in Table 6 for two levels of impact: 15 percent and 30 percent direct yield benefits from the adoption of CSA practices. The yield losses avoided, and the soil fertility benefits were kept constant between the two impact levels. The yield losses avoided were estimated at 3.3 percent per year, as outlined above, and kept constant across the two impact levels.

21. For the additional soil fertility benefits, an additional yield benefit of 3 percent was chosen and likewise kept constant across the two impact levels. In time, the adoption of explicit soil fertility practices may well lead to much greater yield benefits, but 3% was estimated to be appropriate for the initial years of this work. This additional yield benefit was applied across the AICCRA program. Although the soil fertility roadmap has been targeted to West Africa and the Sahel, AICCRA is strategizing to contribute to similar work in East and southern Africa. This will involve south-south learning across the regions and the relevant regional organizations. The overall goal of the roadmap is to contribute to the Africa fertilizer summit. The results of sensitivity analysis of several of these estimates are presented in section 5 below.

22. The analysis is presented for three levels of adoption: 1.5 percent, 2.5 percent, and 3.5 percent per year to 2030. It was judged that slightly higher than the adoption rates used in the original EFA were appropriate, given the additional investment being made.

23. Table A2.6 also presents the three investment criteria for the AICCRA spillover countries for the same impact levels as for the anchor countries, but with lower adoption rates as these are not focus countries for the project.

***Table A2.6. Investment criteria to 2030 using a discount rate of 5% for different plausible yield benefits and adoption rates per year for maize in the mixed crop-livestock systems of the AICCRA anchor countries and spillover countries.***

ANCHOR COUNTRIES

| | Lower impact level | | | Higher impact level | | |
|---|---|---|---|---|---|---|
| Annual adoption rate (%) | 1.5 | 2.5 | 3.5 | 1.5 | 2.5 | 3.5 |
| Total adoption by 2030 (%) | 14 | 22 | 30 | 14 | 22 | 30 |
| NPV (2020 US$ million) | -28.6 | 8.5 | 43.6 | 6.7 | 65.8 | 121.5 |
| IRR (%) | -2.3 | 6.9 | 13.5 | 6.5 | 17.1 | 25.1 |
| B-C ratio | 0.68 | 1.10 | 1.49 | 1.08 | 1.74 | 2.37 |

SPILLOVER COUNTRIES

| | Lower impact level | | | Higher impact level | | |
|---|---|---|---|---|---|---|
| Annual adoption rate (%) | 0.75 | 1.12 | 1.75 | 0.75 | 1.12 | 1.75 |
| Total adoption by 2030 (%) | 7 | 11 | 16 | 7 | 11 | 16 |
| NPV (2020 $ million) | 11.3 | 58.9 | 137.7 | 70.0 | 145.8 | 271.0 |
| IRR (%) | 7.4 | 15.9 | 26.7 | 17.6 | 27.7 | 41.0 |
| B-C ratio | 1.13 | 1.67 | 3.41 | 1.79 | 3.56 | 4.06 |

*Lower impact level: 15% direct yield benefit for maize + 3.3% avoided loss + 3% additional yield benefits from increased project expenditure on soil fertility practices and capacity development from 2024 onwards.*

*Higher impact level: 30% direct yield benefit for maize + 3.3% avoided loss + 3% additional yield benefits from increased project expenditure on soil fertility practices and capacity development from 2024 onwards.*

24. The robustness of some key assumptions of the EFA was tested for one of the scenarios shown in Table A2.6: a 2.5 percent adoption rate and a 15 percent yield benefit resulting from the adoption of CSA. Results are shown in Table A2.7 with respect to (1) less conservative estimates of yield losses avoided through the use of CIS; (2) changes in the incremental yield benefit from additional soil fertility activities; and (3) increases in the discount rate used. The results of the investment analysis using less conservative estimates of the benefits of avoided production losses are particularly noteworthy.

***Table A2.7. Sensitivity analysis for AICCRA investment criteria to 2030 for different CIS benefits, additional soil fertility benefits, and discount rates in the mixed crop-livestock systems of the AICCRA anchor countries.***

| | Scenario | NPV (2020 $ million) | IRR (%) | B/C ratio |
|---|---|---|---|---|
| 1 | Baseline:<br>• 2.5% adoption per year<br>• 15% CSA yield benefit<br>• CIS avoided loss benefit 3.3% (CV of annual yield reduced from 35% to 30%)<br>• Incremental 3% yield benefit from additional soil fertility R4D<br>• 5% discount rate | 8.5 | 6.9 | 1.10 |
| | CIS effectiveness | | | |
| 2 | CV of annual yield reduced from 35% to 25% (CIS avoided loss benefit 6.4%) | 41.7 | 13.2 | 1.47 |
| 3 | CV of annual yield reduced from 35% to 20% (CIS avoided loss benefit 12.2%) | 103.7 | 22.6 | 2.17 |
| | Additional soil fertility impact | | | |
| 4 | Incremental yield benefit changed from 3% to 5% | 15.1 | 8.2 | 1.17 |
| 5 | Incremental yield benefit changed from 3% to 7% | 21.6 | 9.4 | 1.24 |
| | Discount rate changes | | | |
| 6 | Discount rate changed from 5% to 6% | 3.7 | 6.9 | 1.04 |
| 7 | Discount rate changed from 5% to 7% | -0.6 | 6.9 | 0.99 |

25. An analysis was carried out of an additional investment of US$50 million in 2026. For this, the same adoption rates were used as for the baseline analysis of anchor and spillover countries (Table A2.6). The analysis was run out to 2035, allowing for increased adoption of CSA and CIS. A modest increase in the impact levels was assumed from 2026 onwards, with respect to the soil fertility increment. This was increased from 3 percent in the baseline to 5 percent for this scenario. Results are shown in Table A2.8 for the anchor countries and the spillover countries, and for these combined.

***Table A2.8. Investment criteria to 2035 using a discount rate of 5 percent for different plausible yield benefits and adoption rates per year for maize in the mixed crop-livestock systems of the AICCRA anchor countries, spillover countries, and for anchor plus spillover countries.***

ANCHOR COUNTRIES

| | Lower impact level | | | Higher impact level | | |
|---|---|---|---|---|---|---|
| Annual adoption rate(%) | 1.5 | 2.5 | 3.5 | 1.5 | 2.5 | 3.5 |
| Total adoption by 2035(%) | 20 | 32 | 41 | 20 | 32 | 41 |
| NPV (2020 US$ million) | -6.4 | 63.8 | 128.2 | 58.2 | 167.1 | 267.1 |
| IRR (%) | 4.2 | 11.7 | 17.3 | 11.2 | 20.2 | 27.2 |
| B-C ratio | 0.95 | 1.51 | 2.03 | 1.47 | 2.34 | 3.15 |

SPILLOVER COUNTRIES

| | Lower impact level | | | Higher impact level | | |
|---|---|---|---|---|---|---|
| Annual adoption rate (%) | 0.75 | 1.12 | 1.75 | 0.75 | 1.12 | 1.75 |
| Total adoption by 2030(%) | 11 | 15 | 23 | 1 | 15 | 23 |
| NPV (2020 $ million) | 73.9 | 166.9 | 318.4 | 182.7 | 326.8 | 561.7 |
| IRR (%) | 12.5 | 19.8 | 29.3 | 21.0 | 29.9 | 42.1 |
| B-C ratio | 1.6 | 2.35 | 3.57 | 2.47 | 3.63 | 5.53 |

Lower impact level: 15% direct yield benefit for maize + 3.3% avoided loss + 3% additional yield benefits from increased project expenditure on soil fertility practices and capacity development for 2024-2025 and 5% from 2026 onwards.

Higher impact level: 30% direct yield benefit for maize + 3.3% avoided loss + 3% additional yield benefits from increased project expenditure on soil fertility practices and capacity development from 2024-2025 and 5% from 2026 onwards.

## Annex 3. West Africa Regional Soil Fertility and Health Hub

1. **Rationale:** The pursuit of sustainable agriculture and food security is an enduring imperative for Africa and is inextricably linked to the health and fertility of soils. Soil health underpins the very foundation of agricultural prosperity, and its conservation is a collective responsibility that transcends boundaries and sectors. Fertilizer use is critical to increase crop productivity in Africa and provides a key entry point towards building soil health. One could argue that building soil health in the absence of fertilizer is not achievable at scale while the efficient use of fertilizer requires a healthy soil.

2. Notwithstanding the above, agriculture in Africa has been driven by a vicious cycle of soil health decline, land degradation, poor yields, and ecosystem service loss, resulting in poverty and natural resource degradation. The key underlaying cause of this cycle is agriculture based on nutrient mining and with the ever-growing population and reduced opportunities to convert natural ecosystems in agriculture, this situation is no longer tenable.

3. In West Africa, many see rainfall as the first limiting factor food security. Less attention is paid to the role of nutrients from soil and fertilizers as an important factor that limits the productivity of low-input farming systems. However, studies show that for impoverished soils, even a small dose of organic or mineral fertilizers can increases crop yield[14], even in water deficient systems. Fertilizers can also improve rainwater use efficiency[15], making health soils a critical aspect of building agricultural resilience and boosting climate change adaptation in the face of climate change.

4. Soil organic carbon is also a key aspect of Green House Gas emission mitigation in agriculture. Land degradation due to agricultural activities contributes to soil GHG emissions. Emissions of GHG from cropping systems in Africa are predominantly caused by increasing demographic pressure and the predominance of low-input systems that drive area expansion and conversion of natural woodlands and forests with higher C stocks to cropping and grazing systems with low C stocks. Agricultural land presents a trade-off because the same land used for providing essential food and other products stores large amounts of C in soils and biomass in its natural state, thus mitigating climate change. Therefore, sustainable management of agricultural systems and improved soil health are critical for climate change adaptation and GHG emission mitigation[16].

5. **Background:** Following the Abuja Fertilizer Summit of 2006, and the well-known target of achieving fertilizer application rates of 50 kg fertilizer nutrients per hectare per year and acknowledging that much of African agriculture continues to be built on nutrient mining and area expansion, reinforcing soil degradation, a second Summit is planned for early 2024 on Fertilizer and Soil Health, hosted by the African Union Commission. The Heads of State and Government are expected to sign (i) a Statement on Fertilizer and Soil Health, thus recognizing the continued need for increasing fertilizer use while acknowledging that

[14] Bado V.B., Bationo, A., Tabo, R., Laminou, M., Manzo S., Whitbread, A.M. (2022). Improving the productivity of millet based cropping systems in the West Africa Sahel: experiences from a long-term experiment in Niger. Agriculture, Ecosystems and Environment, 335,107992. *https://doi.org/10.1016/j.agee.2022.107992*

[15] Crop productivity and food security are more often limited by soil fertility than drought in low input, semi-arid farming systems. Boubie Vincent Bado, Anthony M. Whitbread, Andre Bationo

[16] Fertilizer and Soil Health in Africa: The Role of Fertilizer in Building Soil Health to Sustain Farming and Address Climate Change, Bernard Vanlauwe, Tilahun Amede, André Bationo, Prem Bindraban, Henk Breman, Remi Cardinael, Antoine Couedel, Pauline Chivenge, Marc Corbeels, Achim Dobermann, Gatien Falconnier, Wole Fatunbi, Ken Giller, Rebbie Harawa, Mercy Kamau, Roel Merckx, Cheryl Palm, David Powlson, Leonard Rusinamhodzi, Johan Six, Upendra Singh, Zachary Stewart, Martin van Ittersum, Christian Witt1, Shamie Zingore, Rob Groot.

this commodity needs to be used judiciously in order to restore soil health; and (ii) a related Action Plan, delineating in broad terms the main components of large-scale investments in fertilizer and soil health.

6. Anticipating the Summit, ECOWAS and the World Bank hosted a round table on Fertilizers and Soil Health in May 2023 to strengthen the sector and improve the use of fertilizers as a key element in stimulating agricultural production and combatting food insecurity in West Africa, under the patronage of H.E. the President of the Republic of Togo. The round table brought together leaders from across West Africa. A 'Fertilizers and Soil‐Health Roadmap for West Africa and the Sahel: Investing in the Future by Nourishing the Soil' was signed by the West African Heads of State and ministers, which will guide investments in fertilizer and soil health around 4 Axes, 12 Priority Actions, and a large number of Sub-actions. Under Priority Action 9 'Strengthen soil health monitoring in West Africa', Sub-action 1 refers to: Implement and coordinate subregional programs for the continuous monitoring of soil fertility and soil health with national and regional research bodies through the establishment of a Regional Centre.

7. **Why a Regional Hub for Fertilizer and Soil Health?** Enhancing soil health and increasing lands productivity through sustainable fertilizer use and adapted practices will require a diverse knowledge base backed by resources and supporting policies. A Regional Hub for Fertilizer and Soil Health for West Africa and the Sahel will consolidate science, policy advocacy, and outreach experts to provide actionable knowledge that attracts investment and informs policies. The Hub will support activities across the region to catalyze investments in fertilizer and soil health, build-in the multiple supporting mechanisms of enabling policy and market environment and focus on dissemination processes that accelerate adoption of best practices at scale. The Hub will operate on the premise that any investment made in Fertilizer and Soil Health in the ECOWAS region is properly coordinated to prevent overlap, duplication, re-inventing the wheel, and to create synergies to maximize impact on soil health improvement for agricultural productivity, food security, climate resilience.

8. The **Vision** of the Regional Hub is for nations in West Africa and the Sahel to improve long-term soil health and fertility for enhanced yield and profitability, efficient resource use (nutrients, water, labor), and climate resilience, thus contributing to the sustainable transformation of African smallholder agriculture for food security, poverty reduction, and environmental sustainability.

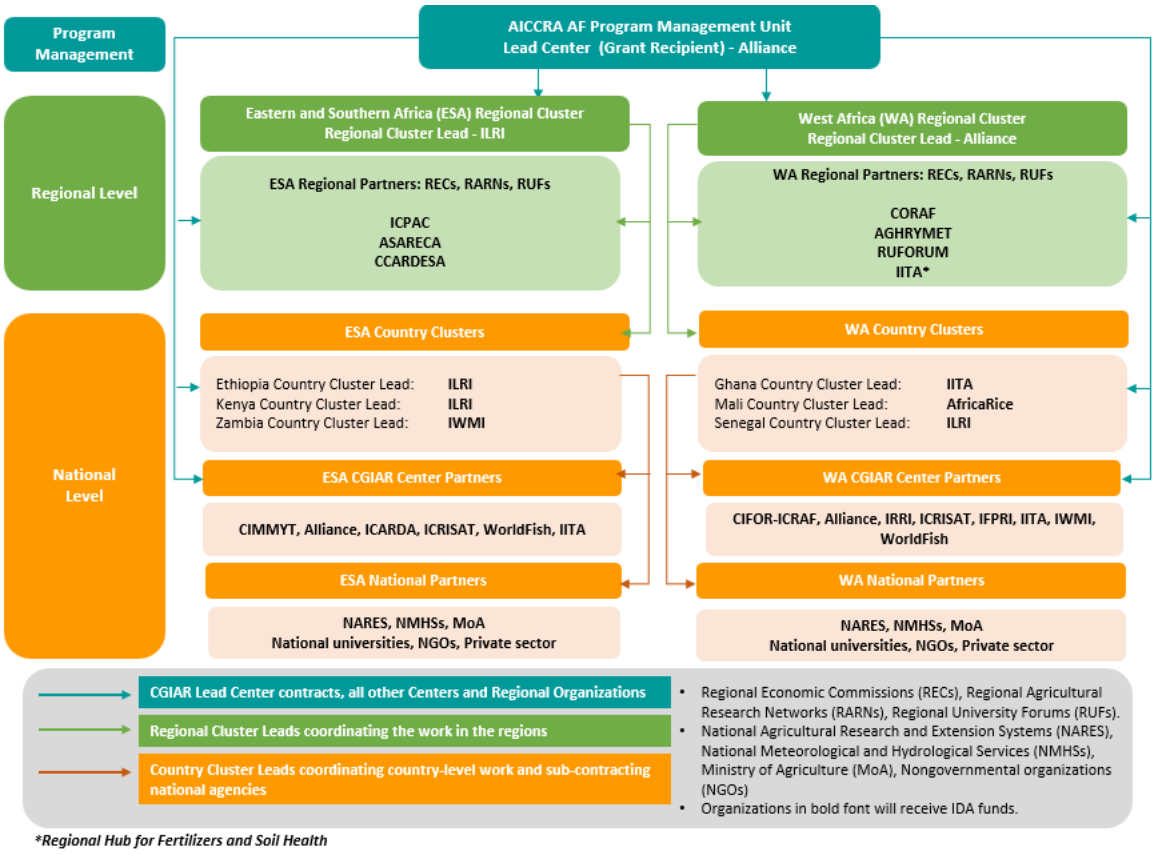
9. The **Mission** is to facilitate the delivery of agronomic gain, conceptualized around yield and profitability, resource use efficiency (nutrients, water, labor), climate adaptation, and soil health, at the regional, national, and sub-national level through the assembly, delivery, and monitoring of fertilizer and soil health management practices and related capacity development of key stakeholders, underpinned by institutionalization principles. The conceptual framework for the Regional Hub will be based on the fundamental principles of collaboration, innovation, and sustainability, in alignment with the goals established in the Lomé Declaration.

10. The role of the Regional Hub is defined by the needs of the Fertilizer and Soil Health Roadmap in response to several key challenges hampering the appropriate use of fertilizer and the rehabilitation of soil health. In particular, it will serve has the regional leader related to soil information and dissemination; soil fertility knowledge management and sharing; agronomic recommendations: capacity development; policy support; and advocacy and awareness creation: and collective resource mobilization.

11. AICCRA support: AICCRA will support the development of the Hub through financing to IITA for the provision of goods, consulting services, non-consulting services, training and workshops, operating costs and payment of staff salaries for the purpose. The development of the Hub concept is well underway and expected to be completed by March 1, 2024, and a launch of the Hub is expected in May 2024.

## Annex 4. Institutional mapping of AICCRA

AICCRA Institutional Structure

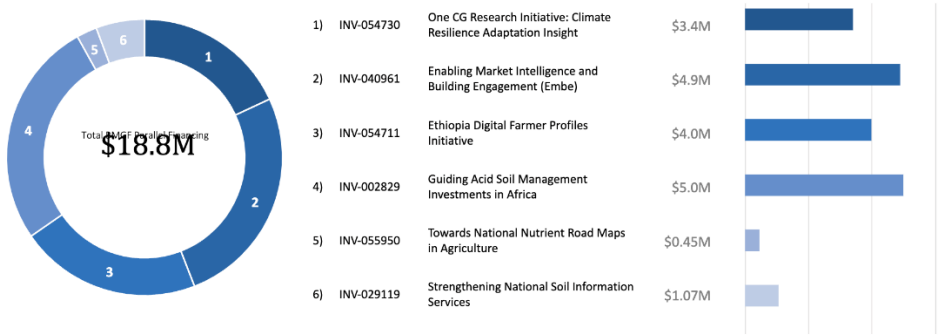



**Regional Hub for Fertilizers and Soil Health*

## Annex 5: Parallel Financing

### Bill & Melinda Gates Parallel Financing

AICCRA & BMGF | Parallel Financing Investments




1. **Background:** The Bill & Melinda Gates Foundation (BMGF), through its Agriculture Development portfolio, is a major supporter of the CGIAR and related agricultural research for development activities. As part of this support, BMGF has been collaborating with the World Bank and the CGIAR in order to develop synergistic activities which serve as strategic leverage in relation to the WB AICCRA objectives, the CGIAR impact areas, and the BMGF Agriculture Development portfolio strategy.

2. During COP28, the World Bank, the United Arab Emirates, and BMGF each pledged US$100 million to bolster the CGIAR. Subsequently, BMGF has identified several investment opportunities in the CGIAR and its partners that can serve as AICCRA Parallel financing. This includes US$18.8M of investments, with additional reinvestments possible. These investments, subject to standard BMGF approval processes, will help catalyze and promulgate key innovations to accelerate and deepen the impact of the AICCRA program.

3. The first investment, currently under standard BMGF review and approval, is **Adaptation Insights** for CIAT for US$3.4 million. Adaptation Insights is aligned with Component 1: Knowledge Generation and Sharing. Specifically, the project is contributing to strengthening provision of Africa-wide agro-climatic services by national agricultural and meteorological agencies and CSA investment planning by national Ministries, Departments and Agencies and private firms through the development of "indicators and metrics for tracking adaptation progress resulting from CSA/CIS technologies and practices" (as described in Annex 1). It will accomplish this by cultivating an ecosystem of tools and data, aligning the vast network of CGIAR and partner expertise with the broader goals of impactful collaboration, consistent assessment, and accelerated adaptation efforts of these AICCRA stakeholders. Importantly, this grant will be awarded through the CGIAR W3 Science Group project mechanism, which carries with it the explicit intention to integrate the results of the effort more broadly into the CGIAR strategy.

4. A second investment, initiated with CIAT, is the **Enabling Market Intelligence and Building Engagement** (Embe) research effort for US$4.9 million. This investment also aligns with Component 1: Knowledge Generation and Sharing. This BMGF R&D investment explores and evaluates the value gained through interactive simulation in a smallholder farmer advisory environment, especially around the

behaviors and agency of farmers, AgriSMEs, and other actors in the use and uptake of climate services and climate smart agriculture practices. Embe contributes to strengthening provision of Africa-wide agro-climatic services by private firms through supporting the development and testing of scaling strategies and the identification of sustainable and commercially viable delivery models. Validated approaches from Embe will indirectly align and contribute to Component 3 by supporting the accelerated scale-up of validated CSA/CIS technology bundles Africa-wide through private sector business models.

5. Another initiated investment is with the Ethiopian Agriculture Transformation Agency for US$4 million for the **Ethiopia Digital Farmer Profiles Initiative**. This effort maps to Component 2 in relation to activities contributing to IPI 2.1 and is complementary to co-developing an integrated national ag-data hub. This BMGF investment will contribute improving integration of farmer information with Ethiopian agricultural data for improving the design and delivery of digital agriculture extension and advisory services for farmers and livestock keeper. Current efforts are hampered by gaps in data sharing and the limited options for integrated data access points. To mitigate this gap, this investment addresses design and use issues around farmer profiles with the objectives of improved access to timely and quality information at lower costs, Improved access to inputs and services such as digital finance, mechanization, and agricultural inputs, better informed decisions by sector actors, to deliver targeted/tailored services and interventions, and overall increased farmer income through better farm management.

6. A second set of active investments focuses on parallel support complementary to the new **Soil Fertility and Health Hub to be based at IITA**. The first of these is currently concluding Phase I of an investment awarded to CIMMYT on Guiding Acid Soil Management Investments in Africa for US$5 million and is concluding in early 2024. The multipronged approach of this investment includes, a) efforts to increase depth and utility of data and evidence related to acid soil management through ex-ante analysis, adoption research and agronomic research; b) support to governments and the private sector to stimulate investment in acid soil management; and c) improved access to and use of data relevant to acid soil management through new data, workflows, and decision support tools. A Phase II reinvestment for US$1.5 million is currently under development for standard BMGF review and approval to help expand the geographic coverage further promote uptake and use of the approaches both in and beyond AICCRA countries.

7. Also complementary to the new Soil Fertility and Health Hub is an investment for **National Nutrient Roadmaps** for US$0.45 million and concluding in 2023. This investment responds to the stated goal of the AUC ‘s Africa Fertilizer and Soil Health Summit to build consensus on an Africa Fertilizer and Soil Health Action Plan, which will constitute high-impact solutions and investments over a 10-year horizon that will increase fertilizer use, improve soil health, raise crop yields and contribute to sustainable agricultural transformation. African governments, development partners and private sector entrepreneurs will be in a stronger position to successfully achieve these outcomes if the key trends and priorities identified are integrated into the post-Summit actions of African governments and the relevant regional and continental organizations. The process and tools required to translate the general recommendation into an investment plan for specific countries or regions is a work in progress and driven by several independently organized processes that all aim to link up with the Action Plan. With this investment, we aim to contribute a framework for the development of national roadmaps and investment plans that will integrate soil health priorities and fertilizer sector development needs. BMGF is currently considering a follow-on investment of US$2 million to support rolling out of national road map development in 5 to 8 countries to inform soil health related investment plans, which is subject to standard BMGF review and approval.

8. The final investment BMGF is mapping as parallel financing is the Process Towards Strengthening National Soil Information Services (SIS) activity for US$1.07 million awarded to CABI. This active investment, ending Q3 of 2024, has two primary outcomes including: 1) national and international partners aligned on approaches towards strengthening national SIS; and 2) a pathway towards strengthening national SIS developed and endorsed in three countries. The effort has developed this approach through several workstreams that include a review of SIS systems and their evolution, assessment of the state-of-the-art technology options for soil solutions, the development of a flexible framework for SIS intervention design and the development country roadmaps, and international soil community engagement and advocacy. Alignment with AICCRA will help facilitate exchange of transferable assets to the AICCRA Soil Fertility and Health Hub.

**OCP Parallel Financing:**

9. OCP Group, through its African Subsidiary OCP Africa, will provide financial and technical contributions to the establishment of the Regional Hub for Soil Health and Fertility in West Africa OCP invests directly across the continent to develop customized soil health and fertility solutions in Africa and utilize advanced technologies like precision agriculture to empower farmers and improve overall productivity. OCP's farmers-centric programs focus on knowledge and skills development, promoting sustainable farming techniques, and providing access to quality inputs and various services.

10. As part of a joint program with the World Bank and the commitment signed in Marrakech 2023 with IITA, OCP Group will support the implementation of the ECOWAS roadmap for soil health and fertility. This involves providing both financial resources and technical expertise in parallel to the AICCRA program and through the AICCRA-financed Hub for Soil Health and Fertility.

11. As part of this program, the group will provide US$5 million in parallel financing to the AICCRA program through the Hub for Soil Health and Fertility, specifically to support countries to: (i) develop digital soil health and fertility maps; (ii) develop fertilization models based on the principles underlying Integrated Soil Fertility Management (ISFM) and the 4R+[17] principles of nutrient management; (iii) undertake scientific studies and research development projects to develop site-specific soil health and fertility solutions and science-based recommendations based on soil, climate and cropping systems; (iv) support farmer led experimentation to adapt ISFM and 4R+ practices recommendations to local conditions based on empirical data and scientific knowledge; and (v) strengthen the capacities of national institutions responsible for soil health and fertility.

[17] Right source, Right place, Right rate and Right time