

SMARTFARM - A data and digital technology driven and farm management solution for climate resilience.

Review PIF and Make a recommendation

Basic project information

GEF ID

10965

Countries

Regional (Ethiopia, Rwanda)

Project Name

SMARTFARM - A data and digital technology driven and farm management solution for climate resilience.

Agencies

IFAD

Date received by PM

4/8/2022

Review completed by PM

5/19/2022

Program Manager

Aloke Barnwal

Focal Area

Climate Change

Project Type

MSP

PIF

Part I ? Project Information

Focal area elements

1. Is the project/program aligned with the relevant GEF focal area elements in Table A, as defined by the GEF 7 Programming Directions?

Secretariat Comment at PIF/Work Program Inclusion

Yes.

Agency Response

Indicative project/program description summary

2. Are the components in Table B and as described in the PIF sound, appropriate, and sufficiently clear to achieve the project/program objectives and the core indicators?

Secretariat Comment at PIF/Work Program Inclusion

Please address the following comments:

1. As adaptation is the principal objective of the project, the Rio Marker should be 2 (principal), not 1 which indicates only significant rating. . Please revise.
2. The objective statement should be very concise. All the details of the projects can be in Table B or in the description of each components. Please revise the project objective section accordingly.
3. The co-finance is very low and will not pass further screening for this project which has a direct private sector and public sector financial leverage potential. While it is good

to note in-kind co-finance from IFAD, the Secretariat expects more tangible co-financing from IFAD through its other digital agriculture initiatives and importantly from CROPIN which is making significant investments in this sector. The LDCF grant is to catalyze such investments instead of providing an additional grant to expand operations. We noted the potential of 8-9 m at CEO ER stage. However, at the PIF please provide an indicative conservative estimated co-financing.

4. While we appreciate the link with IFAD country programs (component 1 and 2), we suggest not to target beneficiaries only linked with IFAD country programs. There may be other potential initiatives by other agencies in the two countries which could benefit from this initiative and vice versa. We suggest to remove specific reference to IFAD country program and keep it more broad and flexible.

GEFSEC 26th April 2022

Many thanks for the responses. Comment cleared.

Agency Response

21 April 2022

1. Rio marker revised for 2 (principal).
2. This has been updated in the revised PIF.
3. The co-financing amount has been revised in the PIF as follows:

IFAD has reviewed possible synergies with IFAD supported programmes in the 2 countries and can mobilise ~USD 2.4 million in co-financing resources as loan through the ongoing projects and in-kind through Project Management Staff time to support the Project implementation in its duration

For CropIn: The digital platform cost per farmer per year is around \$12-15 for WACS and DDAS. It can cost up to \$20 per farmer per year to include pest and disease early warning systems as per some of the projects.

CropIn is contributing \$5/farmer/year engagement cost as co-financing for WACS and DDAS which makes it a total of \$1M for technology (for 200,000 SHFs). This is again exclusive of the cost involved in the regular updating of the platform which is shared with all the clients. Secondly, in terms of human resource, CropIn is committing Project Director's and other personnel costs including that of technology, data science, solution experts to the tune of \$250,000 as in-kind support for project duration.

4. While, this has been updated in the PIF, synergies with ongoing programmes with ATA Ethiopia and African-wide collaboration with AGRA will be explored. Besides, the dev sector projects, CropIn has partnerships with enterprise sector - agribusinesses, input companies, FIs, etc. - that can be leveraged for the programme who come and participate with 200,000 smallholder farmers. This will be further detailed during Step 2 of the design. Its also important to indicate that IFAD support to the Project would need to show synergies with its current ongoing projects in the identified countries, while ensuring participation of other beneficiaries beyond IFAD projects.

Co-financing

3. Are the indicative expected amounts, sources and types of co-financing adequately documented and consistent with the requirements of the Co-Financing Policy and Guidelines, with a description on how the breakdown of co-financing was identified and meets the definition of investment mobilized?

Secretariat Comment at PIF/Work Program Inclusion

Please see comments related to co-financing above.

GEFSEC 26th April 2022

Comment cleared.

GEFSEC 25 May 2022

On the PMC Proportionality: there is not proportionality in the co-financing contribution to PMC. If the GEF contribution is kept at 5.8%, for a co-financing of \$3,650,000 the expected contribution to PMC must be around \$211,700 instead of nothing. As the costs associated with the project management have to be covered by the GEF portion and the co-financing portion allocated to the PMC, the GEF contribution and the co-financing contribution must be proportional, which means that the GEF contribution to PMC might be decreased and the co-financing contribution to PMC might be increased to reach a similar level. Please amend either by increasing the co-financing portion and/or

by reducing the GEF portion. A more definitive estimation of PMC will be presented and adjusted at CEO Endorsement stage.

GEFSEC 25 May 2022

Thanks. Comment cleared.

Agency Response

21 April 2022

Same as above. Updated in the PIF.

26 May 2022

Addressed in revised PIF

GEF Resource Availability

4. Is the proposed GEF financing in Table D (including the Agency fee) in line with GEF policies and guidelines? Are they within the resources available from (mark all that apply):

Secretariat Comment at PIF/Work Program Inclusion Yes.

Agency Response

The STAR allocation?

Secretariat Comment at PIF/Work Program Inclusion NA

Agency Response

The focal area allocation?

Secretariat Comment at PIF/Work Program Inclusion NA

Agency Response

The LDCF under the principle of equitable access?

Secretariat Comment at PIF/Work Program Inclusion Yes

Agency Response

The SCCF (Adaptation or Technology Transfer)?

Secretariat Comment at PIF/Work Program Inclusion NA

Agency Response

Focal area set-aside?

Secretariat Comment at PIF/Work Program Inclusion NA

Agency Response

Impact Program Incentive?

Secretariat Comment at PIF/Work Program Inclusion NA

Agency Response

Project Preparation Grant

5. Is PPG requested in Table E within the allowable cap? Has an exception (e.g. for regional projects) been sufficiently substantiated? (not applicable to PFD)

Secretariat Comment at PIF/Work Program Inclusion Yes

Agency Response

Core indicators

6. Are the identified core indicators in Table F calculated using the methodology included in the corresponding Guidelines? (GEF/C.54/11/Rev.01)

Secretariat Comment at PIF/Work Program Inclusion

While climate information data is indeed important for the project, the central focus of the project is agriculture. The meta information therefore should be revised to reflect this. Climate services intended under this project is also targeted for agriculture purpose mainly. We suggest to consider agriculture as 60%, water management 10% and climate services as 30%.

GEFSEC 26th April 2022

Thanks. Comment cleared.

Agency Response

21 April 2022

Agreed and updated in the PIF.

Project/Program taxonomy

7. Is the project/program properly tagged with the appropriate keywords as requested in Table G?

Secretariat Comment at PIF/Work Program Inclusion

Please see comment related to Rio Marker under the first question.

GEFSEC 26th April 2022

Thanks. Comment cleared.

Agency Response

21 April 2022

Revised.

Part II ? Project Justification

1. Has the project/program described the global environmental/adaptation problems, including the root causes and barriers that need to be addressed?

Secretariat Comment at PIF/Work Program Inclusion

Yes. Very well articulated. Thank you.

Agency Response

2. Is the baseline scenario or any associated baseline projects appropriately described?

Secretariat Comment at PIF/Work Program Inclusion

Baseline scenario is fine at the PIF stage. However, while developing the full proposal, please identify additional baseline projects funded by LDCE, AF or GCF. There are ongoing LDCE projects in Ethiopia and Rwanda by UNDP which have climate resilient agriculture focus and can be complementary to this project. A note in the PIF indicating that such projects will be identified at CEO ER stage will be appreciated.

GEFSEC 26th April 2022

Thanks. Comment cleared.

Agency Response

21 April 2022

Updated in the baseline scenario

3. Does the proposed alternative scenario describe the expected outcomes and components of the project/program?

Secretariat Comment at PIF/Work Program Inclusion

The alternate scenario and the three components look fine. Please review the details as in some places "three countries" are mentioned instead of two.

It is understood that the project will strengthen capacity of extension workers and farmer groups, create knowledge and capacity building materials and pilot the services with a set of 200,000 farmers in the two countries. While the approach overall looks comprehensive, please clarify how the project will enable farmers to benefit from the services after 12 months of initial service. Will the project develop a self sustaining business model to ensure long term continued benefit to the SHFs?

The support activities are linked with GEF and IFAD resources. We would like dedicated efforts and resources from CROPIN also which has been operating in this space for a number of years and would like to leverage their resources also to scale up benefits to vulnerable farmers. We see a short description of this in incremental reasoning section. We will appreciate a more detailed description of this for better understanding.

GEFSEC 26th April 2022

Thanks. Comment cleared.

Agency Response

21 April 2022

1. Updated throughout the PIF

2. On point 2: Expanded on Page 22 of PIF document

The programme intends to support 200,000 smallholder farmers by increasing their potential economic capacity through maximising farm productivity and quality with a suite of weather and crop and farm advisory services. The full value will be realised gradually once farmers start adopting these data driven practices and decision making over a period of time.

As the farm data would build up and benefits start getting released, there would be an uptake from the farmers to invest more and reap higher benefits through better seeds , crop management practices , chemicals etc. The program therefore intends to support such needs and add value by bringing a financial institution as well as an offtaker of the selected commodity in the value chain on the shared digital platform so that the collective risk can be reduced for the stakeholders.

Technology will play a key enabler in terms of data interoperability, building economic and financial profiles based on historical, present and future agriculture performance.

It is important, as a first step in the programme, to build farmers and farm profiles by collecting, verifying and sanitising the data on CropIn's SMARTFARM platform to not only improve advisory services but later build a credible risk sharing models and credit scores for a small group of farmers that is useful for buyers, off-takers, insurance providers, FIs to interact and transact with the farmer/Farmer groups. The programme intends to experiment and build minimum viable products and services and bundle them together beyond the initial stated objective of providing climate and advisory services.

The interaction can be further enabled through remote sensing based crop assessments, credit scores, and a strong offtaker insight platform to connect buyers to potential farmers/farmer groups.

Community representatives from Farmer clusters / Collectives would be empowered to leverage digital platforms to digitize farm records and work as an institution to later

benefit from collective trade. This would not only help maximize value and generate local employment but also reduce risk and build strong institutional capacity for stakeholders to further engage.

In the later phase, the risk sharing and credit score models would reduce the cost of operations which goes in a brick and mortar/traditional model of transaction with farmers or the aggregated farmers. It would eliminate the need for collaterals and criterias which FIs need to issue credit to farmers through accurate risk assessment and due diligence. Further, the presence of buyers in the triangular value chains would provide extra incentive and pull for FIs to lend to the farmers for varying needs besides farm-based loans.

The model will be scaled and replicated to 200,000 SHFs, and other regions through IFAD and other agencies supported programmes in Africa and India.

CropIn has already touched base with leading FIs, buyers, donors and academic institutions to participate in experimenting with building minimum viable products and services for the programme. These include the likes of Rabobank, Ecobank, Wageningen University & Research, GSMA, GIZ, USAID, IDH etc.

3. Addressed in the co-financing table as below:

IFAD has reviewed possible synergies with IFAD supported programmes in the 2 countries and can mobilise ~USD 2.4 million in co-financing resources as loan through the ongoing projects and in-kind through Project Management Staff time to support the Project implementation in its duration

For CropIn: The digital platform cost per farmer per year is around \$12-15 for WACS and DDAS. It can cost up to \$20 per farmer per year to include pest and disease early warning systems as per some of the projects. CropIn is contributing \$5/farmer/year engagement cost as co-financing for WACS and DDAS which makes it a total of \$1M for technology (for 200,000 SHFs). This is again exclusive of the cost involved in the regular updating of the platform which is shared with all the clients. Secondly, in terms of human resource, CropIn is committing Project Director's and other personnel costs

including that of technology, data science, solution experts to the tune of \$250,000 as in-kind support for project duration.

4. Is the project/program aligned with focal area and/or Impact Program strategies?

Secretariat Comment at PIF/Work Program Inclusion

Yes.

Agency Response

5. Is the incremental/additional cost reasoning properly described as per the Guidelines provided in GEF/C.31/12?

Secretariat Comment at PIF/Work Program Inclusion

Please refer to the comment regarding sustainability beyond 12 months of services. Please elaborate this a bit more in the PIF.

GEFSEC 26th April 2022

Thanks. Comment cleared.

Agency Response

6. Are the project's/program's indicative targeted contributions to global environmental benefits (measured through core indicators) reasonable and achievable? Or for adaptation benefits?

Secretariat Comment at PIF/Work Program Inclusion

Yes.

Agency Response

7. Is there potential for innovation, sustainability and scaling up in this project?

Secretariat Comment at PIF/Work Program Inclusion

Yes. The project is highly innovative and first of its kind in LDCs. We will appreciate a bit more elaboration on the sustainability aspects of the project and innovation in implementation/business models which can be suited to the country contexts. We noted the approach to explore funding from different investors, donors, etc. The project may also consider exploring opportunity to integrate this within publicly funded agriculture programs to mainstream this in agriculture policies and programs and also potentially leveraging public finance for some kind of PPP based model.

GEFSEC 26th April 2022

Thanks. Comment cleared.

Agency Response

21 April 2022

Updated on Page 22 of the PIF document.

Project/Program Map and Coordinates

Is there a preliminary geo-reference to the project?s/program?s intended location?

Secretariat Comment at PIF/Work Program Inclusion

Yes.

Agency Response

Stakeholders

Does the PIF/PFD include indicative information on Stakeholders engagement to date? If not, is the justification provided appropriate? Does the PIF/PFD include information about the proposed means of future engagement?

Secretariat Comment at PIF/Work Program Inclusion

In the list of stakeholders, the project shouldn't limit engagement with climate teams of the respective governments only. Engagement with agriculture department and related agencies will be highly useful in success of the project.

GEFSEC 26th April 2022

Thanks. Comment cleared.

Agency Response

21 April 2022

Updated accordingly. Oversight as ministries of agriculture nominated staff to be present at meetings and several of these were specialists on agriculture, climate aspects. Further engagement with other ministries and agencies will be done during stage 2 of the design.

Gender Equality and Women?s Empowerment

Is the articulation of gender context and indicative information on the importance and need to promote gender equality and the empowerment of women, adequate?

Secretariat Comment at PIF/Work Program Inclusion

We appreciate the indication of a detailed gender plan at CEO ER stage. However, at the PIF stage also we would like some more details of how gender equality and women empowerment will be supported through the project. For this, please provide a bit more context and more details of the proposed gender inclusion approach.

GEFSEC 26th April 2022

The PIF word document attached is in track changes mode and hard to read. Please upload a clean revised file.

The elaboration of gender context is still inadequate and provides an outline only. Please provide some more context on gender related challenges and then map the interventions and approaches to respond to those challenges. Please elaborate a bit more.

GEFSEC 25 May 2022

The project already identified that 50% of the beneficiaries are women given their role and contribution as smallholder farmers. Although the project has indicated that it will develop a gender mainstreaming plan during project preparation phase, it is recommended that gender perspectives should be reflected in each project component. This means, for example, ensuring that tools and technology, knowledge products developed, are gender-responsive (engaging gender experts) and that capacity-building activities planned must take into account gender considerations to maximize the contributions and engagement of women (and girls, as necessary), and the benefit of the project to them.

GEFSEC 26 May 2022

Thanks. Comment cleared.

Agency Response

21 April 2022

Updated on page 27.

6 May 2022

A clean revised file will be uploaded.

Gender section is updated to elaborate context of gender issues in smallholder agriculture and how SMARTFARM will empower female workers.

26 May 2022

Components? description have been adapted to reflect gender considerations. Moreover, a para on IFAD gender transformative mechanism for climate adaptation work in Ethiopia has been included, since the analysis and expertise will benefit also this project. More analysis and gender perspectives and considerations will be fully taken into account during full design.

Private Sector Engagement

Is the case made for private sector engagement consistent with the proposed approach?

Secretariat Comment at PIF/Work Program Inclusion

Yes.

Agency Response

Risks to Achieving Project Objectives

Does the project/program consider potential major risks, including the consequences of climate change, that might prevent the project objectives from being achieved or may be resulting from project/program implementation, and propose measures that address these risks to be further developed during the project design?

Secretariat Comment at PIF/Work Program Inclusion

In the risks, please include COVID-19 as one of the risks and suggest mitigation measures. In line with GEF's guidance related to COVID-19, please include a section describing COVID-19 risks, mitigation measures and the potential opportunities in the project to facilitate a green and resilient recovery.

Further, as per GEF and STAP guidance, please elaborate climate change related risks to the project and how the project will tackle those risks.

GEFSEC 26 April 2022

Thanks but still it's not adequate. We would like to see a more detailed analysis of COVID context in the target countries/regions, risks and mitigation strategies, and importantly, a clear articulation of how this project can support resilient recovery.

Similarly, the climate risk assessment is also not adequate. Please explain a bit more on future climate scenarios, associated risks and how the project can tackle these risks.

Please refer to STAP guidance for this or refer to other GEF IFAD projects in the GEF 7 period.

GEFSEC May 6, 2021

Thanks. The climate risk screening is fine. However, please articulate, how the project will support resilience recovery from the COVID-19 pandemic. This is required in addition to risk and mitigation measures, per GEF guidance.

Agency Response

21 April 2022

Updated in risks section- table.

6 May 2022

Updated risk table:

Covid-19 section is added on new line to elaborate the context of the pandemic in the countries and address anticipated risks and mitigation measures.

Climate risk includes the results from the climate risk screening tool (from IFAD) for both countries.

- Updated the Risk Table with Climate Projections

19 May 2022

The risks table has been updated related to how the project will support recovery related to the pandemic, mainly shock to incomes of smallholder farmers. Both technical and institutional capacity building and augmenting practical climate risk information available to farmers to support real-time changes in farming operations adjustments according to climate risks have been suggested. SMARTARM will introduce both weather nowcasting, forecasting and prediction models to deal with current and future risks. The capacity building, improved access and more efficient use of inputs will contribute to improved productivity and green recovery.

Coordination

Is the institutional arrangement for project/program coordination including management, monitoring and evaluation outlined? Is there a description of possible coordination with relevant GEF-financed projects/programs and other bilateral/multilateral initiatives in the project/program area?

Secretariat Comment at PIF/Work Program Inclusion

In the project implementation and coordination arrangement, please specify how national/local government agencies or departments will be involved. Their engagement is important for greater buy-in, potential scale-up and tailoring the project activities in line with national climate adaptation priorities of the two countries.

GEFSEC 26 April 2022

Thanks,. Comment cleared. We will look forward to clear articulation of government's engagement in the project at the CEO ER stage.

Agency Response

21 April 2022

While SMARTFARM will leverage global satellite data through its existing partnership with IBM combined with onfarm data to provide climate and extension advisories, the project will also engage with other government agencies and partners as part of its implementation and sustainability of interventions particularly focusing on building local capacities and institutional strengthening for sustainability and scale-up. The detailed design will further elaborate on these aspects as part of project coordination model and capacity building.

Consistency with National Priorities

Has the project/program cited alignment with any of the recipient country's national strategies and plans or reports and assessments under relevant conventions?

Secretariat Comment at PIF/Work Program Inclusion

Please provide more specific information regarding alignment with national priorities of the two countries Rwanda and Ethiopia. The section is quite generic.

GEFSEC 26 April 2022

Thanks. Please upload a clean file, as the modifications are in track changes. Also, please add the list of national plans/policies in the portal entry. Alignment with GEF's goals isn't necessary in this section and can be moved to a different and more relevant section.

GEFSEC May 6, 2022

Thanks. Comment cleared.

Agency Response

21 April 2022

Updated on page 34 and 35

6 May 2022

A clean revised file will be uploaded.

Section is updated.

Added National Policies.

Knowledge Management

Is the proposed ?knowledge management (KM) approach? in line with GEF requirements to foster learning and sharing from relevant projects/programs, initiatives and evaluations; and contribute to the project?s/program?s overall impact and sustainability?

Secretariat Comment at PIF/Work Program Inclusion

Yes.

Agency Response

Environmental and Social Safeguard (ESS)

Are environmental and social risks, impacts and management measures adequately documented at this stage and consistent with requirements set out in SD/PL/03?

Secretariat Comment at PIF/Work Program Inclusion

Yes.

GEFSEC 25 May 2022

It is well noted that the project overall ESS risk is classified as moderate and PIF includes climate change and environment risks in the section 5. Risks to achieving Project Objectives. The Agency, however, should be able to attach a screening document (including type of environment and social risks for each MS 1-9) consulting with environmental and social specialists/unit of the Agency. Please provide an environmental and social risk screening document or plan for further environmental and

social assessment and development of environmental and social management plan during PPG stage.

GEFSEC 26 May 2022

Thanks. Comment cleared.

Agency Response

26 May 2022

A ESS screening was done and attached. We confirm we plan to conduct further ESS assessment and develop the ESMP during PPG stage.

Part III ? Country Endorsements

Has the project/program been endorsed by the country's GEF Operational Focal Point and has the name and position been checked against the GEF data base?

Secretariat Comment at PIF/Work Program Inclusion

No. Please attach the OFP endorsement letters from Ethiopia and Rwanda for this project.

GEFSEC 26 April 2022

Thanks for the letter from Ethiopia. Please secure letter from Rwanda also. Without the letter the PIF can't be cleared.

GEFSEC May 6, 2022

Please resubmit the PIF with the LoE from Rwanda.

Agency Response

21 April 2022

Endorsement letter for Ethiopia uploaded in the portal.

Endorsement letter for Rwanda is pending from the OFP.

6 May 2022

The Letter of endorsement for Rwanda is coming

19 May 2022

The letter of Endorsement is uploaded in the portal

Termsheet, reflow table and agency capacity in NGI Projects

Does the project provide sufficient detail in Annex A (indicative termsheet) to take a decision on the following selection criteria: co-financing ratios, financial terms and conditions, and financial additionality? If not, please provide comments. Does the project provide a detailed reflow table in Annex B to assess the project capacity of generating reflows? If not, please provide comments. After reading the questionnaire in Annex C, is the Partner Agency eligible to administer concessional finance? If not, please provide comments.

Secretariat Comment at PIF/Work Program Inclusion

NA

Agency Response

GEFSEC DECISION

RECOMMENDATION

Is the PIF/PFD recommended for technical clearance? Is the PPG (if requested) being recommended for clearance?

Secretariat Comment at PIF/Work Program Inclusion

Not yet. The Agency is requested to address the technical comments provided in the review sheet and resubmit the project for further review.

GEFSEC 26 April 2022

Not yet. Please resubmit the project by addressing additional comments.

GEFSEC 26 April 2022

Not yet. Please resubmit the project with an LoE from Rwanda and also by adding information on how the project will support green and resilient recovery from the impacts of COVID-19 pandemic.

GEFSEC 19 May, 2022

The LoE of Rwanda OFP has now been included. The project is recommended for technical clearance.

GEFSEC 25 May 2022

Please address three additional comments related to PMC proportionality, Gender and ESS provided under relevant questions in the review sheet.

GEFSEC 26 May 2022

Thanks. Responses and revisions are fine. All comments are cleared now.

ADDITIONAL COMMENTS

Additional recommendations to be considered by Agency at the time of CEO endorsement/approval.

Secretariat Comment at PIF/Work Program Inclusion

Review Dates

	PIF Review	Agency Response
First Review	4/12/2022	4/21/2022
Additional Review (as necessary)	4/26/2022	5/6/2022
Additional Review (as necessary)	5/6/2022	5/19/2022
Additional Review (as necessary)	5/19/2022	5/26/2022
Additional Review (as necessary)	5/25/2022	

PIF Recommendation to CEO

Brief reasoning for recommendations to CEO for PIF Approval

The proposed LDCF project "SMARTFARM - A data and digital technology driven farm and farm management solution for climate resilience" by IFAD aims to increase adoption of climate resilient agriculture practices in LDCs- Rwanda and Ethiopia by making real-time weather and climate data along with data-driven farm advisory available to smallholder farmers.

By utilizing the SMARTFARM platform of CROPIN, the project will advance digital agriculture which has emerged as a key solution to support long term and short term adaptation in agriculture. Building on the success and experience of CROPIN in Asia region and IFAD's digital agriculture efforts for smallholder farmers, the project will create an enabling environment for adoption of digital technologies for climate and agri advisory services in the Africa region with a potential of large scale replication. It will create opportunities for the private sector to offer technical services to smallholder farmers to support increased crop production, access to knowledge and access to innovative finance including credits and insurance. The project will also develop and deploy a digital agriculture platform, and connect nearly 200,000 farmers with the platform to provide them crop advisory services, connect them with financing and other technical institutions and strengthen their technical knowledge on climate resilient agriculture practices. It will also train 2000 extension workers and agripreneurs to use the platform and provide last mile services to smallholder farmers in sustainable manner. More specifically, the project will provide four specific technical services to smallholder farmers to support climate resilient agriculture.

- Weather and climate services (WACS) to provide valuable and actionable information to smallholder farmers on weather forecasts, weather nowcasts, climate predictions and early warnings. The information will be provided through mobile SMS. The climate data and services will be provided in synergy with local met organizations and using global climate databases.

- Data-driven agriculture services (DDAS) to provide agriculture intelligence services to farm level decision making by building on traditional agricultural advisory services and complementing it with precision agriculture uses hyperlocal data sources, such as sensors and UAV imagery, to optimize on-farm activities, and may involve elements of mechanization, such as solar irrigation.

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- Agri digital financial services (Agri DFS) to support agricultural credit products and agricultural index insurance that can help smallholder farmers become more climate resilient. For the index insurance, CropIn will deploy SMARTRISKS and PLOTTRISKS to score farmers and farms out of 100 to gauge the risks associated with the particular farmer.

- Digital Agri-Market services (DAMS) include complete farm to fork traceability and horizon on harvest and yield for off-takers and buyers to participate in business relationships with smallholder farmers institutions through traceability, digital procurement, and e-commerce platform. CropIn will deploys ROOTTRACE and

MARKETPLACE applications under this component. It will be a highly innovative application and first of its kind in Africa which will test use of Blockchain technology for climate resilient agriculture.

- Overall, it's a highly innovative and could be a beacon project in the two countries demonstrating application of digital technology for making agriculture sector more climate resilient, enhancing knowledge and technical capacity of small holder farmers and extension workers and creating a platform to connect various stakeholders in agri value chain to develop further innovative adaptation solutions. With a direct link with improving agriculture productivity and supporting sustainable livelihoods, the project will directly contribute to resilient recovery and building back better from the COVID-19 pandemic. The project is aligned with national adaptation priorities of Rwanda and Ethiopia including NAPAs and NDCs. It will focus strongly on women smallholder farmers, strengthen private sector engagement through the digital platform and support a strong knowledge management system on climate resilient agriculture.