



# Progress Report November 2021

**Supporting coherent policy implementation to catalyse food & livelihood security and unlocking multiple SDGs in Uganda with lessons to inform countries across Africa.**

## 1. CONTEXT

This intervention supported Uganda to enhance cross-sectoral coherence towards Ecosystems Based Adaptation approaches (EBA) and clean energy for food and livelihood security. The end is to unlock multiple Sustainable Development Goals (SDGs) and implement the Nationally Determined Contributions (NDCs). Uganda is among the countries that have submitted [revised](#) NDCs. These build on and expand on the ambition of the [first round NDCs](#), that prioritised clean energy, specifically solar, including to power agro-value addition. They prioritise sustainable agriculture approaches of Climate-Smart Agriculture (CSA) and forestry by prioritising clean & efficient cooking. These priorities align with the project objectives of enhancing EBA & clean energy for food and livelihood security towards unlocking multiple SDGs.

The agriculture sector stands out as one of the most critical to Uganda's actualisation of the SDGs. It provides livelihoods for [about 65%](#) of the population and is highlighted as being [strategic](#) to accelerate the realisation of Uganda's 3<sup>rd</sup> National Development Plan (NDP3). The NDP3 is a derivative of the long-term development vision 2040 which underpins inclusive, climate-resilient growth in transforming Uganda into an industrialized country, aligning with the SDGs. Value addition and agro-industrialization are expressly captured as key trajectories to this end.

Climate change and post-harvest losses are among the leading sources of inefficiency in Uganda's value chains. Accordingly, between [2 – 4%](#) of Uganda's GDP is depleted each year because of climate change, and without remedial actions, Uganda is set to lose up to \$5 billion per year by 2030. Specific to the agriculture sector, which engages up to 70% of the population, increasing extreme events are costing the sector [over \\$40million](#) in crop damage alone. Beyond climate change, the high levels of post-harvest losses (PHLs) stand out as another significant inefficiency. Accordingly, the country loses [up to 45%](#) of its yields to PHLs, which constitutes a [substantial threat](#) to Uganda's agricultural contribution to the national economy and the realisation of the SDGs. The losses are particularly notable in key-value chains such as cassava, the second most crucial staple food [farmed](#) by over 70% of the population. Cassava is very [susceptible](#) to PHLs and begins to deteriorate within 48 hours of harvest. Uganda's annual cassava PHLs are [estimated](#) at over \$30million. Reversing these PHLs, together with climate change-induced yield losses, stands out as critical to the realisation of the SDGs.

Beyond these direct food system losses, unclean cooking solutions are also a leading impediment to the SDGs. [Over 90%](#) of the Ugandan [population](#) rely on biomass fuel for cooking and heating. This high dependency on unclean cooking is a leading driver of indoor pollution, which causes [over 20,000](#) deaths in Uganda each year, with more than 5,700 being children, compromising health. In addition, [about 3%](#) of [Uganda's forests](#) are cut down each year for fuel. This, in turn, drives the degradation of forests and other terrestrial ecosystems. The cumulative effect of these losses – from PHLs to climate-induced reduction in yields, indoor pollution and deforestation-impacts Uganda's realisation of the SDGs.

As remediation, this initiative comes in to buttress the country's effort to reverse these losses towards realising the socioeconomic development priorities & the SDGs by leveraging climate action solutions of EBA & clean energy. Most importantly, this work demonstrates how the above can be achieved by leveraging the most significant constituency of ground implementers in Uganda – the youth and the informal sector, which [contributes over 50% of GDP and 80%](#) employment in Uganda. This gap has never been addressed – i.e., SDGs implementation impact achieved at the local level by leveraging climate action solutions uptake by the informal sector actions that create most of the livelihoods in Uganda and the youth who are the majority of Uganda's population.

Actions were undertaken on two levels to actualise this paradigm of leveraging EBA & clean energy through informal sector actions to enhance the productivity of food systems and unlock multiple SDGs. The **first** was practical ground actions that empirically showed how cross-sectorial coherent actions are critical to bridging gaps towards upscaling EBA & clean energy to enhance food system productivity through cutting post-harvest losses (PHLs) & clean cooking. This showed how the collaboration of operational actors across different sectors & different skills are needed to apply EBA & clean energy to food systems to reverse PHLs and enhance productivity. The **second** level was on generating empirical data on the social, economic/market, technical dimensions of developing & applying these climate action solutions to inform coherent policy

implementation. The Ecosystems Based Adaptation for Food Security Assembly (EBAFOSA) policy action framework was leveraged to mobilise ground actors with ongoing work that can take up these climate action solutions and demonstrate their impact on enhancing food systems in a low-risk manner. EBAFOSA was also leveraged to engage the policy actors for data uptake. The urgency to reverse these losses is further heightened by the need for the COVID-19 recovery efforts, where individual incomes [shrank](#) by up to \$52, and [growth](#) dropped from 6.2% to 1.6% - 2.5%.

## 2. SUMMARY OF RESULTS

Work involved engaging actors under the EBAFOSA Uganda framework and voluntarily engaging them to work with the community in developing and decentralising climate action solutions using the Innovative Volunteerism approach. The local governance structure of the Buganda kingdom administration and the leading local cooperative – the CBS PEWOSA – provided the structure for low risk, accountable engagements of the community. The Buganda kingdom policy on jobs and food security through cassava value addition provided a basis for EBAFOSA collaboration with the kingdom in implementing this policy. These engagements entailed coherent/complementary actions among actors of diverse sectorial backgrounds. Accordingly, work involved four key segments.

The first was gap analysis, where community members mobilised under the patronage of the Buganda kingdom and engaged through the CBS-PEWOSA cooperative structure decentralised to the village level through “Village Savings & Loans Associations (VSLAs)” were surveyed to establish gaps in their food systems on value addition and clean cooking. During the value addition survey, it was also established that most of the community applies nature-based EBA approaches to grow their food. A sample of 125 community members drawn from 5 VSLAs leading in agro-value chain engagement within the PEWOSA membership was interviewed. What was realised is that open sun drying was the predominant method of drying used, and solar dryers were not applied. It was also found that up to 56% of respondents have heard of solar dryers. Cumulatively, the survey established that up to 80% of yields is lost per season for lack of adequate preservation and value addition. Up to 70% of community members were willing to take up solar dryers as alternative value addition, while the rest expected to see the effectiveness of the dryers before making the shift. On clean cooking, up to 50 respondents who use different cooking methods – charcoal, firewood - and drawn from households to eateries were surveyed, and 92% indicated their eagerness to try clean cooking fuel briquettes as an alternative fuel to learn how to make these briquettes.

The second segment was training and capacity enhancement in developing and applying these climate action solutions. Accordingly, 20 young people, 21 women, and three men were trained to make and use fuel briquettes. The ten youth were also trained in fabricating simple briquettes making machines to enable broad application within the community. These are set to train more people through the VSLAs structure. 58 young people were trained in the development/fabrication

of solar dryers. Up to 139 agro-value chain actors drawn from 5 VSLAs were trained to apply solar dryers for processing & preservation to cut PHLs & enhance their incomes. One hundred fifty community members holding a total of 92 acres of farmlands were trained on diverse EBA techniques to improve their knowledge on EBA application. These trainings indirectly benefitted over 8000 community members spread over 21 VSLAs represented by family members in the trainings. Manuals for EBA training, solar dryer fabrication and use were also developed to guide the training and expand it to more VSLAs. Up to 60 VSLA members were also trained on financial management to complement the technical training in developing and applying climate action solutions to enable them to improve their savings in the VSLAs cooperatives groups.

The third was developing and decentralising these climate action solutions for community uptake. Accordingly, 7 giant solar dryers of over 400kgs capacity each were designed and decentralised to benefit over 300 agro-value chain actors through communal solar dryer centres where the use of the dryers is shared. Among primary beneficiaries are actors cultivating cassava, which is the strategic crop of both the Buganda kingdom and the CBS PEWOSA cooperative and pumpkin and vegetables. These 300 beneficiaries were spread across 5 VSLAs. On EBA, after training, a total of 60 agro-value chain actors, representing 125 acres and 609 household members, directly benefited from the distribution of organic cassava cuttings to be cultivated using EBA approaches and to be used for multiplication gardens to reach more beneficiaries. Up to 375,000 cassava cuttings were distributed. Cassava is highly climate-resilient and resistant to moisture stress. Expanding its cultivation is part of EBA. [Projections](#) show that while other crops are likely to experience significant declines of up to 22% under moisture stress, cassava will experience the least decline – of about 8%. On fuel briquettes, over 500 pieces were made, which are already creating earning opportunities for the community. A prototype briquettes machine capable of making up to 500 pieces per day was tested and passed, and this is set to be used as an example to make machines to be taken up and used by up to 9 VSLAs in the area with up to 150 members benefiting directly, and 900 indirectly.

The fourth was data compilation for policy uptake. Accordingly, data on the technical & socioeconomic impacts of these climate action solutions were compiled for policy uptake. For example, the use of solar dryers enabled the processing of up to 500kgs of cassava by VSLA members according to the UNBS standard US2241:2020, which specifies threshold moisture content values needed to ensure food safety. A 100% quality rate was registered for dried cassava. The reduction in PHLs was particularly critical during the COVID-19. The COVID-19 control measure minimised market activities meaning the loss of stock of perishables that could not be sold as fast during normal market days. The decentralisation of solar dryers to VSLAs in Buganda ensured reduction of pumpkin losses by 28%, earnings from high-quality dried cassava increased by \$50. This was in a trial group of about 15 farmers, and these impacts were registered in a period of about one month. Cumulatively, this data was compiled into guides for fabricating and using solar dryers that are set to be used to engage the UNBS towards developing an affordable solar dryer standard to enable quality assurance and regulation in the commercial development of these climate action solutions by the informal sector enterprises across Uganda.

Fifth was the Innovative Finance component. The engagement of actors through the structure of cooperatives meant that the financial benefits registered in the uptake of climate action solutions were deposited back to their cooperatives savings. This provided a foundational basis for the CBS PEWOSA cooperative to target investments in climate action solutions as a business development & expansion strategy.

The gender breakdown of beneficiaries was also undertaken, and over 60% of beneficiaries in all classes of climate action solutions were women. This is a critical step in enhancing gender inclusion in climate action, especially through the enterprise lens by creating inclusive income opportunities for women. This is a significant step in bridging the gender divide exacerbated by unequal access to economic opportunities.

The following sections expound further on the actions & impacts.

### **3. MAIN ACHIEVEMENTS**

The following was achieved by deliverable:

#### **Deliverable 1: Willing actors engaged under EBAFOSA policy action framework to drive climate action solutions of EBA and clean energy into their work**

Through the EBAFOSA framework, diverse actors, including young people, were guided to retool their skills and enhance their capacity in developing and applying climate action solutions of solar dryers, fuel briquettes, and EBA. Manuals were developed to guide these actions.

- Accordingly, 139 community members cutting across 5 VSLAs were trained in applying solar dryers for value addition. Following this training, a high of 100% of the VSLA members in one of the VSLAs demonstrated substantive knowledge of at least three skills they were trained in. A high of 86% of women farmers adopted the use of solar dryers following the training. In addition, up to 10 young people were trained in the fabrication of solar dryers, and they made and tested three dryers as proof of mastery of these technical skills. The images below illustrate this value addition training,



**Photo left:** women trained in solar dryer application test their skills on practical application.  
**Right:** youth trained in fabricating solar dryer test skills on practical application.

- On EBA training, up to 150 persons drawn from 5 VSLAs benefited from this training. Among the impacts of this training, one of the leading VSLAs applied intercropping and harvested 450 kilograms of beans, which earned a total of 1,125,000 UGX equivalent to \$315. The images below illustrate this EBA training.



**Photo:** training on EBA application underway

On fuel briquettes, 20 young people, 21 women, and 3 men were trained to make and use fuel briquettes. 10 youth were also trained in fabricating simple briquettes making machines to enable broad application within the community. Following the training, a local bakery shifted from charcoal to 100% using of fuel briquettes. The adoption of fuel briquettes provided domestic energy savings of \$25 for one woman, translating to \$300 in annual savings. Sells of briquettes generated revenue of \$13.8 per week for one of the trained youths. Beyond the briquettes, trained youth were able to fabricate a prototype briquettes machine that can make up to 500 pieces per day. This prototype will be the model that will be used to fabricate additional machines

to enable up to 9 VSLAs to access briquettes machines. The images below illustrate the briquettes training.



**Photo:** community members training in making fuel briquettes



**Photo:** youth training in making briquettes machines

The reports attached below expound further on the above actions and impacts.



EBAFOSA UGANDA Solar dryers report  
BRIQUETTES REPORT from EBAFOSA Uganc



EBA-Training  
Manual\_Final.pdf



Ecosystem Based  
Adaptation Training R



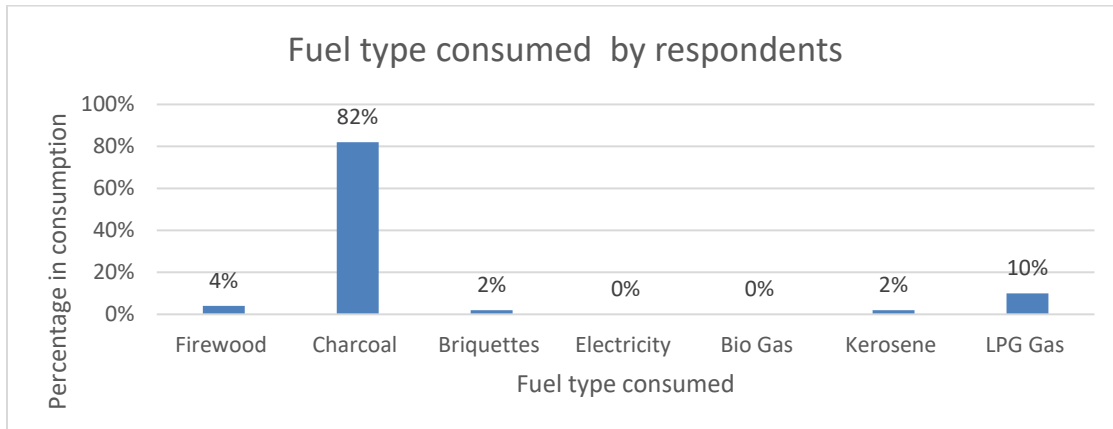
Solar Dryer Training  
Report for EBAFOSA L



**Deliverable 2: Agro-value chain actors engaged in key-value chains of Uganda – including cassava, etc., and cluster into groups and productivity gaps developed that can be bridged using climate action solutions**

Through the EBAFOSA framework, agro-value chain actors drawn from 21 VSLAs were surveyed to establish value addition and clean cooking gaps. Out of this population, a sample of 125 agro-value chain actors that are the most active were judgementally sampled and interviewed on their value addition gaps. In addition, 50 community members who are high charcoal/firewood users were also sampled to establish their attitudes and preference towards fuel briquettes.

- Accordingly, on clean cooking, it was established that over 80% of respondents use charcoal. It was also established that up to 92% of those interviewed were ready to switch to fuel briquettes. It was also established that up to 90% of those surveyed know of briquettes existence, and up to 28% use fuel briquettes. The biggest issue was availability. 9 out of 10 times, a buyer in the market is likely to find charcoal and other unclean sources compared to fuel briquettes. Enhancing the availability of fuel briquettes was therefore found to be the most significant gap. The images below capture the survey actions.



**Chart:** proportion of population that uses charcoal



**Photo:** Charcoal vending & transportation

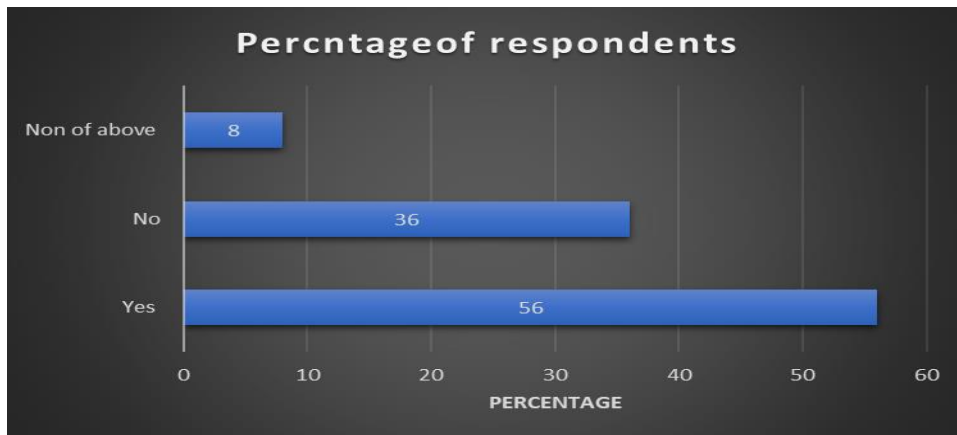
On agro-value addition, it was established that open sun drying is the most predominant method used to dry/preserve food products, including cassava, a major strategic crop in the area. The study also established that, on average, one farmer loses up to 20,000 UGX due to post-harvest. This translates to losing up to 80% of their product after every farming period. The study also established that 56% of the respondents knew about solar dryers and usage, while 36% did not know. The study also found out that all those interviewed – 100% would like to shift to using solar dryers – with 70.4% not minding sharing the dryers in a communal model. In comparison, 29.6% preferred to be allocated dryers individually.



The images below further illustrate the survey findings.



**Photo:** produce drying in the open sun, exposed to the elements, hence being unhygienic.



**Chart:** respondent's knowledge of solar dryers.  
The attached reports further elaborate on the above gaps.



Solar dryer Feasibility Report for Uganda\_Fii  
Fuel Briquettes Feasibility Study Reperc

**Deliverable 3: Decentralise the climate action solutions of EBA and clean energy to agro-value chain actors in an enterprise approach**

Following the survey gaps, EBAFOSA Uganda working with the trained youth, decentralised the developed climate action solutions to the community clustered into VSLAs for application and generation of data on impact. In addition, on average, over 60% of beneficiaries in all classes of climate action solutions were women. Accordingly, climate action solutions of EBA and solar dryers were decentralised for community uptake and resulted in the following impacts:

- on solar dryers, a total of 300 community members spread across 5 VSLAs benefitted from the decentralisation of solar dryers for communal use. One of the significant farmers growing mushrooms noted that the amount of crop she can save grew from 1kgs per month to 14kgs per month – a 1300% increase. With this, she got \$232 in revenue in just one month, translating to \$2,789 in annual revenue. As a shared service, the solar dryers were decentralised in a pay-as-you-go model. The youth who were decentralising and managing these dryers generated some income. In 3 VSLAs, a total of UGX 98,500, which translates to \$27, was generated in one drying session to provide income for the young people. This was critical to enable the youth to build socioeconomic resilience during these COVID-19 difficulties. Indeed, this study's notable impact arose from the dryers' practicality to cutting PHLs during the COVID-19 lockdowns that necessitated the closure of markets and resulted in a backlog of stock of perishables. Among those engaged in the tests were market traders. During the COVID-19 period, while others were counting losses arising from the closure of markets, beneficiary communities accessed climate action solutions of solar dryers. They realized a reduction of pumpkin losses by 28%, enhanced earnings from high-quality dried cassava by \$50 per farmer group while creating income for the youth who decentralized these dryers. These benefits were registered in just one month. The images below further illustrate this uptake.





**Photos:** solar dryers applied to dehydrate cassava and ready for processing /storage/consumption



**Photo:** value-added cassava made from cassava dried using solar dryers.

- on EBA, trained farmers, were guided to apply diverse EBA approaches. One of the leading VSLAs managed to cultivate harvest up to 7 tonnes of fast-maturing cassava grown using EBA. Market sales earned them UGX1,400,000, equivalent to \$392. At the same time, another VSLAs earned a total of 1,125,000 UGX, equivalent to \$315, from the sale of 450kgs of EBA cultivated beans. At the same time, the distribution of cassava cuttings as an EBA approach of using drought-resistant crops resulted in the distribution of 375,000 cassava cuttings to cover 125acres, benefiting 60 farmers directly and up to 600 persons of their households indirectly. In addition, a total of 23 acres of multiplication sites cultivated using EBA were established to supply planting material to an additional 93 acres and benefit up to 138 more farmers in the coming season. All this will expand coverage of EBA among agro-value chain actors and enhance demand-driven upscaling. The photos below further illustrate this EBA uptake.



*Photo: distribution of cassava cuttings to the community as an EBA strategy of drought-resistant crops*



**Photo: EBA farm**

The attached reports elaborate on this decentralisation of climate action solutions and the registered impacts.



Impact of Climate Action Solar Dryer to ' DISAGGREGATION D/ Uganda-Buganda Kin



GENDER



UNEP- EBAFOSA



Solar dryers report from EBAFOSA Uganc

**Deliverable 4: Empirical data of the social, financial, economic & environmental aspects of decentralising climate action solutions of EBA & clean energy compiled for uptake by academia, local governance structures, and national policy experts convened under the UNBS coordinated “policy harmonisation & coherence committee for implementation” to inform SDGs implementation across different sectors**

The application of climate action solutions of solar dryers among VSLA members resulted in the generation of data on the effectiveness of the solar dryers in actualising food safety benchmarks in terms of hygiene and threshold moisture content needed to prevent the growth of aflatoxins, mold, yeast, and other mycotoxins. This is in line with implementing the national standard US2241:2020 of the Uganda National Bureau of Standards (UNBS). Following this success, EBAFOSA working with the UNBS has initiated developing an affordable solar dryer standard to enable quality assurance and regulation in the commercial development of these climate action solutions of solar dryers by the informal sector enterprises across Uganda. And by this, enhance accessibility to these solar dryers that have proven to be effective tools for implementing national standards. As an initial step, manuals have been developed on both fabrication and use of these dryers and these are to be used as part of the information pack of source documents that will be used to develop the solar dryer standard. The attached images illustrate the application of these solar dryers by VSLA members and the generation of this data.



*Photo: solar dryer application to demonstrate implementation of US2241:2020 standard*





**Photo:** data collection to demonstrate effectiveness of solar dryers in actualising the requisite moisture content values as stipulated in UNBS standards to ensure food safety.

The attached reports further elaborate on the above.



Drying rates of  
cassava chips in the st



EBAFOSA UGANDA MANUAL ON SAFETY  
MANUAL FOR FABRICAND USAGE OF AN IN



**Deliverable 5: Innovative finance to access climate action solutions of EBA and clean energy by agro-value chain actors**

This work was delivered through the structure of communal cooperatives called VSLAs to enable accountability and seamless operationalisation of savings and investments to enhance climate action solutions. A total of 5 VSLAs with a total of 300 direct members were engaged. The engagement of actors through the structure of cooperatives meant that the financial benefits registered in the uptake of climate action solutions were deposited back to their cooperatives savings. This provided a foundational basis for the CBS PEWOSA cooperative to target investments in climate action solutions as a business development & expansion strategy. Accordingly, among financial benefits registered are EBA, where the application has resulted in one VSLA harvesting up to 7 tonnes of fast-maturing cassava grown and earning \$392. This money was deposited back to the cooperative. On solar dryers, value addition increased earnings by 1300%, causing one of the VSLAs to earn \$232 in a month. These savings will go into growing the deposit base of the cooperative. On clean cooking, the adoption of fuel briquettes provided domestic energy savings of \$25, for one woman, translating to \$300 in annual savings. Sells of briquettes generated revenue of \$13.8 per week for one of the trained youths. All these incomes were deposited with the cooperative.

These income opportunities enhance members' liquidity and hence their ability to invest in more climate action solutions to expand their cycles of saving and investments in these climate action solutions and shore up their savings and investments in the CBS PEWOSA cooperative. These climate action interventions provide proof to the cooperative's movement on how climate action

presents opportunities to improve the financial bottom-line and provide an incentive for more targeted products by cooperatives to prioritise upscaling climate action solutions.





*Photos: VSLAs members engaged in application of climate action solutions.*

The attached reports further elaborate on these impacts.



UNEP- EBAFOSA Climate Action report  
Uganda- CBS - PEWO- CBS PEWOSA Coops

## **4. MAIN IMPLEMENTATION CHALLENGES**

Institutional lethargy was one of the main challenges experienced where uptake of climate action from an enterprise and income opportunities lens is a new narrative separate from the traditional approach of taking climate action from the social lens established in most institutions. Such new knowledge tends to face resistance from bureaucracies when some decision-makers, especially at the operational level, decide to shelve such new paradigms and opt for the traditional ones. To surmount it is critical to work with early adopters within institutions to spearhead the task of convincing counterparts within the bureaucracy.

## **5. LESSONS LEARNED AND OPPORTUNITIES**

Working through local governance and finance structures that engage the majority of the community proved critical to mobilising community members to participate in a low risk, traceable way that makes it easier to track progress and convince policy steps.

## **6. MULTIPLIER EFFECTS**



Working through local financial institutions that engage the majority of the population provides a ready structure of accountability and traceability to upscale successes. Success in one cooperative group / VSLA attracts other VSALs which replicate it. In addition, ensuring policy is recalibrated following what has been proven to work on the ground ensures that incentives are targeted at the highest potential for success in the long term.

## **7. PENDING ACTION and WAY FORWARD**

The next steps will focus on expanding the application of climate action solutions of solar dryers, EBA, and fuel briquettes to generate more data sets. Priority will be given to applying solar dryers to implement standards – including the US2241:2020, and developing value-added product lines in the market and generating direct market impacts. Priority will also be given to linking the solar dryers to the EBA farms that receive the cassava cuttings in this period to unlock more value addition opportunities and measurable impacts. Additional priority will be to strengthen the value-added financial ness of the climate action solutions to the CBS PEWOSA and the enhanced policy re-prioritisation towards incentivising more of these climate action solutions uptake among more VSALs.

The development of fuel briquettes machines will be finalised, the displacement of measurable amounts of unclean cooking and generation of income opportunities from clean cooking will be fostered.

All these actions will be delivered through the structure of VSLAs – where lessons from one VSLA are shared for replication with more VSALs.

The solar dryer standard development process will also be further enhanced.