Final Report

Programme Review of the CARE Denmark Strategic Partnership Agreement with Danida (2022-2025)

Date: 21 March 2025

CONTENTS

EXECUTIVE SUMMARY

The Executive Summary is attached separately so it can be printed as a stand-alone document.

INTRODUCTION

This report summarises a mid-term review of the CARE Denmark Strategic Partnership Agreement (SPA II) with Danish Ministry of Foreign Affairs (MFA) which runs from 2022-2025. The overall purpose of the programme review is to assess and analyse CARE's climate innovation approach by capturing best practices and sustainable business models emerging within the SPA framework. Countries included in SPA II are Bangladesh, Burkina Faso, Ethiopia, Mali, Niger, Somalia, and Uganda, plus climate smart action to improve conditions for multiplying impact through scaling and replication of innovative solutions beyond the individual country level.

The objectives of the programme review are as follows:

a. To assess the relevance of the underlying programme design for CARE DK's climate innovation portfolio and identify potential opportunities for strengthening/adapting the framework.
b. To undertake a mapping and detailed description of best practices, business models and/or climate solutions that are assessed to be sustainable and scalable
c. To analyse how the climate innovation approach plays into a nexus context and how this could be strengthened throughout the project cycle.
d. To synthesise learning and provide operational recommendations for a future SPA together with a strategic refinement of the climate innovation portfolio as well as for late-state implementation.

The final report describes financially viable business models for climate-smart solutions that at the same time make an impact (or have the potential to) for the climate-vulnerable people that CARE works with. In addition to the main report, there are two other outputs which can be found in the annexes.

a. Promising business models that have a local impact (or potential for), presented as three independent cases.
b. A catalogue of criteria for successful scaling and/or best practices.

The outline of this report follows the outline prescribed in the Terms of Reference, which emphasises high level practices, findings, lessons, and recommendations.

KEY PROGRAMMATIC FINDINGS

1. All country programmes developed climate change adaptation solutions that increased community resilience. Few of the solutions were new technologies, rather they were **new approaches to established technologies** such as drip irrigation and biogas digesters managed by community groups.
2. **No programme reached the point where solutions were scaled up**, but most planned to spend 2025 working on this.
3. While many country programmes developed **business models,** most were at the point of being modified in order to scale up, and thus **were not ready to be adopted or adapted** by other country programmes. The majority of modifications involved creating new community groups to manage production or finance on a larger scale, and the results would only be evident later in 2025 when plans for scaling up are implemented.
4. Most programmes were not clear at which point they should engage with the **private sector** to scale up their initiatives. In some cases, dialogue with private companies or microfinance institutions is only just starting in the last year of the SPA II programme.
5. **Finance** and the need for **more development of solutions** with participants were identified as the primary barriers to scaling.
6. About **half of the solutions have a chance of scaling up** through markets, others would require donor or government funds to be sustained or grow further.

Country programmes have developed more than a dozen climate solutions and have taken them to various stages of testing and implementation. While programmes followed the basic steps of human-centred design, the actual process for each varied depending on what work had been done previously, the complexity of the solutions promoted, the current conditions in the area, and the interests and capacities of local participants. Annex 6 summarises the solutions and breaks them down by key elements of business models:[1] value proposition; key activities; stakeholders; key partners; key resources needed; financing models; and cost structure. Table 1 summarises the most promising solutions, and describes them according to key elements of the business model framework, since there is no room here to capture the entire analysis. Case studies for each of these solutions can be found in a separate attachment, as referenced in Annex 1.

[1] These categories have been adapted from models in the following sources:
Business models for climate services: An analysis https://www.sciencedirect.com/science/article/pii/S2405880719300524 ;
UNaLab, *Business Models & Financing Strategies,* 2018,
https://unalab.eu/system/files/2021-06/business-models-and-financing-strategies-nbs2021-06-15.pdf;
Paula Gil Baizan, *A Business Model Canvas for Humanitarian Innovation,* Nov 20, 2022,
https://medium.com/@paulagilb/a-business-model-canvas-for-humanitarian-innovation-cf7c1d474775.

Table 1: Solutions that show promise of scaling up

Country	Solution	Value proposition	Financing models	Barriers to scaling up
Bangladesh	Reverse Osmosis	• Increases access to non-saline water at a reasonable price without depleting the water table	• Upfront Investment US$25k • 500 households pay for fresh water • ROI: US$5000 per year • Break-even is 6 years for covering just the initial costs of acquiring land and plant construction, but 14 years if all costs for start-up are included such as establishing the Water Committee: staff costs, travel etc	Initial investment of US$39,000 required
Ethiopia	Post-Clearance Farming Through Drip Irrigation	• Increases resilience to uncertain rains and droughts • Increases agricultural production and income • Prevents regrowth of *Prosopis* and preserves land for grazing and farming	• **Start-up:** Investment made by SPA II (drip irrigation facilities and agricultural inputs) • **Scaling up:** Support from - government initiative - diaspora initiative funds - microfinance organisations - other NGOs would need to provide finance to install more drip irrigation. Existing farms can be continued by the groups through sales of vegetables	Start-up finance is needed for materials for new groups to start
Uganda	Black Soldier Fly Farming	• Produces chicken feed and compost cheaply with simple technology that small farmers can construct • Increases production of chickens and vegetables	• **Start-up:** kits bought with SPA II funds, given to farmers for free • **Scaling up:** to be determined. Possibilities: sale of kits, training in self-construction, loan fund	• Planning • Monitoring • Training
Uganda	Biodigesters	• Produces clean household energy while reducing time and damage caused by foraging for firewood • Produces compost slurry for increasing crop production, feeding Black Soldier Flies, sanitation, and hygiene (house floor smearing to reduce dust, latrine odour control)	• Revolving fund through BUAK • Maintenance through Biogas Solutions Uganda Ltd carbon fund	• Planning construction • Training • Monitoring • Maintenance services
Niger	Biodigesters	• Produces household energy while reducing time and damage caused by foraging for firewood • Produces compost slurry for increasing vegetable production	• None yet, exploring MFIs	Finance. May be viable with lower cost local installers. Financial analysis being prepared, not yet available

As well as the solutions in Table 1, others also show promise, including drip irrigation in Bangladesh and Somalia, and processing of *Prosopis* for commercial products in Ethiopia. Discussions with CARE staff and partners, and field visits to Ethiopia and Uganda, revealed that these listed above are the most mature solutions and have a reasonable chance of scaling up with further work.

Table 1 shows that the value proposition for each – the benefits of these solutions – go well beyond climate benefits. All have multiple co-benefits, namely: increasing household resilience to climate shocks or stresses; generating income; providing a valuable local service or product; and reducing time burdens on women. In every case, participants selected these solutions along with CARE and its partners because of the value they saw in them. CARE's role was important in guiding the whole process as a facilitator along with local leaders and NGO partners. In the case of the post-clearance farming model and (potentially) Black Soldier Fly farming and biodigesters, the solutions create circular economies in which waste products become the feed stock for other productive products such as compost or animal feed. In the case of *Prosopis*, a problematic invasive species becomes a valuable resource for up to three local small industries.

All solutions were based on organised community groups, except in Somalia where the programme promoted a drip irrigation solution as a pilot with 47 individual farmers selected by the community. The forms of the community groups varied:

- **Women's groups, including a women-led water management committee and savings and loan associations,** managed the irrigation project in Burkina Faso and the reverse osmosis plant in Bagerhat District in Bangladesh.
- A **youth group and common interest groups** (CIGs) managed the four different solutions in Ethiopia.
- Newly formed **users' associations** have recently begun to manage the Black Soldier Fly and biodigester programmes in Uganda: BSF Champions for the flies, and Bio-energy Umbrella Association of Kyangwali (BUAK) for the biodigesters.

A number of these groups are newly formed, and will no doubt take some time to sort out their organisation and procedures. It is not a foregone conclusion that all groups will be able to manage the enterprises, since all were started with funds and facilitation by CARE and its partners, and the transition to independent operation will most likely require considerable accompaniment. In most cases, while the solutions show promise, it is still unclear what their cost structures will be, what competition they face, and what their balance sheets will need to look like to move past the initial no-cost start-up that the SPA II programme afforded them.[2] The process has been useful and productive, but the focus on community group management and a market-oriented approach requires continued support to help make good ideas sustainable and replicable. What exactly are these solutions? Below are thumbnail sketches of the four highlighted solutions. More detailed information is contained in the accompanying case studies.

Reverse Osmosis Plant in Bagerhat District, Bangladesh

In Bagerhat District, there are shortages of safe water for household use. In this programme, CARE staff and partners worked with a water management committee of local women. Among the solutions developed was a reverse osmosis plant, which reduces the salinity of the water and makes it available for sale at a reasonable price to 300 local households. The first plant is completed, and the water management committee and CARE have developed a plan to scale it up in the final year of the programme by either constructing new plants or taking over some of the 36 government-built plants which are not operating. Figure 1 illustrates the current business model for the plant, showing the role of the partner Rupantar and the central role of the women's water management committee. Because start-up costs of a new plant are relatively high – nearly US$19,000 for land acquisition and construction, and another US$20,000 of it is necessary for pay for more staff costs and travel to establish another water committee – the programme is counting on commercial investment in the plants. The financial analysis conducted by the programme shows that a plant can break even and invest in a new one after 15 years of operation. The programme has already received a commitment for the next phase. The financial analysis is found in Annex 3.

[2] Note that there are many alternatives to the community-led models of most solutions in the programme which could still provide broad benefits. For example, one possible candidate would be a large scale centralised *Prosopis* processing plant, creating a value chain by organising self-governing community groups in harvesting *Prosopis* biomass (leaves, branches, stem, roots, and pods) and transporting it to the processing plant. This could be a large pilot which a business or government could take-up and attract investment.

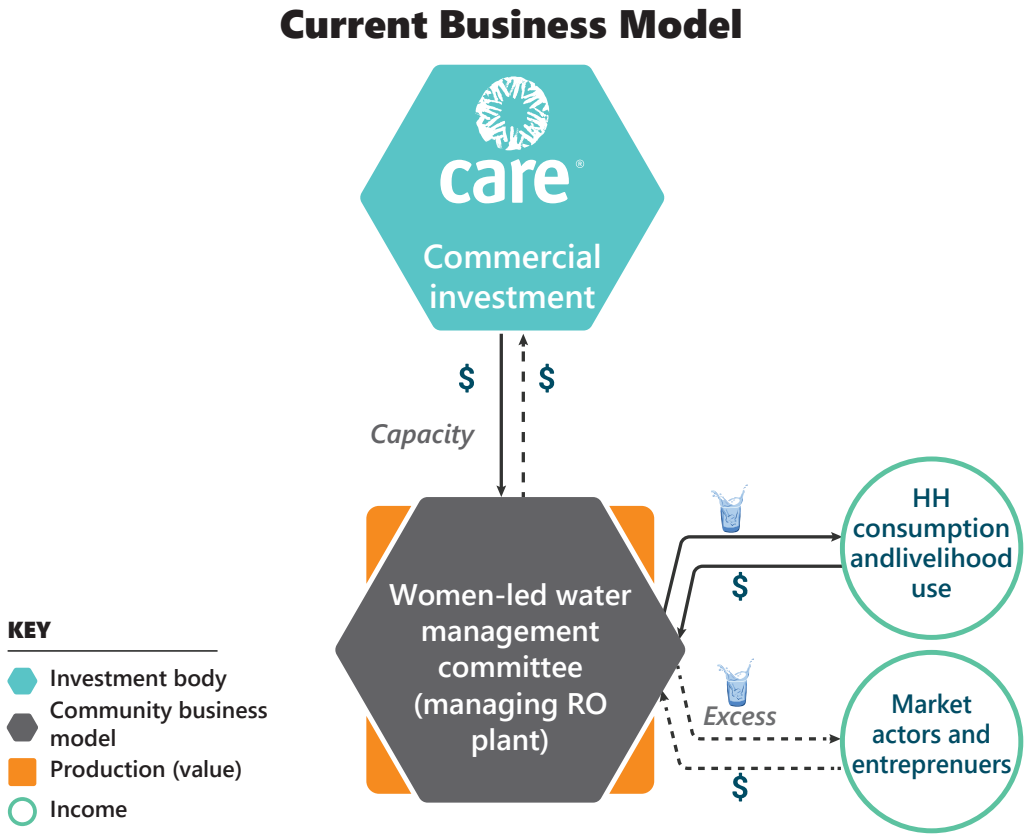


Figure 1: Business model of reverse osmosis plant, Bangladesh

Post-Clearance Farming through Drip Irrigation, Ethiopia

This solution comes from the Afar Region of Ethiopia, an arid pastoral area that has been struggling with an infestation of an invasive species, *Prosopis juliflora* (henceforth called *Prosopis*) (pictured in Figure 2). *Prosopis* has taken over land previously used for grazing and sometimes crops, and previous eradication efforts have been unsuccessful. Consultations with government, academics, community members, and civil society organisations at the beginning of the human-centred design process developed a concept where physical removal of *Prosopis* would clear land for crops that will prevent its reemergence, and the harvested material would be used for three different commercial uses: manufacture of bricks, charcoal briquettes, and animal feed. In this way the programme created an incentive to remove the plant while opening up new areas of employment and revenue generation. As a climate solution, this approach restores land for productive use and diversifies income.

Figure 2: *Prosopis juliflora*

CARE funded the original clearing of seven hectares, and the irrigation equipment needed for two cooperatives of pastoralists to begin irrigated agriculture of vegetables and watermelon. The cooperatives ran all farming operations, have conducted the first harvest, and have paid themselves dividends from the revenue from sales and retained 30% for future expenses. Figure 3 summarises the business model.

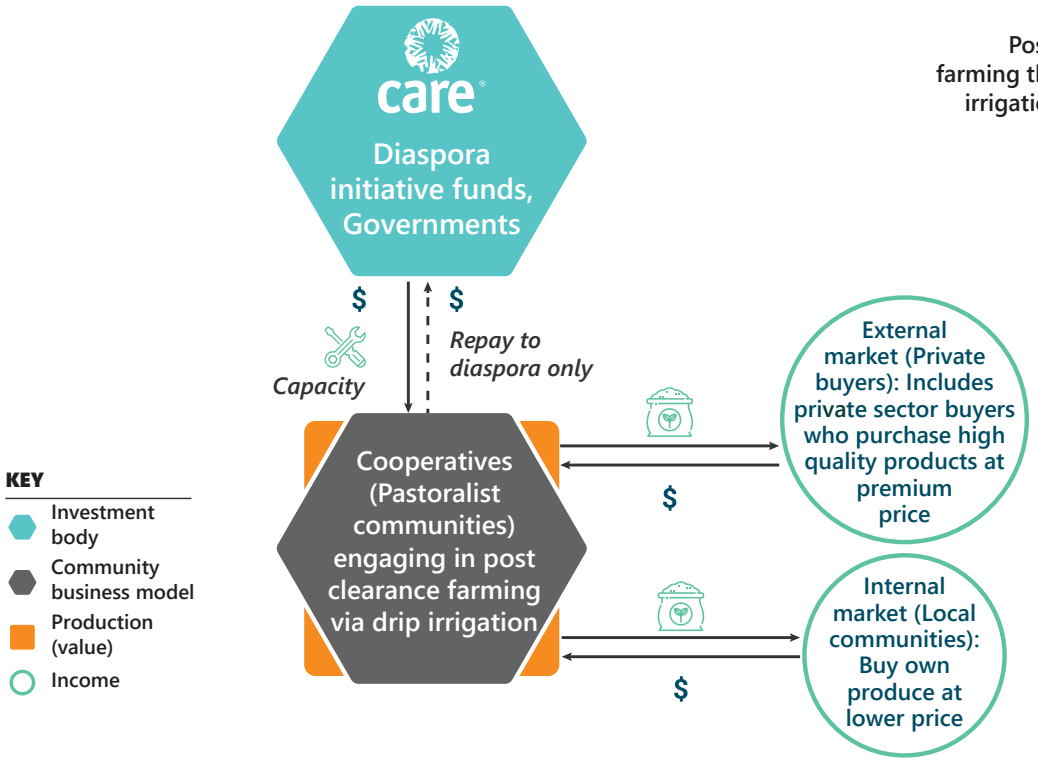


Figure 3: Post-clearance farming through drip irrigation, Ethiopia

Initial financial analyses show a net profit of 935,680 ETB (approximately US$7,400) in the first season, even taking into account depreciation of the water pump, drip system, and solar system. It also shows a 40% return on investment, which rises to 124% in year two. The actual revenue of 180,000 ETB (US$1,400) in the first year and 360,000 ETB (US$2,800) in the second year lends credence to this analysis. It is too early to say if this success is sustainable, but all indicators suggest that the groups are coherent and well organised, and that little outside funding is required to continue.

An unexpected boost has come from a loan from the Ethiopian diaspora of 500,000 ETB (US$3900) ETB through the government. This investment suggests that there is capacity for growth from sources other than northern donors.

The original model included the potential for some circular economy opportunities based on *Prosopis* from cleared land being used as inputs for other businesses: brick, charcoal briquette, and animal feed production. However, that original concept has not been realised in practice yet, for several reasons: larger machines are needed to process the *Prosopis* for block and feed production, and are difficult to manufacture locally; the area cleared by a government project that has the proper machinery is approximately 40 km away from the block production; and transport is difficult. So, for the moment the post-harvest clearance irrigation is the only one of the four solutions that has proved itself and could be considered ready to scale.

Black Soldier Fly Farming, Uganda

In the Kyangwali refugee settlement and the surrounding area in northwestern Uganda, the programme has had success with introducing a new solution to the area, raising Black Soldier Flies to produce feed for animals and compost for fields. Introduced by CARE partner The Bug Picture, the programme provided kits and starter larvae for new farmers to get into the business. The larvae and flies feed off of organic waste and produce high quality compost for gardens and more larvae which can feed chickens.

The programme trained 13 existing groups of farmers in the method, half from the refugee settlement and half from the host community. Two thirds of these people were women. Of the 265 people trained, 40 have gone on to be "BSF Champions," who have recently formed an organisation that will manage the "Bug Hub," a demonstration farm started by The Bug Picture during the programme. This group will promote the technology, and generate revenue through training events and marketing of the compost and the dried larvae for sale to larger agricultural operations. This next step has just occurred at the time of this review, so there are many steps required for it to be fully operational. As a result, there is no financial data available to assess its viability. The review team did not see any financial projections to assess how it must operate to succeed. Figure 4 summarises the current business model.

Again, the programme began with funding from CARE and technical advice from The Bug Picture. The review

team did not see any financial analysis of the benefits for farmers, but the programme reported considerable anecdotal evidence that farmers were profiting from the activity. It would be important to assess under what conditions new farmers can start up the practice, what their costs would be, and how competitive it is against similar animal feeds.

Current Business Model

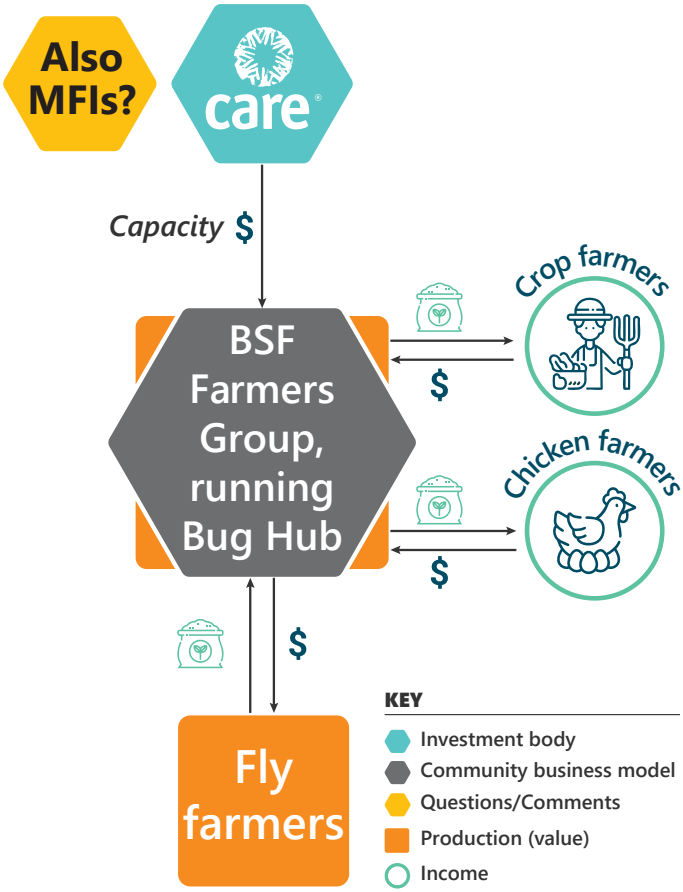


Figure 4: Business model of Black Soldier Fly farming, Uganda

Biodigesters, Uganda and Niger

Another solution to reduce deforestation and the time pressure on women is promotion of biodigesters. A biodigester is a sealed system where microorganisms break down organic materials, such as food scraps and manure, in an oxygen-free environment to produce biogas and nutrient-rich fertiliser. The gas is most commonly used in Africa for cooking. The technology has been around for many years, and in this programme, CARE has experimented with it on a household level in Uganda, in Kyangwali, and in Niger.

The value proposition is that a biodigester produces household energy and compost slurry for increasing vegetable production while reducing time and damage caused by foraging for firewood. The technology is simple and easy to operate as long as there is sufficient organic material and water to keep it fed to keep the digestion process going. In both Uganda and Niger, the biodigesters were paid for by CARE and installed by contractors that CARE hired. The women who received the installations use them daily, but those who do not have livestock say they have difficulty supplying enough organic material and water to produce sufficient gas for their cooking needs. In Uganda the process has advanced to the point that existing biodigester users have organised themselves into the Bioenergy Umbrella Association of Kyangwali (BUAK). This development was not part of the original plan but emerged as an initiative of the participants themselves.

Figure 5 shows the plan that CARE and BUAK now have for scaling up the technology. BUAK will run the operation, marketing the concept to new farmers. It will contract Biogas Solutions Uganda Ltd., the private company that does the installation and major maintenance, to install new biodigesters. New customers will repay BUAK in kind in compost slurry, which BUAK will gather together to produce commercial compost products for larger farm operations. None of this has happened yet, but the final year of this programme will be devoted to it. The review team was unable to review any financial analysis or business plan but understands that those analyses are in process.

Biodigesters, Uganda

Current Business Model

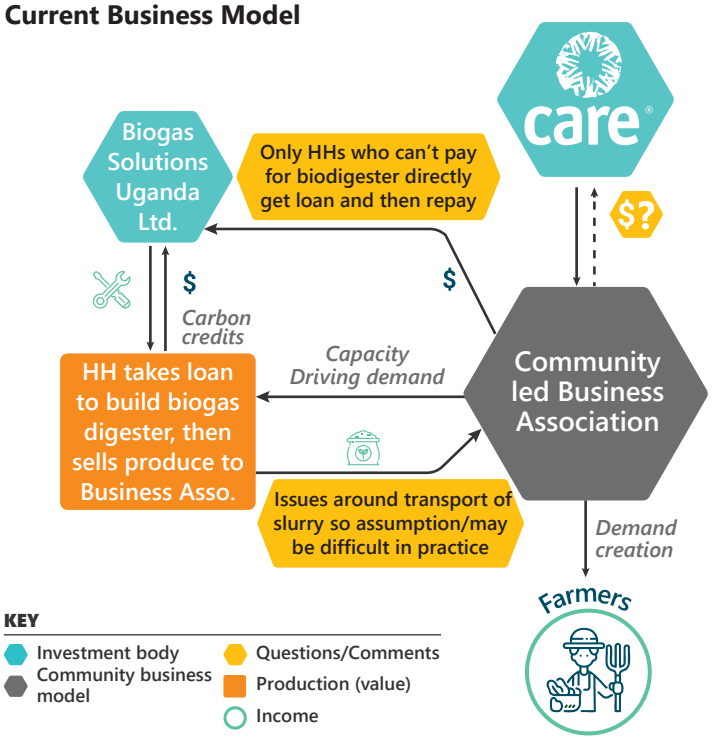


Figure 5: Business model of biodigesters, Uganda

METHODOLOGY

REVIEW QUESTIONS

There are 27 evaluation questions: three groups of review questions, with another three sets of cross-cutting questions. The questions are grouped in the following domains.

Domains of review questions:

1. **Climate innovation as a relevant approach:** to what extent is climate innovation a relevant approach for adaptation programming, resilience, and local leadership?
2. **Effectiveness and sustainability of climate-smart solutions:** what has been the effectiveness and sustainability of promoted climate-smart solutions and associated practices?
3. **Learning, viable business models, and operational recommendations:** what learning can be captured and synthesised with a focus on viable business models and operational recommendations for future programming?
4. **Cross-cutting thematic questions**
   - **Gender transformation:** How well are gender considerations integrated into programmes?
   - **Local leadership:** Does the climate innovation approach contribute to local leadership?
   - **Nexus:** Is the climate innovation approach sufficiently catered to fragile context(s) or rapidly changing environments?

The full set of review questions can be found in Annex 5.

JUSTIFICATION OF METHODOLOGY

To answer these questions, the review team used the methods described below.

Document review – The review team examined 106 documents from each country programme, as well as programme-wide or strategic documents from CARE Denmark headquarters. The team divided up the documents by country and theme.

Site visits – CARE Denmark staff identified two countries in which the review team should conduct deep dives: Ethiopia and Uganda. National consultants familiar with local languages, history, and practices travelled to project sites, Kyangwali in Uganda and Afar in Ethiopia. The site visits included meetings with community groups, local staff and partners, and local government officials. Seventeen interviews and 14 focus groups were conducted during the site visits, and also in Addis Ababa and Kampala.

Interviews and focus groups – In addition to the interviews and focus groups in Ethiopia and Uganda, the review team also interviewed 19 CARE staff and partners from all the country programmes, as well as in Denmark and Nairobi. A list of all interviews and focus groups conducted is in Annex 4. In every case, participants were provided with an Informed Consent Form that described the purpose of the review and how data from the interviews and focus groups would be handled. Every participant provided consent. Note that the review team requested one change from the Terms of Reference, which originally called for handing over notes from interviews to CARE. In discussion with CARE Denmark staff, it was agreed to revise the requirement to do confidential interviews. Our Informed Consent Form reflected this confidentiality. Any quotations or citations of evidence in this report are done in a way to protect personally identifiable information.

Internal workshops – The review team conducted two internal workshops to bring together our findings and conclusions from all countries in the programme and views from select headquarters staff. This workshop was organised by review question and is the basis of most of this report and the accompanying case studies.

External workshops – The review team conducted two workshops with CARE staff: an inception workshop to ensure that the team understood the programme and what staff and partners were trying to do, and a reflection workshop to critically examine the most important of our preliminary findings. Both were important for those purposes, and in addition deepened our understanding of the differing views of various teams on the value of the human-centred design process and plans for the future in promoting upscaling of solutions.

Case Studies – In consultation with CARE staff, the review team selected four solutions for more in depth case studies. The case studies were based on field visits

to Ethiopia and Uganda, remote interviews, and programme document review, and are organised in a format developed in coordination with CARE staff. The original Terms of Reference called for case studies of "Promising business models that have a local impact (or potential for)...The cases should clearly showcase how and why a certain model is financially viable, relevant to its local context, and scalable in the wider sector." With a year still to go in the programme, few programmes could be declared financially viable in the absence of CARE financial support, and none had shown clear evidence of ability to scale in the wider scale. As a result, the case studies are somewhat modified from this description to describe what has made them viable and relevant so far, and what paths forward there are for scaling up. In addition, the business models are in flux, as community groups emerge from the testing stage to take over full control of their solutions and take the first steps toward independent operations.

LESSONS LEARNED

Key Takeaways

1. **It takes time to adopt a new way of working.** Re-orienting staff and partners to the new approaches of human-centred design and business models that emphasise cost recovery and financial sustainability is a long term proposition. All country programmes were able to pivot to new methods and goals, but the plan that most would produce commercially viable climate solutions and models during the life of SPA II is likely to have been overly ambitious. Much can happen in the remainder of 2025, but it is unlikely that all country programmes will be able produce replicable or scalable business models before the end of the programme.
2. **The SPA II process has produced promising business solutions and nascent models.** Several country programmes developed promising climate solutions with their partners, and it is likely that several will be ready to scale up or be replicated by the end of the programme. Most likely candidates are the reverse osmosis plants in Bangladesh, the Black Soldier Fly farming in Uganda, the post-clearance irrigated agriculture in Ethiopia, biodigesters in Niger and Uganda, and digitising the Early Warning System in Niger.
3. **Other solutions are valuable but not self-financing; they should be supported with continued donor funding**. While there are several promising solutions that look like they can generate their own funding in the near future, it may be worth pursuing other solutions that are also valuable but will require continued donor funding. Examples would include valley dams in Karamoja, Uganda and drip irrigation in Bagerhat, Bangladesh. In interviews, staff showed a recognition that that would likely be the case, that not all solutions would be self-supporting through market mechanisms alone. And requiring donor funding does not make a programme, by definition, unsustainable. For example, the digitisation of the Early Warning System in Niger promoted by CARE NIGER is on the cusp of spreading across the entire country, because the national government has included it in its plan and budget.

   Expecting all NGO projects to follow a commercial model is not always realistic, which the SPA II programme recognised from the beginning. CARE Denmark's approach - providing initial support through technical assistance, machinery or equipment, and farmer/pastoralist training while ensuring long-term viability through private sector linkages - is crucial. Without NGO-funded pilots, governments and private sectors would rarely invest in these models.

   At the same time, it is also important to remember that not all solutions to problems can generate revenue: addressing gender-based violence, humanitarian response to conflict, peacebuilding, and a host of other important programmes are unlikely to be sustainable or replicable without continued donor funding.
4. **Factors which make scaling up likely** include financially viable models, strong demand and minimal competition for products, private sector involvement at the right times, conducive local government and technical advice, and good organisational support for nascent community groups and cooperatives. **Factors inhibiting scaling up** include a reliance on handouts, poor financial return, prohibitive costs to start up, poor organisation, insufficient technical ability or machinery, and civil conflict.
5. **There are many ways to engage organisations from the private sector, and the timing varies widely with purpose and type.** The timing of engaging the private sector in development of climate solutions is tricky, and varied widely from country to country. In Ethiopia for example, private vendors or engineers were in on the original HCD meetings with CARE staff and partners and with government officials; they were important players in defining the problems to be solved and the means of doing so. In Burkina Faso, the programme brought in La Fabrique, a local firm dedicated to incubation of

social enterprises, to help find innovative private partners early on, which resulted in an excellent partnership with technical partners. In Niger the programme contracted CIPMEN, also an enterprise incubator, to guide the innovation process. The role of private sector partners varied widely, from advice on techniques to production of needed materials or machinery to sources of finance. For those private sector partners who produced things needed for the process, the timing was a bit more obvious than for those whose role was financing the scale up, most often microfinance institutions. These institutions were brought in only in the last year of the programme, so it is hard to draw lessons on the appropriateness of timing. At the time of this review, two programmes appear to have generated loans or investments to scale up: the post-clearance irrigated agriculture in Ethiopia, and the reverse osmosis plants in Bangladesh. For other programmes, inquiries are less mature at this point.

6. **Strong engagement with local authorities** has brought great benefit in several project countries. In Ethiopia, government partners have helped to legalise cooperatives and provided policy support for scaling of production, including facilitating access to future loans. In Bangladesh, local authorities have offered two of 36 mismanaged government reverse osmosis plants to see if women-led water management committee can run them better.
7. **Begin proper financial analysis earlier on in the process.** Financial viability is key to the ability not only to benefit people, but also to scale up. Some programmes integrated financial considerations into the human-centred design process by taking into account costs when thinking about different types of solutions, while others left that work until the final year of the programme. A nuanced idea of what interventions are viable financially under what conditions might help financial institutions to invest more readily. More vigorous monitoring of actual financial performance, rather than the ideal figures that some of the financial analyses used, would lend greater credibility to the ability of solutions to scale.[3]
8. **All solutions potentially increased climate resilience**, though the proof will come only when shocks and stresses of natural weather events test them. Irrigation programmes allowed people to produce food and high value vegetables in both dry seasons and in seasons with insufficient rains; solutions that produced income for farmers such as the Black Soldier Fly farming diversified sources of income; biodigesters reduced deforestation and reduced women's time poverty. **No solution appeared to increase resilience to civil conflict,** which is an issue in several of the countries in the programme. In some cases, participants are able to carry their new knowledge generated by the programme about new techniques, such as Vertical Micro Gardens or Micro Food Forests, in the case of civil disruption, but none of the physical aspects of the solutions were very transportable.
9. Projects have **fostered gender transformation by integrating women across various stages,** often challenging gender norms. Nearly all projects enhanced women's influence in community decision-making, creating leadership opportunities and resource management roles.
10. **Local leadership** has been key in many project achievements to date, with cooperatives and community groups formed across multiple projects, and community ownership crucial in conflict resolution and collaborative decision-making. Local authorities and technical services have been key allies in most countries, especially in Burkina Faso, Ethiopia, and Bangladesh. Local leadership would be more meaningfully enacted if projects were viewed not as single initiatives expected to achieve scale-up recognition independently, but rather as components of wider programmes addressing systemic issues.
11. CARE could enhance the **integration of project work with policy advocacy** by aligning evidence from country programmes with broader national and international policy agendas. This would enable the dedicated policy team at CARE DK to advocate more effectively for adaptation and overall finance. A current barrier is the detachment from learnings and results generated in smaller projects due to limited resources and timeframes.

LESSONS FOR FUTURE IMPROVEMENT

- **A switch to market-oriented or self-sustaining models requires different skill sets and attitudes** on the part of staff, who have a long history of good community engagement and planning methods, but less exposure to other methods of creating sustainable enterprises.

[3] The review team has only seen three financial analyses, all of which are found in Annex 3. Some were more rigorous than others. The end result was that it was difficult to determine which solutions were in fact viable under which conditions. This would be essential to know before encouraging people to invest time and money in solutions may not pan out.

- **A gradual transition from project giveaways to a cost recovery approach can be a way of easing out of expectations that CARE and partners will pay for everything.** Nearly all programmes based the solutions on provision of tools and equipment with no expectation of repayment. Not only does this make it hard to determine the likelihood that the solutions could be replicated or scaled, it also discourages those who would imitate it who note the unfairness of a change in policy.
- **Training and accompaniment for community groups and individuals in how to manage an enterprise are as important as the technical skills needed to produce products or deliver services.** Private sector investors are of course interested in the spreadsheets about a solution, but most are even more interested in the skills and coherence of the management team and their ability to work together to solve problems.

INNOVATIVE APPROACHES

Leveraging Innovation – Approaches and Tools

- **Human-centred design** – The main shift that country programmes made in SPA II was to employ a human-centred design process rather than the traditional tools that CARE and many other development organisations have been using for many years to help communities adapt to climate change. The process varied in every country, but most followed the basic steps of Problem identification, Ideation,[4] Solution Development, Testing, and Scaling. For the staff who saw this method as superior to more traditional methods, they cited the fact that 1) they approached communities with only general concepts such as solar technology to relieve water problems and 2) it required considerable consultation with communities at nearly every step in the process. Other staff felt that they had always approached communities with an equally open mind and ensured that any solutions proposed were approved by partner communities. This second group noted that the human-centred design process was slower and more expensive as a result, and were not sure that the outcomes were different enough to justify the greater use of time and money. In general, the human-centred design process did promote local leadership, either in the groups developing the solutions, or in the local authorities who supported them along the way. It is also likely that as CARE staff and partners get used to using human-centred design, it will become faster and possibly cheaper to use.
- **Market-based approaches** – A fundamental element of the innovation process was an increased emphasis on the use of markets to lift incomes, solve climate problems, and increase opportunities to scale small solutions to reach far more people. While it is too early to conclude that markets will in fact support these goals, country offices are devoting the final year of the programme to this key step. Two promising areas currently are the development of a reverse osmosis plant in Bangladesh that has already raised outside capital for expansion to a second plant, and the formation of two community groups doing irrigated agriculture in Ethiopia to prevent the return of an invasive species which has raised a loan for future expansion of US$3,900, (thus turning an environmental problem into a productive resource). CARE staff realise that not all solutions can pay for themselves by generating revenue in markets. Sometimes that revenue must come from future donations for solutions that make sense but don't pay their way. CARE technical staff break these solutions down into three groups:

    1. Projects that can be scaled through markets through the revenue they generate.
    2. Projects that are worth replicating, but cannot reasonably cover their own costs.
    3. Projects that are worth sustaining in themselves for their benefits to current participants, but do not justify replicating them elsewhere.

Thes approaches are summarised in Figure 6, with a list of which projects belong to which group at the time of this review.

[4] Ideation is the process of brainstorming possible ideas with communities about possible solutions to the problems identified.

Characteristics

Projects that are worth sustaining

- The cost of initial investment cannot be reasonably recovered (negative RoI and/or break even not within a reasonable period).
- Project beneficiaries are meaningfully benefitting from the solution that has been provided as part of testing.
- Replication in other projects does not represent good value for money (reach/impact).

Large scale irrigation in Burkina Faso, Drip systems in Somalia, Micro food forests in Kyangwali, Vertical gardens in Kyangwali

Projects that are worth replicating

- Significant social and/or environmental impact (reach/value for money).
- The initial investment cannot be reasonably recovered.
- Promote to other (larger) humanitarian actors who do not have the same market-based focus as CDK.
- CDK may replicate, or promote replication of, in new projects in fragile contexts, with no existing markets, using different financing mechanisms.

Valley dams in Karamoja, Affordable drip irrigation in Bagerhat, Hydroponics in Cox's Bazaar (depending on nutrient solution)

Project that can be scaled through markets

- Initial investments (a commercial investment) can be reasonably recovered – ROI is positive, and break even within a reasonable period.
- Positive RoI for end users.
- Barriers to entry (for end users) can be overcome through tested innovative business, ownership, or financing models.
- Private sector actors can drive scale through profit making mechanism.
- Commercial investement can catalyse scale, and recover investment + interest.

Reverse osmosis in Bagerhat, Bug Hub in Kyangwali, Plastic recycling in Kyangwali, Biogas digesters in Niger, Biogas digesters in Uganda, *Prosopis juliflora* in Ethiopia

Figure 6:
Three categories of climate solutions and their ability to scale up

- **Choice of partners** – Most country programmes took considerable care in choosing partners. In West Africa, for example, the programmes followed different processes to settle on two partners: an implementation partner who is much closer to the communities, and an innovation partner who also supports CARE in the process of developing solutions. In Burkina Faso, for example, the implementation partner was AMR, which was the primary contact for all activities with communities, and the innovation partner was Le Centre Agroécologique Albert Schweitzer (CEAS), which was responsible for researching and recommending appropriate solar energy technologies. These two organisations were chosen by CARE through a process of developing a list of five possible partners. CARE staff drew up a small guide to help them identify potential partners, based on their own objectives, and administered a questionnaire to them. These two organisations were chosen through that process.

RECOMMENDATIONS

1. **Future development of solutions needs to focus as much on the organisational development of teams as the technical and financial aspects.** Success of even feasible models and technologies depends on the ability of teams to manage well. CARE and partners should consult with newly formed groups about the support they need to settle on governance procedures, financial management, business plans, and profit sharing, and to co-develop plans for meeting those needs.
2. **Conduct market studies and financial analyses throughout the development process** to support the design and prototyping of solutions and models long before it is time to scale up. Where multiple options are available, consider going beyond simple analyses of profit and loss and break-even points to find return on investment or internal rates of return to know which options are the smartest investment of time and money.
3. In future programmes **avoid the free distribution of goods or tools if there is any intention of using a market-based approach or if there is any desire for others to replicate the solution.** Even the most successful programme is unlikely to be replicated or scaled if it is clear that it was started with the main costs covered by CARE. This may be difficult in refugee and displaced person camps, so those may be exceptions.
4. As funding allows, **continue progress beyond 2025 with explicit attention to scaling up.** Continue other solutions developed in the SPA II programme that are not amenable to market-based sustainability or scaling by assisting partners to attract other funding as feasible.

5. **Continue to use the human-centred design process** as appropriate now that staff have some experience with it, where staff feel it produces better or more sustainable solutions. Give staff the freedom to adapt the process to the needs of local partners and contexts to take advantage of local creativity and initiative.
6. **Explore models beyond group-based interventions.** Individual or small partnership enterprises with 'triple bottom line' value added can also be effective models for scaling climate solutions.
7. **Monitoring of solutions should generate data that show more accurately how viable solutions are before encouraging others to adopt them.** Claims of increased crop production, increased income, financial viability, and reduced labour time all need to be verified in fact before promoting the solutions to others.

CONCLUSION

The CARE Denmark SPA II programme piloted a new approach to working with communities to adapt to climate change. Seven country programmes in Africa and Asia adopted a human-centred design process to work with people to develop solutions that could be scaled up and replicated with minimal continued grant funding from donors. Country programmes worked with local NGO partners and communities to develop more than a dozen climate solutions which they have taken to various stages of testing and implementation. Some of the most promising solutions include turning an invasive species into a useful input for three local small scale industries; growing Black Soldier Fly larvae as animal feed with rich compost as a by-product; drip irrigation to help people weather drought and dry seasons; biodigesters to reduce deforestation and provide cleaner household energy; and small plants to turn salty water into fresh water for household use. Programmes also developed nascent business models that work in the initial stages when funding is available, and are now adapting those business models to allow them to scale up and seek their own finance for growth. All solutions have multiple co-benefits: they increase household resilience to climate shocks or stresses, diversify income sources, provide a needed local service or product, and reduce the time burden on women. All solutions also promoted local leadership, though none increased resilience to civil conflict. The next steps are to refine the business models to scale them up, which is well under way in the final year of the programme.

Factors which make scaling up likely include financially viable models, strong demand and minimal competition for products, private sector involvement at the right times, conducive local government and technical advice, and good organisational support for nascent community groups and cooperatives. Factors inhibiting scaling up include a reliance on handouts, poor financial return, prohibitive costs to start up, poor organisation, insufficient technical ability or machinery, and civil conflict. At the time of this review, none of the solutions had already scaled up, though many showed promise. At this point the lack of technical, financial, and market analyses of enough depth make it premature to recommend the models to other programmes elsewhere. Programmes are working on these issues in the final year of the programme. Previous reliance on CARE to fund all costs for innovations may make the transition to full cost recovery difficult, and may limit the ability to scale the solutions or for others to take them up.

The SPA II programme was successful in reorienting the approaches of country programmes and partners to a new set of skills and ways of working, and developing several promising solutions to the complex issues of climate change. These new approaches show great potential for making CARE Denmark's work more sustainable and scalable in the future.

ANNEXES

EVIDENCE

The Terms of Reference called for interview and focus group notes to be shared. During the Inception Phase, CARE staff and the review team agreed that we would get more frank ideas, and thus better analysis, if all interviewees and focus group participants were promised that all discussions would remain confidential, available only to the review team. As a result, no notes of these discussions are included here.

In keeping with EU standards, all notes will be deleted within 90 days of the completion of the review.

For evidence of financial viability, see Annex 3, Financial Analysis of Solutions.

ANNEX 1 CASE STUDIES

See Case Studies in a separate attachment.

ANNEX 2 POTENTIAL ROUTES TO SCALING UP

The key principle in the SPA II programme of promoting solutions that can help people adapt to climate change beyond the scale of a few communities is sound. Progress so far in this programme has shown that it is likely to work in some cases, though none of the solutions have yet to scale up, out, or to be replicated. As a result, this review cannot point to empirical evidence of this wider influence; however, it can suggest some likely directions for scaling up.

1. **Expansion of existing operations with self-financing, loans, or investment capital** – This review has noted a number of solutions that have potential to spread their influence, with the proper accompaniment around organisational development and conducive forms of finance such as loans from governments, individuals, and possibly microfinance institutions. These solutions share many characteristics: entry into the business for initial start-up is open and feasible with proper technical and financial support; affected community members or groups can manage the solutions well; markets for the services or products are available and not overcrowded by competitors; local and national government legal frameworks are conducive to the services and products on offer. The most likely solutions in this programme to follow this path are reverse osmosis plants in Bangladesh, crop production through drip irrigation, Ethiopia, Black Soldier Fly farming, Uganda, and household biodigesters, Uganda and Niger.

2. **Expansion with self–generated finance** – The focus of much of SPA II has been on developing revenue-generating services or products that help people

adapt to climate change. It is important to remember that many important solutions are not likely to do enough business in the classic form to support themselves without future grants or outside funding. Expansion of early warning systems, promotion of advocacy networks to influence public policy toward locally led adaptation, cultural shifts to unlock the potential of women and men are all unlikely to be supported by a for-profit model, however useful these interventions may be to managing climate change. In these cases, and with an eye to a post-foreign aid world, it is important to remember that for much of history and in many places, government grants have not been the only support for citizen action. The Red Cross and Red Crescent movement was founded in 1863, for example, has been funding itself far longer than most for-profit businesses operating today. It is a major player in the climate adaptation space, and while most members also seek grants, all generate significant revenue from individuals, local businesses, and fundraising events. All countries around the world have traditions of support in cash and in kind for community services, though in recent years it has been most cost effective to adopt the Western model that has risen since the second half of the twentieth century of large grants funded by government departments. Thousands of schools, churches, mosques, and health centres are built every year with donations from raffles, bingo nights, kin networks, and diaspora giving. So, a supplemental path for future climate adaptation solutions could include a revival and revaluing of generating local support for locally led adaptation.[5] And a co-benefit of this approach is that it promotes local leadership and control over how funds are raised and what is done with them.

There is a robust set of organisations promoting local giving, often organised along national and regional lines. In Africa, for example, there is a network of organisations that is both studying and promoting the expansion of local giving to support action on important social issues, including the African Philanthropy Forum (APF), the African Philanthropy Network (APN), the Africa Venture Philanthropy Alliance (AVPA), the Center on African Philanthropy and Social Investment (CAPSI), and the Global Fund for Community Foundation (GFCF)[6]. Trust Africa, based on Senegal but operating throughout the continent, funds much of this work. In West Africa, West African Philanthropy Support Ecosystem (WAPSE) Project convenes influential African organisations in the field like the STAR-Ghana Foundation and the African Women's Development Fund, and there are similar networks in every region of Africa. Similar networks are active in Asia, Latin America, Europe, and North America.

3. **Expansion with donor funding for simple but highly effective methods** – While much of this report has focused on solutions with potential to scale up, the second category of solutions discussed above – projects that are worth replicating – suggests that many solutions do provide important climate solutions, but don't generate enough revenue to ensure their easy replication or scaling up. The valley dams in Karamoja, Uganda, for example, providing crucial water infrastructure in an arid area, with strong local control over the process and management. While it is wise to plan for a post-foreign aid world, many of these efforts are worth reproducing after many decades of use and proof of value in many countries. There will be some donors looking to fund proven methods though at lower levels. Many of these solutions, like valley dams and other water harvesting methods, do not cost large amounts of money, especially when local leadership is in control of them. Since one of the major roles of northern NGOs like CARE Denmark is to source funds in the north to support good work in the south, CARE Denmark may consider promoting these solutions to private foundations, individuals, and businesses who cannot mobilise millions of Kroner but who can support local leaders with good ideas.

[5] A good general introduction to practices in the field especially in the Global South can be found in Jenny Hodgson and Barry Knight, *#ShiftThePower: the rise of community philanthropy,* Alliance Magazine, December 2016, https://www.alliancemagazine.org/feature/shiftthepower-rise-community-philanthropy/.

[6] The Global Fund for Community Foundations is based in Johannesburg, South Africa, and has a wealth of materials on the issue, often grouped around the theme of #ShiftThePower. There is an annual gathering that it organises on a different continent each year, the #ShiftThePower Global Summit, which brings together practitioners and donors to discuss practical methods of increasing southern control over resources for social action.

ANNEX 3
FINANCIAL ANALYSES OF SOLUTIONS

1. Financial Analysis, Drip Irrigation, Ethiopia

SEASON 1 INCOME STATEMENT

For the Period Ended		Season 1 (USD)
1.	**Revenue**	
1.1	Sales Revenue	16,561.37
1.2	Other Income (crop residue sales)	787.56
Total Revenue		**17,348.93**
2.	**Operating Expenses**	
2.1	Collection and Transportation of Product	708.80
2.2	Depreciation Expense*	1,553.06
2.4	Storage and Handling Costs	787.56
2.5	Operational Costs	630.05
2.6	*Prosopis* Clearing cost	6,300.45
Total Operating Expenses		**9,979.92**
Net Income/Net Profit		**7,369.01**

* Assuming the asset has a useful life of 10 years (including the water pump, drip system, and solar system)

SEASON 1 RETURN ON INVESTMENT (ROI) FOR THE DRIP IRRIGATION SYSTEM

S/N	Item description	Initial cost of Investment (USD)	Additional Investment from the community group (USD)	Final Investment cost (USD)	Return on investment
1	Drip irrigation kits for 1 ha	4,331.56	2,756.45	18,287.06	**40.30**
2	De-watering water pump	2,362.67			
3	HDP pipe 63 mm= 300m*250 ETB	1,575.11			
4	Geomembrane 0.8mm	960.82			
5	Seasonal costs for fertilisers, improved seedlings, seeds, and chemicals	6,300.45			

SEASON 2 INCOME STATEMENT

For the Period Ended		Season 2 (USD)
1.	**Revenue**	
1.1	Sales Revenue	22,839.14
1.2	Other Income (crop residue sales)	1,968.89
Total Revenue		**17,348.93**
2.	**Operating Expenses**	
2.2	Depreciation cost	1,553.06
2.4	Storage and Handling costs	787.56
2.5	Operational Costs	1,575.11
2.6	*Prosopis* clearing cost	4,725.34
Total Operating Expenses		**3,128.17**
Net Income/Net Profit		**21,679.86**

SEASON 2 RETURN ON INVESTMENT (ROI) FOR THE DRIP IRRIGATION SYSTEM

S/N	Item description	Initial cost of Investment (USD)	Additional Investment from the community group (USD)	Final Investment cost (USD)	Return on investment
1	Drip irrigation kits	4,331.56	1,968.89	17,499.50	40.30
2	De-watering water pump	2,362.67			
3	HDP pipe 63 mm= 300m*250 birr	1,575.11			
4	Geomembrane 0.8mm	960.82			
5	Seasonal costs for fertilisers, seedlings, seeds, and chemicals	6,300.45			
Total (USD)		**15,530.61**	**1,968.89**	**17,499.50**	**124%**

2. Financial Analysis, Energy Briquettes, Ethiopia

YEAR 1 ENERGY BRIQUETTE INCOME STATEMENT

For the Period Ended		Year 1 (USD)
1.	**Revenue**	
1.1	Sales Revenue	5,906.67
1.2	Other Income (if applicable)	1,181.33
Total Revenue		**7,088.00**
2.	**Operating Expenses**	
2.1	Collection and Transportation of Biomass costs	551.29
2.2	Additives and Binder Costs	511.91
2.3	Packaging costs	472.53
2.4	Quality Control and Testing	196.89
2.5	Storage and Handling costs	236.27
2.6	Operational Costs	472.53
2.7	Environmental and Compliance Costs	196.89
2.8	Marketing and Distribution costs	354.40
Total Operating Expenses		**2,992.71**
Net Income/Net Profit		**4,095.29**

YEAR 1 RETURN ON INVESTMENT (ROI) FOR THE ENERGY BRIQUETTE PRODUCTION FROM *PROSOPIS* BIOMASS

S/N	Item description	Initial cost of Investment (USD)	Additional Investment from the community group (USD)	Final Investment cost (USD)	Return on investment
1	Charcoal burning kiln (1792*2000) mm made from a 4mm thick black sheet	463.08	1,968.89	7,976.28	76.52
2	Hammer Mill (1173*757*1629) mm with 7.5 Kw 1440 rpm, three phase electric motor	1,480.17			
3	Briquette machine raw material mixer machine (430*1542*1400) mm with 4kw 1450 rpm, three phase electric motor)	1,757.39			
4	Briquette forming machine 1200*560*1500) mm with 4kw, 900 rpm motor	2,007.48			
5	Diesel operated mill Jigsaw 4 spare chains	299.27			
Total (USD)		**6,007.39**	**1,968.89**	**7,976.28**	**60%**

YEAR 2 ENERGY BRIQUETTE INCOME STATEMENT

For the Period Ended		Year 2 (USD)
1.	**Revenue**	
1.1	Sales Revenue	9,450.68
1.2	Other Income (if applicable)	787.56
Total Revenue		**10,238.24**
2.	**Operating Expenses**	
2.1	Collection and Transportation of Biomass costs	708.80
2.2	Additives and Binder Costs	630.05
2.3	Packaging costs	787.56
2.4	Quality Control and Testing	275.64
2.5	Storage and Handling costs	472.53
2.6	Operational Costs	551.29
2.7	Environmental and Compliance Costs	393.78
2.8	Marketing and Distribution costs	315.02
Total Operating Expenses		**4,134.67**
Net Income/Net Profit		**6,103.57**

YEAR 2 RETURN ON INVESTMENT (ROI) FOR THE ENERGY BRIQUETTE PRODUCTION FROM *PROSOPIS* BIOMASS

S/N	Item description	Initial cost of Investment (USD)	Additional Investment from the community group (USD)	Final Investment cost (USD)	Return on investment
1	Charcoal burning kiln (1792*2000) mm made from a 4mm thick black sheet	463.08			
2	Hammer Mill (1173*757*1629) mm with 7.5 Kw 1440 rpm, three phase electric motor	1,480.17			
3	Briquette machine raw material mixer machine (430*1542*1400) mm with 4kw 1450 rpm, three phase electric motor)	1,757.39	1,968.89	7,976.28	**76.52**
4	Briquette forming machine 1200*560*1500) mm with 4kw, 900 rpm motor	2,007.48			
5	Diesel operated mill Jigsaw 4 spare chains	299.27			
Total (USD)		**6,007.39**	**1,968.89**	**7,976.28**	**60%**

3. Financial Analysis, Reverse Osmosis, Bagerhat, Bangladesh

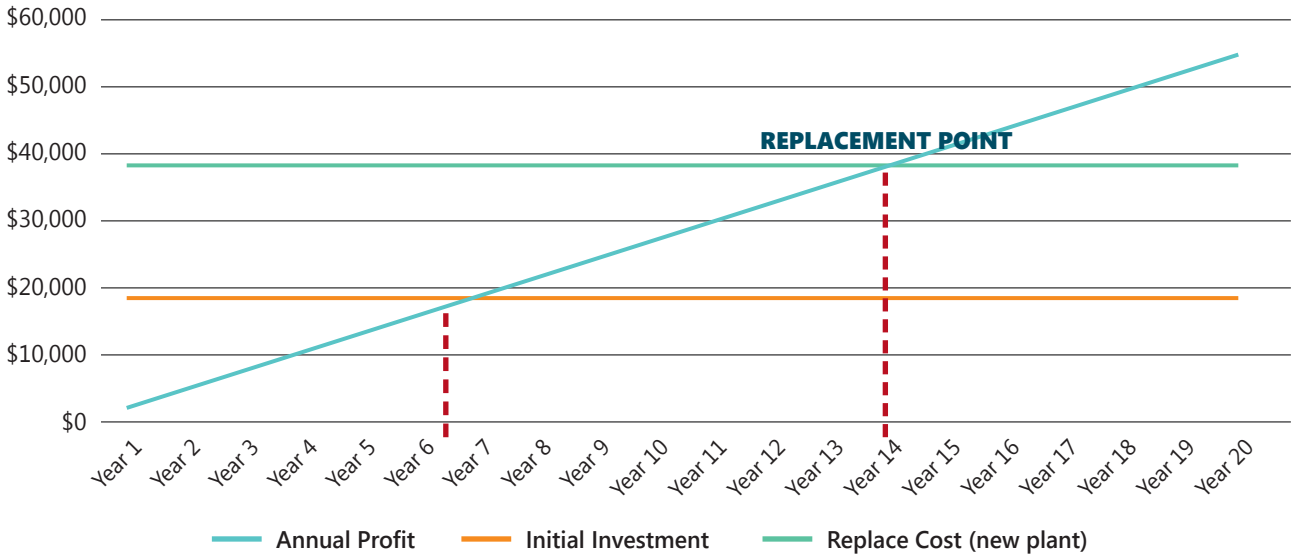
PROFIT AND LOSS STATEMENT

Items	USD (Current Prognosis)	USD (Positive Prognosis)	USD (Negative Prognosis)
Initial Investment (RO Plant, construction, land etc.)	$18,934	$18,934	$18,934
Initial Investment (establishing the Water Committee - staff costs, travel, etc.)	$20,000	$10,000	$10,000
Total Initial Investment	$38,934	$38,934	$38,934
Annual Initial Investment (lifespan of 20 years) (A)	**$1,947**	**$1,947**	**$1,947**
Annual Electricity Costs (BDT 12000*12 months)	$1,298	$1,298	$1,298
Annual Salary Caretaker (BDT 8000*12 months)	$866	$866	$866
Annual Maintenance costs (BDT 30,000 twice per year)	$541	$541	$541
Total Annual Cost (B)	**$2,705**	**$2,705**	**$2,705**
Number of Households	300	400	300
Number of Litres per Household per day (this is not part of the calculation)	600	600	600
Number of days per month Households buy water	15	25	10
Payment per Household per day of water purchased	$0.09	$0.09	$0.09
Income from sale of water per Household per month	$405.73	$900.00	$270
Total Income from Households per year (C)	**$4,869**	**$10,800**	**$3,246**
Number of Litres for 3rd Party buyers per day	2,000	2,000	2,000
Cost per Litre	$0.009	$0.009	$0.009
Total Income from 3rd Party buyers per day	$18	$18	$18
Number of days per month 3rd party buyers purchase water (days)	15	25	20
Total Income from 3rd Party buyers per month	$451	$451	$361
Total Income from 3rd Party buyers per year (D)	**$5,410**	**$5,410**	**$4,328**
Total Annual Income from sale of water (C+D)	**$10,279**	**$16,210**	**$7,574**
Total Annual Income shared with participating households (50% of Total Annual Income)	**$5,139**	**$8,105**	**$3,787**
Total Annual Income per Participating Household (this is not part of the calculation)	**$17**	**$18**	**$13**
Total Annual Income (after payments to participating households) (E)	**$5,139**	**$8,105**	**$3,787**
Annual Profit/Loss (E-(A+B))	**$2,434**	**$5,400**	**$1,082**
Profit Accrued over 20 Year Lifespan	**$51,123**	**$113,400**	**$22,721**

BREAK EVEN ANALYSIS

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Annual Profit	$2,705	$5,410	$8,115	$10,820	$13,524	$16,229	$18,934
Initial Investment	$18,934	$18,934	$18,934	$18,934	$18,934	$18,934	$18,934
Replace Cost (new plant)	$37,869	$37,869	$37,869	$37,869	$37,869	$37,869	$37,869
	Year 8	**Year 9**	**Year 10**	**Year 11**	**Year 12**	**Year 13**	**Year 14**
Annual Profit	$21,639	$24,344	$27,049	$29,754	$32,459	$35,164	$37,869
Initial Investment	$18,934	$18,934	$18,934	$18,934	$18,934	$18,934	$18,934
Replace Cost (new plant)	$37,869	$37,869	$37,869	$37,869	$37,869	$37,869	$37,869

Break even + plant replacement



ANNEX 4
LIST OF INTERVIEWS AND FOCUS GROUPS

Name	Function	Organisation
CARE Denmark		
Sebastiaan Soeters	Head of Technical Team	CARE Denmark
Caroline Thorsen	Climate adviser and coordinator for technical team	CARE Denmark
Alpha Gitau	Private Partnerships Coordinator (Technical team)	CARE Denmark, Kenya
Peter Bruun Clausen	Programme & Grants Manager, South Asia	CARE Denmark
Burkina Faso		
Kadia Guindo	Cheffe de projet SPA régional - BF	CARE Burkina
Inessa Hassiata Napo	Cheffe de Projet PIRSa Yelemaya	CARE Burkina
Worokuy David	IP SPA BF	AMR (Burkina Faso)
Kabore Bonaventure	IP SPA BF	AMR (Burkina Faso)
Niger		
Tahirou Mani	IP SPA Niger	Demi-e
Aminatou Galadima	Cheffe de projet SPA régional - Niger	CARE Niger
Abdoulaziz Maazou	Chef de projet Pirsa Nazari	CARE Niger
Somalia		
Abdikadir Abdulsalam	COLISOBR/SPA Project Manager	CARE Somalia
Mohamed Ahmed Mohamed	Programme Officer	CARE Somalia
Rahma Abdillahi	Ministry of Agriculture, Sanaag Region	Ministry of Agriculture, Erigavo
Abdi Hashi	innovation partner	Horn Gardens (private partner)
Bangladesh		
Nahar Badrun	Programme Manager and CLIMB Project Manager, Cox	CARE Bangladesh
Mizanur Rahman	CLIMB project manager, Bagerhat	CARE Bangladesh
Abdul Mannan	Programme Director	SHED (Bangladesh)
Mali		
Bakary Thiero	Programme Manager	CARE Mali

Name	Function	Organisation
Ethiopia		
Focus group discussion attendants	Members	Halaydege Cooperative
Focus group discussion attendants	Members	Sede Farming cooperatives/ enterprise
Focus group discussion attendants	Members	Briquette Production and selling enterprise
Focus group discussion attendants	Members	Block Production and selling enterprise
Focus group discussion attendants	Members	Livestock feed Production and selling enterprise
Sintayehu Tadesse	Project Manager, PIPA	CARE Ethiopia
Ato Awoke	SPA Field level Project Coordinator	CARE Ethiopia
Tewodros Sibehat	DRM-NRM specialist	CARE Ethiopia
Ali Ibrahim	Natural Resource Management Expert	Amibara Woreda RLM directorate
Minilik Belay	Project coordinator on Hunger Crisis Response for East Africa (External Social Actor)	Friendship Support Association
Chomen Geleta	Regional NGO and Bilateral coordinator, and Range Land Management Advisor	Afar Regional Office
Uganda		
Cotilda Nakyeyune	Programme Manager-Climate Justice	CARE Uganda
Emmanuel Ediau	Senior Initiative and Innovation Manager	CARE Uganda
Awori Mary Immaculate	Partnership and Innovation Specialist	CARE Uganda
Gideon Muhindo	Project Officer	Partner staff-Biogas Solutions Uganda Ltd
Catherine	Director, Obuntu bwa Kasalina	Partner staff- Ubuntu bwa Kasalina- Food Forest Innovation
African Muhangi	Program Management Consultant	CARE Uganda
Laura Martinussen	Project Manager	Partner staff-The Bug Picture-Black Soldier Fly Innovation
Judith Nzale	BSF and Food Forest Champion	Refugee Community, Kyangwali
Leo Masereka	Food Forest and BSF Champion farmer	Host Community
Caroline	Chairperson	Biogas Umbrella Association of Kyangwali
Kyangwali Host Community Men	Biogas Participants	Host Community
	Head Teacher- COBRUAS Secondary School	Institutional Biogas end user - Refugee Community
Buteleevu-Kyeya – FGD	Women Vertical Garden Farmers	Host Community
Ngurwe-Kyeya – FGD	Women Food Forest Farmers	Host Community
Kanala-Kyeya – FGD – Men	BSF Farmers	Host Community
Kyangwali - FGD – Men	Biogas Users (Host Community)	Host Community
Kavule Demo Farm – FGD – Men	Vertical Garden Farmers	Refugee Community
Kavule Demo Farm – FGD – Women	BSF Farmers	Refugee Community
Kasonga- FGD – Men	Biogas users	Refugee Community
Kavule - FGD – Women	Biogas Users	Refugee Community

ANNEX 5
EVALUATION QUESTIONS

1. Climate innovation as a relevant approach

Assessing the extent to which climate innovation is a **relevant approach** for adaptation programming, resilience, and local leadership:

a. To what extent is the design of the programmes conducive for strengthening local climate resilience?
b. In which ways do the programmes foster innovation (if any)? What is actually new?
c. Where can programmes be strengthened from a Human-centred design perspective?
d. To what extent are promoted solutions perceived as relevant and/or preferable to existing practices by end users?
e. To what extent do programmes facilitate local ownership of promoted solutions? How can this be strengthened?
f. What is the added value of a climate innovation approach compared to more conventional climate adaptation?
g. To what extent is climate innovation a suitable approach for fragile contexts and nexus settings?

2. Effectiveness and sustainability of climate-smart solutions

Assessing the **effectiveness** and **sustainability** of promoted climate-smart solutions and associated practices:

a. How well are sustainability considerations built into the programme framework and the different programmes?
b. Is CARE approaching the right type of partners for scaling and replication of solutions?
c. How can CARE's role in multi-stakeholder innovation be characterised? What are the challenges?
d. To what extent have CARE had success with engaging the private sector in developing, testing and scaling the solutions? What were the challenges and what are different views on how we can improve?
e. To what extent were market-based approaches used to sustain and scale the solutions?
f. Is there evidence of external uptake or scaling of solutions by non-project (external) stakeholders?
g. What were the challenges and what are different views on how we can improve?

3. Learning, viable business models, and operational recommendations

Capturing and synthesising **learning** with a focus on viable business models and operational recommendations for future programming:

a. To what extent are the solutions embedded in viable business models? What are the concrete examples?
b. What characterises scalable solutions? What type of criteria should be used when scaling tested models?
c. What are the opportunities to strengthen sustainability? What is missing in CARE's scaling strategy?
d. What are the examples of return on investment (if any)?
e. What other factors (external) have contributed to achieving results and/or successful business models?
f. What type of unintended outcomes /changes can be observed? (when compared with programme design and Theory of Change)
g. How can CARE improve its ability to capture and document results from climate innovations? What tools or methods could support programme M&E?

4. Cross-cutting thematic questions

Gender transformation

a. How well are gender considerations integrated into programmes, and to what extent do observed outcomes involve positive changes for women and gender dynamics?
b. How can CARE DK strengthen gender perspectives in its work?

Local leadership

a. Does the climate innovation approach contribute to local leadership?
b. How could CARE advance local leadership within the climate innovation approach?

Nexus

a. Is the climate innovation approach sufficiently catered to fragile context(s) or rapidly changing environments?
b. To what extent has CARE been successful in adapting the strategy to humanitarian settings?

ANNEX 6
TABLE OF SOLUTIONS EXPLORED BY COUNTRY

Country	Solution	Value proposition	Key activities	Stakeholders/ Participants	Key partners	Key resources needed	Financing models	Cost structure	Barriers to Scaling Up
Bangladesh	**Drip Irrigation in Cox's Bazaar**	Increases resilience to uncertain rains, increases agricultural production and income where existing water sources are saline in the dry season		Cox's Bazaar – 1.000 HH (indirect target group) started using drip irrigation and produced vegetables through women-led homestead gardening by the end of 2023.					In the Cox´s Bazaar refugee communities, CARE and partners are working within a heavily regulated space with limited possibilities for market-based scaling. Hence CARE and partners are focusing on scaling Camp 16 pilots to the remaining camps through the UN system. Moving forward, CARE and partners will explore replicating solution models such as the drip irrigation systems in other camps and settings.
	Drip Irrigation in Bagerhat	Increases resilience to uncertain rains, increases agricultural production and income		In Bagerhat, scaled from an initial 75 households to 1,046, with plans to expand to four unions. High community engagement: 100% of users confirmed continued use, and 80% of community change agents expressed interest in replication.	Partnerships with 7 local and national NGOs		Unknown	Locally sourced irrigation materials	

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	Reverse Osmosis	Increases access to non-saline water at a reasonable price without depleting the water table			Women-led water management committee	Land, construction costs, operating costs	Upfront Investment $25k. 500 household pay for fresh water. ROI: $5000 per year. Break Even is 6 years for covering just the initial costs of acquiring land and plant construction, but 14 years if all costs for start-up are included such as establishing the Water Committee - staff costs, travel etc.		Initial investment of US$39,000 required
Ethiopia	**Post Clearance Management (PCM) _ Crop production through drip irrigation**	Increases resilience to uncertain rains and droughts, increases agricultural production and income, prevents regrowth of *Prosopis* and preserves land for grazing and farming	Youth groups selected by local authority; youth groups self-managed; irrigation installation or management	Pastoralists and youth group, Coordination with *Prosopis* clearing	Local authority, state extension services	Irrigation equipment, farm tools, seeds	**Start-up** investment made by SPA II (Drip irrigation facilities and agricultural inputs) **Scaling up: Support government initiative, microfinance organisations, or other NGOs** would need to provide finance to install more drip irrigation. Existing farms can be continued by the groups through sales of vegetables	Drip irrigation facilities, water pumps, solar panel, construction of ponds with geo-membrane, improved seed, and farm tools	Start-up finance is needed for the needed materials for new groups to start

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	Livestock feed Production	*Prosopis* seed pods can be processed in livestock feed, turning *Prosopis* clearing into a revenue producing activity	Collection of *Prosopis* pods and branches, chopping of branches / leaves and milling of pods, mixing it with other forage products and supplements	Common interest groups, CARE	Government	Trainings and capacity building, *Prosopis* pods and branches, Chopping and milling machines, electricity supply, workshop for processing and storing, other livestock supplements, packaging	**Start-up** investment made by SPA II (Machineries for chopping and milling, and other supplements for mixing **Scaling up: Support government initiative, private sector, microfinance organisations, or other NGOs** would need to provide finance to install more livestock feed processing machines and Existing business can be continued by the groups through sales of livestock feed (this has not happened yet)	Machinery, other livestock feed supplements, trainings for CIGs,	Existing machinery is not powerful enough to crush and mill the raw materials
	Building Block Production	Cleared *Prosopis* can be processed into building blocks, turning *Prosopis* clearing into a revenue producing activity	Proper cutting of *Prosopis,* transporting to the workshop, chopping branches, and mixing with other materials (cement and sand)	Common interest groups, CARE	Government, especially local authorities	Trainings and capacity building, *Prosopis* branches, workshop for processing, store, chopping and mixer machine, electricity and water supply, other materials like cement and sand	**Start-up** investment made by SPA II (Machines for chopping, milling and mixing, and other supplements for mixing water, cement and sand. **Scaling up: Support government initiative, private sectors, microfinance organisations, or other**	Machines, other materials for block production, transportation of *Prosopis* biomass to workshop, trainings for Community Interest Groups,	Machinery bought for testing is not good enough for production. Transport of raw *Prosopis* branches over long distances is a problem.

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							NGOs would need to provide finance to install more block production machineries and existing business can be continued by the groups through sales of building block (but not happened yet)		
	Charcoal briquette production	Cleared *Prosopis* can be processed into briquettes, turning *Prosopis* clearing into a revenue producing activity	Proper cutting of *Prosopis,* making charcoal in the field, transporting it to the workshop, grinding / milling and mixing with other materials (such as casava powder)	Common interest groups, CARE	Government, especially local authorities	Trainings and capacity building, *Prosopis* stem and branches, workshop for processing, store, chopping and milling and Mixer machine, electricity and water supply, other materials like casava powder	**Start-up** investment made by SPA II (Machineries for chopping and milling, and other supplements for mixing like Casava powder **Scaling up: Support government initiative, private sectors, microfinance organisations, or other NGOs** would need to provide finance to install more briquette processing machineries, existing business can be continued by the groups through production and sales of briquette (but not happened yet)	Machineries, other ingredients for briquette production, transportation of *Prosopis* biomass to workshop, trainings for CIGs,	No market yet, must identify customers. Charcoal is produced on site but must be transported to the workshop for further processing into Briquettes.

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Uganda	**Black Soldier Fly farming**	Produces chicken feed and compost cheaply with simple technology that small farmers can construct, increases production of chickens and vegetables	Construction of BSF kits, training for farmers (BSF larvae production, chicken raring, vegetable growing)	Small farmers (poultry, piggery and fish) in both the refugee settlement and host community, suppliers of the equipment	The Bug Picture	Labour, waste	**Start up** – kits bought with SPA II funds, given to farmers for free; **Scaling up:** to be determined. Possibilities: sale of kits, training in self-construction, loan fund	Planning, monitoring, training	Planning, monitoring, training
	Micro Food Forests	Produce nutritious and healthy food, as response to reducing food aid. Enable the household to reap more from small plots of land and sell surplus vegetables for income. Use of organic pest control and organic fertiliser reduces cost of production and makes crops resilient during drought.	Soil conditioning with organic waste (frass, bio-slurry), garden maintenance, irrigation, pest control, transportation to markets	Small farmers in both the refugee settlement and host community, seed suppliers.	Obuntuu bwa Casalina	Seed, organic pest control mechanisms, organic fertilisers, transportation to markets, water, labour	Seed and tools provided by SPA II, farmers produce their seeds eventually. SPA II has also provided group transportation (tricycles) to markets. Farmers make their own herbal pest control solutions, though still to be perfected.	Seed, organic manure, pesticides, irrigation, transportation	Lack of easily accessible water for irrigation in both in the refugee and host community (though more acute in the host community), local markets are low (in terms of prices), high cost of transport to the markets for farmers in the host community, organic pest control still remains a challenge
	Vertical Micro Gardens	Produce nutritious and healthy food, as response to reducing food aid. Enable the household to reap more from small spaces, for household nutrition and income. Use of organic pest control and organic fertiliser reduces cost of production and makes crops resilient during drought.	Construction of Vertical gardens/pyramids, soil conditioning with organic waste (frass, bio-slurry), garden maintenance, irrigation, pest control, transportation to markets	Small farmers in both the refugee settlement and host community, seed suppliers.	Vertical Micro Gardening Uganda	Materials for pyramid construction, labour, seed, water, pest control solutions	Construction material, see and tools provided by SPA II, farmers produce their seeds eventually and will refurbish their pyramids. Farmers make their own herbal pest control solutions, though still to be perfected.	Pyramid construction materials, Seed, organic manure, pesticides, irrigation	Lack of easily accessible water for irrigation in both in the refugee and host community (though more acute in the host community), local markets are low (in terms of prices), high cost of transport to the markets for farmers in the host community, organic pest control still remains a challenge

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	Biodigesters	Produces clean household energy while reducing time and damage caused by foraging for firewood, produces compost slurry for increasing crop production, feeding Black Soldier Flies, sanitation, and hygiene (house floor smearing to reduce dust, latrine Odor control)	Construction of bio digesters, training users on operation and maintenance, training local technicians for maintain ace service	User households in refugee and host community, local maintenance technicians, BUAK	Biogas Solutions Uganda Limited, BUAK	Labour, waste (cow dung), water, maintenance services	Revolving fund through BUAK, maintenance through Biogas Solutions Uganda Ltd carbon fund	Planning, construction, training, monitoring, maintenance services	Planning, construction, training, monitoring, maintenance services
Niger	**Digitising the Early Warning System**	Faster and more up to date information on food security issues can be shared from local level to national and vice versa than the old paper-based system.	Tracking indicators from village level on up: the indicators, e.g. price of cereals, ag production, management of diseases, par zone and season and level (normal, alert, urgent), share information from commune to the department or subregional level to the region and national levels	Village committees, decentralised government technical staff, Prime Minister's office		Training in the system, government approval, scale up by government to all regions	Funded by government budget for the Early Warning System	Continuous data entry, monitoring, software, programme coordination	
	Biodigesters	Produces household energy while reducing time and damage caused by foraging for firewood, produces compost slurry for increasing vegetable production	Construction of bio digesters, training users on operation and maintenance, training local technicians for maintenance service	User households with access to organic material to feed the digesters, customers for the slurry	Partners CIPMEN and the University of Maradi	Labour, waste (cow dung), water, maintenance services	None yet, exploring MFIs.	The biodigesters are profitable taking into account the time each woman saves in not looking for wood for cooking. The sale of compost also generates revenue. Not clear if this is true in practice. 170 Installed, 40 in the process of construction	Finance. May be viable with lower cost local installers. Financial analysis being prepared, not yet available

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Burkina Faso	**Large Scale Irrigation**	Irrigated gardening provides crops even when the rain is unreliable. Increased income for women.	Installation of well and irrigation equipment, improved governance by women's group to set rates for renting plots and paying for water	Women's groups in two communes of "la boucle du Mouhoun": Pig-Pooré et Fara. Governance is a committee of 16 women, with 120 women working on this two-hectare site	The innovation partner (CEAS), the implementation partner (AMR)	Irrigation equipment, farm tools, seeds, large well	None yet, exploring MFIs	Planning, installation of well and irrigation equipment, maintenance	Upfront Investment $70k 200 women farm on a piece of land with irrigation that pre-existed the project. ROI: $4500 per year Break Even is 15 years – unreasonable break even
Somalia	**Drip Irrigation - HH farms**	Increases resilience to uncertain rains, increases agricultural production and income							
	Drip Irrigation training module								
	Drip Irrigation kit / land leasing	Increases resilience to uncertain rains, increases agricultural production and income							