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IMPLEMENTATION COMPLETION AND RESULTS REPORT

(ESMAP Grant No. TF A2295-UG)

ON A

SMALL GRANT

IN THE AMOUNT OF US\$2.20 MILLION

TO THE

REPUBLIC OF UGANDA

FOR THE

UGANDA CLEAN COOKING SUPPLY CHAIN EXPANSION PROJECT (P153679)

March 30, 2021

Energy and Extractives Global Practice
Eastern and Southern Africa Region

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CURRENCY EQUIVALENTS
(Exchange Rate Effective November 9, 2020)

Currency Unit = Ugandan Shilling (USh)
USh 3,700 = US\$1

FISCAL YEAR
July 1 – June 30

ABBREVIATIONS AND ACRONYMS

BoU	Bank of Uganda
BUDS	Business Uganda Development Scheme
COVID-19	Coronavirus Disease 2019
CIRCODU	Centre for Integrated Research and Community Development Uganda
CREEC	Centre for Research in Energy and Energy Conservation
DCF	Distribution Challenge Fund
DO	Development Objective
EASP	Uganda Electricity Access Scale-up Project
ERT	Energy for Rural Transformation
ESMAP	Energy Sector Management Assistance Program
GIZ	German Agency for International Cooperation (<i>Deutsche Gesellschaft für Internationale Zusammenarbeit</i>)
GoU	Government of Uganda
HAP	Household Air Pollution
ICR	Implementation Completion and Results Report
ILF	International Lifeline Fund
ISO	International Organization for Standardization
ISR	Implementation Status and Results Report
IVA	Independent Verification Agency
KPT	Kitchen Performance Test
LPG	Liquefied Petroleum Gas
M&E	Monitoring and Evaluation
MEMD	Ministry of Energy and Mineral Development
MoFPED	Ministry of Finance, Planning and Economic Development
PDO	Project Development Objective
PSFU	Private Sector Foundation Uganda
SACCO	Savings and Credit Cooperative Society Limited
UCCSCEP	Uganda Clean Cooking Supply Chain Expansion Project
WTP	Willingness to Pay

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**DATA SHEET****BASIC INFORMATION****Product Information**

Project ID	Project Name
P153679	Uganda Clean Cooking Supply Chain Expansion Project
Country	Financing Instrument
Uganda	Investment Project Financing
Original EA Category	Revised EA Category

Organizations

Borrower	Implementing Agency
Ministry of Finance, Planning and Economic Development (MoFPED)	Ministry of Energy and Mineral Development, Private Sector Foundation Uganda (PSFU)

Project Development Objective (PDO)

Original PDO

The Project Development Objective is to reduce both (i) the economic burden on households and (ii) the negative impacts on the environment, of the inefficient use of solid biomass fuels for cooking by fostering sales and adoption of cleaner and more efficient cooking technologies.

FINANCING

	Original Amount (US\$)	Revised Amount (US\$)	Actual Disbursed (US\$)
Donor Financing			
TF-A2295	2,200,000	2,152,618	2,152,618
Total	2,200,000	2,152,618	2,152,618
Total Project Cost	2,200,000	2,152,618	2,152,618



KEY DATES

Approval	Effectiveness	Original Closing	Actual Closing
05-Mar-2016	28-Oct-2016	30-Jun-2018	30-Sep-2020

RESTRUCTURING AND/OR ADDITIONAL FINANCING

Date(s)	Amount Disbursed (US\$M)	Key Revisions
29-Jun-2018	0.88	Change in Results Framework Change in Components and Cost Change in Loan Closing Date(s) Reallocation between Disbursement Categories Change in Implementation Schedule
20-Dec-2019	1.43	Change in Loan Closing Date(s) Change in Implementation Schedule
14-Jun-2020	1.65	Change in Components and Cost Change in Loan Closing Date(s) Reallocation between Disbursement Categories Change in Implementation Schedule

KEY RATINGS

Outcome	Bank Performance	M&E Quality
Satisfactory	Satisfactory	Substantial

RATINGS OF PROJECT PERFORMANCE IN ISRs

No.	Date ISR Archived	DO Rating	IP Rating	Actual Disbursements (US\$M)
01	10-Nov-2017	Moderately Unsatisfactory	Moderately Unsatisfactory	0.50
02	24-Sep-2018	Moderately Unsatisfactory	Moderately Unsatisfactory	0.94
03	06-Jun-2019	Moderately Satisfactory	Moderately Satisfactory	1.07
04	26-Jan-2020	Satisfactory	Satisfactory	1.43
05	05-Oct-2020	Satisfactory	Satisfactory	1.92



ADM STAFF

Role	At Approval	At ICR
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I. PROJECT CONTEXT AND DEVELOPMENT OBJECTIVES

A. CONTEXT AT APPRAISAL

Context

1. At the time of project appraisal in 2015, over 95 percent of Ugandans used solid biomass fuels for cooking, with 73 percent using firewood and 23 percent using charcoal as their primary cooking fuel. The use of modern fuels such as liquefied petroleum gas (LPG) was low at 0.5–1.0 percent, and even a majority of the 12 percent of households that had access to electricity, used wood and charcoal for cooking. Due to increasing costs of biomass fuels and escalating charcoal prices, the share of household expenditures on solid cooking fuels in Uganda was one of the highest across Sub-Saharan Africa, with the lowest quintile expending an average of 9 percent of household income on cooking fuels and the highest quintile expending about 15 percent. Uganda's population growth and cooking practices were putting considerable pressure on natural resources, especially on forest resources. The escalating demand for wood fuels, along with clearing of forests for agriculture and settlements, resulted in a deforestation rate of 2.46 percent between 2000 and 2010, the fifth highest deforestation rate in Sub-Saharan Africa. Additionally, exposure to household air pollution (HAP) in Uganda was shown to significantly affect the health of over 20 million people and cause over 13,000 deaths every year, with about 3.8 million households cooking on open fires in enclosed spaces and nearly 1 million additional households exposed to carbon monoxide from traditional charcoal stoves. HAP was also responsible for 8.2 percent of infant deaths due to acute lower respiratory infections.

2. Cooking practices received a policy impetus from the Government of Uganda (GoU), especially under the Uganda Renewable Energy Policy Objectives and Strategies that set out to improve uptake of efficient charcoal and wood fuel stoves. The health co-benefits of clean cooking were recognized in Uganda's National Biomass Energy Demand Strategy and an interministerial approach was adopted for the development and implementation of national policies and regulations on clean cooking solutions with the Ministries of Health, Housing, Environment, and Energy. The Ministry of Energy and Mineral Development (MEMD) has been leading the GoU's agenda on clean cooking, most importantly by running the Modern Biomass for Rural Development Program, whose main objective is to promote the sustainable use of indigenous and environmentally friendly fuels derived from biomass to generate electricity for productive use and thermal energy. The MEMD also managed the Promotion of Renewable Energy and Energy Efficiency Program that sought to disseminate 50,000 household improved cookstoves and 400 institutional cooking systems and save 350,000 tons of fuelwood each year. The Global Alliance for Clean Cookstoves was working with the MEMD to reach 3 million households or 15 million people with access to clean cooking technologies and services by 2017.

3. Despite the GoU's efforts, a high potential demand for clean cookstoves, and a plethora of government and donor interventions, the adoption of improved cookstoves remained far below 10 percent. However, with a large and growing number of consumers having the ability to pay for improved cookstoves, and 36 percent of rural households spending a significant and growing share of their monthly incomes on fuelwood, a strong economic case was identified for the uptake of efficient cookstoves. The market potential for improved cookstoves consisted of more than 4.5 million households in rural areas and an additional 1.5 million in the urban centers.



4. While Uganda had more than 50 cookstove producers, the scale of production was low at around 100 units per month, with only a handful having the potential for mass production. Apart from a lack of technology transfer and centralized manufacturing facilities, the low productivity was because of the patchy integration of domestic production into local supply chains. While past sector strategies and resources were focused on creating supply-push through the scaling up of cookstove production volume, the rest of the supply chain had not grown in tandem, and the lack of distribution networks was constraining further market growth. Most importantly, with stove distribution being limited to a few poorly capitalized distributors, cookstove manufacturers were shouldering the entire burden of inventory financing and working capital needs of their sales intermediaries. Consequently, the production sector was suffering from continuously eroding margins and lack resources for reinvestment in production capacity. This impeded manufacturers from building the economies of scale and product innovation that was needed to remain competitive and meet evolving consumer demand.

5. The weak supply chain limited the exposure of consumers to more advanced and attractive state-of-the-art technology, choked demand growth, and led to market spoilage. The lack of point-of-sale feedback from a sufficiently broad network of commercial distributors left manufacturers in the dark with insufficient sales data and market intelligence on consumer preferences and willingness to pay (WTP) to make informed investment decisions. Moreover, with 'traditional' stoves continuing to support an aggressive supply-push of locally manufactured products through noncommercial channels, such as subsidized distribution by (mission-driven) nongovernmental organizations and the manufacturers themselves, negative effects, such as market spoilage and oversupply, were increasingly prevalent.

6. Supply and manufacturing capacity lagged far behind and were unable to meet the public health challenge posed by cooking practices. With over 20 million people affected by HAP-related pollution, and market penetration of cleaner and more efficient stoves stagnating far below achievable target levels, new and more effective private sector-led approaches were needed to match both the magnitude and urgency of the public health issue. Given the limited number and capacity of stove manufacturers, it was identified that not only an exponential increase in the adoption of cleaner and more efficient stoves was required but that it had to be bolstered by upgrading of both quality and performance of stoves in the market. Therefore, centralized manufacturing models were identified as a prerequisite for securing the minimum quality and performance and delivering reductions of HAP at scale. Targeted assistance to a limited number of larger, more established manufacturers were recognized as a pathway to achieve economies of scale and foster technology transfer through partnerships between Ugandan and international industry leaders.

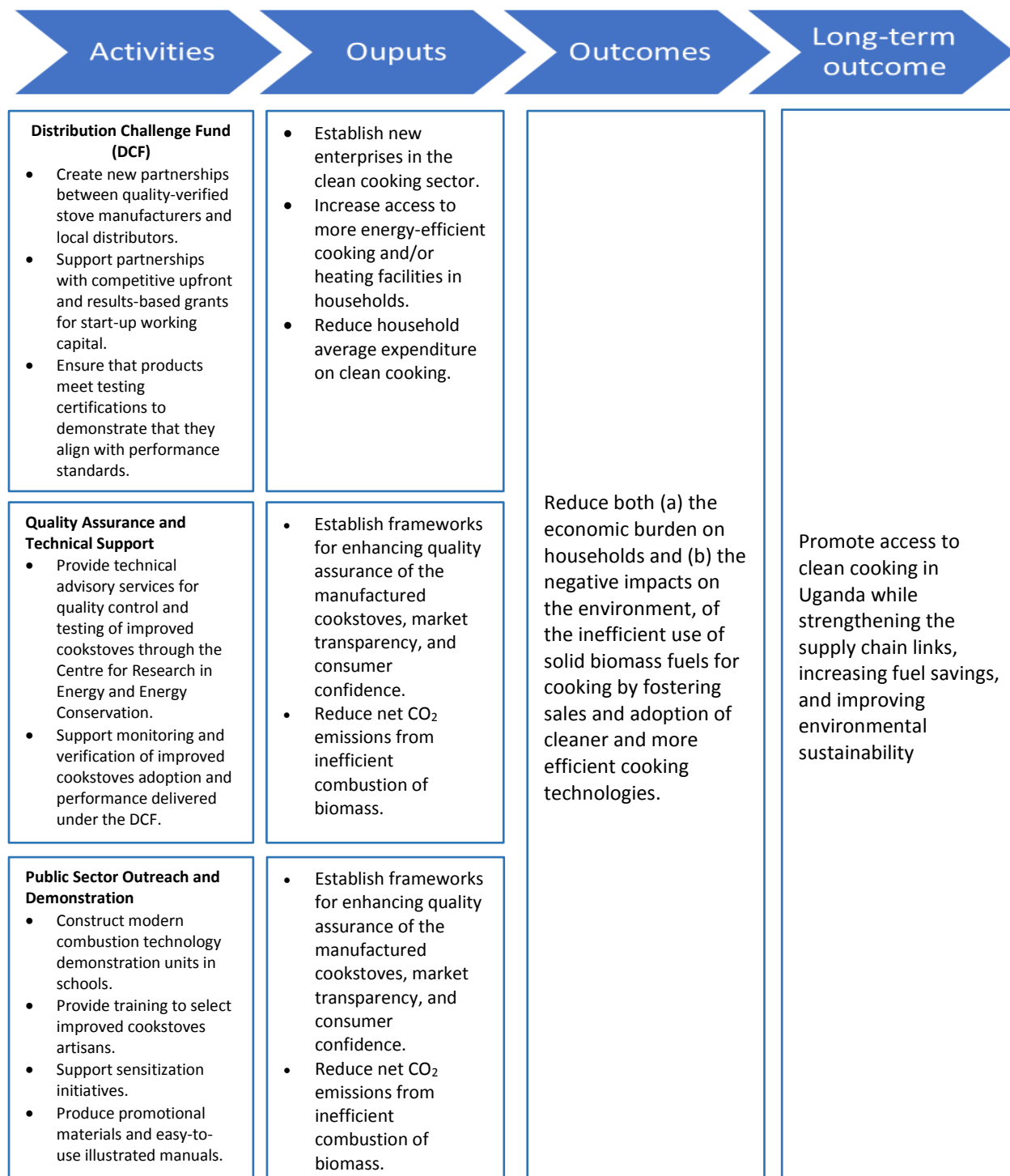
7. On the demand side, national stakeholder consultation and market survey revealed persistent lack of awareness among consumers of the many benefits of clean stoves and fuels. Based on experiences and results from other countries in Sub-Saharan Africa, a preference for boosting demand through trial periods and direct marketing was identified as opposed to subsidized prices and donor-led awareness building.

Theory of Change

8. The project paper did not include any description of the theory of change or results chain for the project. As part of this report, figure 1 represents the theory of change linking the project inputs, outputs, project objectives, and outcomes as identified at appraisal.



Figure 1. Theory of Change





Project Development Objectives (PDOs)

9. The PDO is to reduce both (a) the economic burden on households and (b) the negative impacts on the environment, of the inefficient use of solid biomass fuels for cooking by fostering sales and adoption of cleaner and more efficient cooking technologies.

Key Expected Outcomes and Outcome Indicators

10. The main PDO-level indicators were

- (a) Households that gained access to more energy-efficient cooking and/or heating facilities;
- (b) Household average expenditure reduction on cooking fuels; and
- (c) Climate impact - reduction of net CO₂ emissions from inefficient combustion of biomass.

11. In addition, the following intermediate-level indicator was established for tracking the progress of other project activities: Number of new enterprises in the clean cooking sector.

Components

Component 1: Distribution Challenge Fund (DCF) (US\$1.92 million)

12. This component aimed to strengthening the demand and supply chain for improved cookstoves through the provision of competitive grants to eligible beneficiaries.¹ Grant support was available to distributors of approved stove models that complied with minimum performance levels as determined by the MEMD.

13. The key lines of support for the DCF included the following:

- (a) **Creating new partnerships** between quality-verified stove manufacturers and local distributors.
- (b) **Supporting the above partnerships** with competitive upfront and results-based grants for start-up working capital. The incentives were set as follows:
 - A one-time 50 percent start-up grant off the first wholesale order for up to 5,000 stoves or up to US\$100,000 (whichever reached first) payable upon verified delivery
 - 20 percent of stove wholesale price for each unit sold and verified as an inventory replenishment grant for distribution expansion (results-based finance)
 - 50 percent of the matching grant for verified marketing expenses up to US\$150,000 in total per consortium.

¹ The key eligibility criteria included (a) establishment of credible partnerships between the manufacturer and one or more distributors accompanied by financial commitments for executing the proposed business plan and (b) the product meeting the minimum stove thermal efficiency equal or higher than 30 percent.



- (c) **Providing quality assurance.** Grant support was available for approved stove models that comply with minimum performance criteria based on the International Organization for Standardization (ISO) TC285 standards. Each product required testing certifications to demonstrate that it met the required performance standards.

Component 2: Quality Assurance and Technical Support (US\$140,000)

14. This component was conceived to support the establishment of frameworks for enhancing quality assurance of the manufactured cookstoves, market transparency, and consumer confidence, all through

- (a) Providing technical advisory services for quality control and testing of improved cookstoves by the Centre for Research in Energy and Energy Conservation (CREEC); and
- (b) Supporting monitoring and verification of improved cookstoves adoption and performance delivered under the DCF.

Component 3: Public Sector Outreach and Demonstration (US\$140,000)

15. This component aimed to support a pilot on modern combustion technology initiatives in selected public schools relying on wood fuel, including

- (a) Construction of modern combustion technology demonstration units in such schools;
- (b) Provision of training to select improved cookstoves artisans;
- (c) Supporting of sensitization initiatives targeting head teachers, managers, and catering staff on the advantages of improved cookstoves; and
- (d) Production of promotional materials and easy-to-use illustrated manuals on how to operate and maintain improved cookstoves.

Project Restructuring

16. The project was first restructured in June 2018, extending the closing date from June 30, 2018, to December 31, 2019, in light of delays associated with the procurement of an independent verification agency (IVA) and reconfiguration of clean cooking company partnerships. During the first restructuring, funds were reallocated across components, as indicated in table 1, to provide more targeted support to areas with higher impact, and the Results Framework was revised to more accurately reflect the likely impact of this project by the new end date, as tracked by the results indicators. The restructuring was indicative of the agreement reached regarding Component 2 during the mission in May 2018. It was seen that because of the modest amount originally allocated and lack of progress to date with implementation, more time was needed to identify a superior but suitable technology for the Ugandan institutional context. It was agreed that the MEMD would establish a more ambitious and comprehensive program that will look at the market and suitable technologies for both public and private institutions, including schools, restaurants, hotels, and other businesses, that could benefit from improvements in cooking technology. This strategy would then be integrated in the future, together with other clean cooking activities, in the World Bank's support to the country's energy access agenda. Hence, the original Component 2 (Public Sector Outreach and Demonstration of Institutional Stoves), with US\$140,000



allocated, would no longer remain part of the project and the amount would instead be reallocated to fund the technical assistance activities to support the demand-side equation of the DCF. As a result, the budget allocated under Component 3 (US\$70,000) was reallocated to the DCF under Component 1. The reallocation also allowed for sufficient budget to cover the operating expenses and independent verifications until the end of the closing date and to meet cost overruns. For institutional cooking, a market survey was undertaken to establish (a) a baseline on how institutions, in different segments, are cooking today; (b) what clean cooking technology products are available to institutions; (c) factors affecting supply and uptake; and (d) possible interventions to enhance the use of clean cooking fuels and technologies.

17. The second project restructuring, which occurred in December 2019, extended the closing date from December 31, 2019, to June 15, 2020, in light of the momentum that the project had gained to allow for greater impact in the field and minimize the time gap between the World Bank project activities.

18. The third and final project restructuring was another 5.5-month extension of the closing date from June 15, 2020, to September 30, 2020, because of the impact of the ongoing coronavirus disease 2019 (COVID-19) pandemic affecting the sector. The extension allowed for continued essential support to this fragile sector and to further bridge the gap between the project and the upcoming World Bank activities to support Uganda's clean cooking sector. Reallocation of funds across disbursement categories was undertaken for verification and implementation supervision activities. The reallocation of US\$250,000 was made from Component 1 (competitive grants, category 2) and US\$70,000 from Component 3 (category 3) to the consulting services and operating costs (category 1) to allow for sufficient budget to cover the operating expenses and independent verifications until the end of the closing date and to meet cost overruns in this category. Additionally, a reallocation of US\$20,000 was made from the competitive grants (category 2) to the training and operating costs of the MEMD (category 3). The PDO was not affected by the restructurings and remained unchanged throughout the project.

19. The final allocation of resources, by component, is provided in table 1.

Table 1. Allocation of Funds, by Component

Component	Original Allocation Cost (US\$)	After Restructuring in July 2018 (US\$)	After Restructuring in December 2019 (US\$)	After Reallocation in June 2020 (US\$)
1. Distribution Challenge Fund (grants, cost category 2)	1,750,000	1,300,000	1,300,000	1,050,000
2. Quality Assurance and Technical Assistance (cost category 1 includes cost of verifications)	223,480	751,101	751,101	911,167
3. Public Sector Outreach and Demonstration of Institutional Stoves (cost category 3)	140,000	0	0	70,000
Operating costs (disaggregated here but part of cost category 1)	86,520	148,899	148,899	168,833
Total	2,200,000	2,200,000	2,200,000	2,200,000



Other Changes

20. As mentioned earlier there were no changes to the PDO. However, during the first restructuring, one of the key results, the incremental sales of stove, was revised from the project target of 100,000 to 45,000 units. The overall target was revised based on data from the sales of the two quarters preceding the restructuring and consultation with the consortia as well as on the assumption that some consortia will perform better than others over the course of the project period. Another factor for revising the targets was the overall transactions costs (cost of verification, monitoring and impact assessment, marketing campaigns, operating expenses, and so on), which turned out to be higher than anticipated at the beginning of the project. The indicator tracking progress under Component 3 was removed, and it was agreed with the client that due to the modest amount originally allocated under this component and the lack of progress with implementation, the MEMD would establish a more ambitious and comprehensive program that will look at the market and suitable technologies for both public and private institutions, including schools, restaurants, hotels, and other businesses, that could benefit from improvements in cooking technology. These changes did not affect the achievement of the PDO.

Result Indicators

21. No changes took place to the PDOs nor the PDO indicators; however, the targets of results indicators were revised, as provided in table 2.

Table 2. Original and Revised Targets of Main and Intermediate Indicators

Project Design Element	Baseline	Unit of Measure	Original Target	Revised Target as of December 31, 2019	Comments
Households that gained access to more energy-efficient cooking and/or heating facilities	22% of 880,000 HH (182,600 HH)	Number	100,000	45,000	Revised during the first restructuring in June 2018 due to delays in kick-off activities under the DCF and data from the sales of the last two quarters and consultation with the consortia
Average reduction of household expenditure on cooking fuels (kg/HH/month)	Consumption of 51 kg/HH/month	Percent	20% reduction, equivalent to consumption of 40.8 kg/HH/month	—	No changes
Reduction of CO ₂ emissions (tons of CO ₂ emissions/HH/year)	Emission of 0.00882 tons of CO ₂ /HH/day	Percent	20% reduction, equivalent to 0.007056 tons of CO ₂ /HH/day	—	No changes



Project Design Element	Baseline	Unit of Measure	Original Target	Revised Target as of December 31, 2019	Comments
Increase in the number of new enterprises in the clean cooking sector	4***	Number	Increase by 7	—	No changes

Note: HH = Household.

***Potential Energy, AREM, Fenix International, Ezylife, BRAC, Bidhaa sasa, and Simoshi.

II. OUTCOME

A. RELEVANCE OF PDOS

Assessment of Achievement of Each Objective/Outcome

22. The PDO was to reduce both (a) the economic burden on households and (b) the negative impacts on the environment, of the inefficient use of solid biomass fuels for cooking by fostering sales and adopting cleaner and more efficient cooking technologies. The project contributed to Uganda's Country Assistance Strategy (2010–2015), Report No. 14460–UG that identified “arresting environmental degradation and natural resource depletion” as a key development issue. From 2000–2010, Uganda had the fifth highest deforestation rate in Sub-Saharan Africa, with an average rate of deforestation of 2.46 percent during this period.² The project was thus also relevant for curbing high levels of deforestation and forest degradation while bringing down household expenditure on fuels, the expenditure which had doubled between 2000 and 2015. The stoves sales enabled by the project have led to the reduction of 60,831 tons of CO₂ per year—a 30 percent emission reduction rate compared to the baseline—and a savings rate of 223,470 tons of charcoal per year. This represents about a 36 percent average monthly fuel consumption reduction for households and an equivalent amount in financial savings. Women also report that the stoves free up 30–90 minutes per day to do other household chores, spend time with children, or rest, instead of having to search for cooking fuel.

23. The momentum built from this project, along with the necessity to continue to develop a market for clean cooking, has motivated the inclusion of a clean cooking investment activity in the upcoming Uganda Electricity Access Scale-up Project (EASP) (P166685), a US\$340 million IDA-financed project, and informed its design. The Uganda EASP has managed to leverage US\$10 million in IDA allocation, an expected US\$10 million from ESMAP's Clean Cooking Fund, and an equivalent projected contribution from the private sector. The funds will support both biomass efficiency and transition to clean fuels. The Uganda EASP is scheduled for World Bank Board approval in FY21.

24. The relevance of the project after restructuring remained unchanged. The changes made in the project were to ensure that the full benefits of the project were realized while remaining relevant to upcoming World Bank projects in Uganda. Thus, relevance of PDOs for the project is rated High.

² ESMAP (Energy Sector Management Assistance Program). 2014. *Clean and Improved Cooking in Sub-Saharan Africa: A Landscape Report*. <https://openknowledge.worldbank.org/handle/10986/22521>.



B. ACHIEVEMENT OF PDOS

25. **Overall efficacy of the project is rated Substantial.** The project was innovative, timely, and an important operation in the context of the World Bank's role in development of the clean cooking sector. The project made a unique and attributable contribution to Uganda's development through reducing both (a) the economic burden on households and (b) the negative impacts on the environment, of the inefficient use of solid biomass fuels for cooking by fostering sales and adoption of cleaner and more efficient cooking technologies.

26. The project faced several challenges from the onset. Attracting experienced and highly capable local distributors who were also interested in efficient biomass stoves was one of the key challenges that the project focused on solving through facilitation and matchmaking events. Furthermore, there were several reorganizations of the project consortia (manufacturer-distributor partnership) until the partnerships began to materialize and mature. The project also needed to support innovative marketing methods to spur further demand with the end users. Value chain tracking for stoves presented many challenges as some of the distributors provided incomplete data or in formats that were not acceptable for verification of the sales by the IVA, creating further delays with processing of the payment claims and, during the initial periods, slowing down the utilization rate of the lines of support. The challenges were solved after hands-on working meetings consisting of the Private Sector Foundation Uganda (PSFU), World Bank, IVA, and the participating beneficiaries. Lastly, the COVID-19 crisis' impact was felt greatly in the clean cooking sector in Uganda. Because the clean cooking businesses require retail activity across different locations, the risk is especially high due to the inability of sales agents to operate as usual. The sales for the second calendar quarter of 2020 were much lower than expected as a result but picked up in the third and final quarter ending in September 2020.

27. A wide range of activities were undertaken to achieve the outputs needed for achievement of targets established for results indicators, as elaborated in table 3.

Table 3. Activities Undertaken under the Project

S. No.	Description of Activity
Component 0: Project Preparation	
1.1	Activities included collection of baseline data on cookstove availability and adoption, performance, household spending on cooking fuels, as well as household pollution including greenhouse gas and black carbon.
1.2	WTP and consumer acceptance trial of shortlisted products was conducted.
Component 1: Distribution Challenge Fund (DCF)	
2.1	DCF created new partnerships between quality-verified stove manufacturers and local distributors.
2.1.1	The project supported manufacturer-distributor partnerships with competitive upfront and results-based grants for start-up working capital.
2.2.2	- Activities under the DCF included 6-month consumer trials in households to test product compatibility and consumer WTP. - Both laboratory and field-based product performance and durability assessments were undertaken to avoid promotion of poor-quality products and ensure that only products that met the minimum quality criteria (Tier 3 and above according to the ISO TC 285 standards) and consumer expectations were eligible to compete.
2.3	Behavioral diagnostic study was commissioned to explore the nuances of customer decision-making to purchase stoves and provided actionable recommendations to be implemented through



S. No.	Description of Activity
	a market activation campaign. The study was carried out through household interviews and focus groups.
2.4	The project supported the establishment of 2 stove manufacturers working with 3 pay-as-you-go solar companies.
	Component 2: Quality Assurance and Technical Support
3.1	An IVA was appointed to verify the sales and eligible expenditures under the DCF and ensure accountability of the results-based finance aspects of the project.
3.2	Field-based monitoring activities were conducted. These activities included the following: (a) user surveys conducted in all the households visited and (b) kitchen performance tests (KPTs) performed in all the households surveyed. Market fuel price surveys in the neighborhoods of the surveyed households were also carried out.
	Component 3: Public Sector Outreach and Demonstration
4.1	Market survey on institutional cooking in Uganda was undertaken to establish a baseline on how institutions in different segments are cooking today, what clean cooking technology products are available to institutions, factors affecting supply, and uptake and possible interventions to enhance their use.

28. The implementation of project activities was entrusted to the PSFU, with the MEMD leading the project. The PSFU had also served as one of the implementing agencies for the Uganda Energy for Rural Transformation (ERT) phases I and II. The PSFU consists of over 160 business associations, corporate organizations, and government agencies. The PSFU established the Business Uganda Development Scheme (BUDS) as a specialized department/unit that implements matching grant programs for a variety of donors and the Government.

29. The activities undertaken under the project are categorized under three components: (a) Distribution Challenge Fund (DCF), (b) Quality Assurance and Technical Support, and (c) Public Sector Outreach and Demonstration. First, the project, under Component 1 set up a grant facility—the DCF—to address gaps in the supply chain for quality-assured, efficient biomass stoves and enhance below-the-line consumer engagement. The fund comprises several lines of support designed as market incentives to attract new players in the sector and establish partnerships. The DCF provided (a) one-off up-front matching grants and ongoing results-based financing for scaling up distribution networks for select products and (b) cost sharing high-impact marketing campaigns and consumer engagement to raise awareness and enable flexible payment methods. The design was based on a multiphase, comprehensive preparation period preceding the project. Activities included six-month consumer trials in households to test product compatibility and consumer WTP and both a laboratory and a field-based product performance and durability assessment to avoid promotion of poor-quality products. These preparatory activities ensured that only products that met the minimum quality criteria (Tier 3 and above according to the ISO TC 285 standards) and consumer expectations were eligible to compete.

30. During project implementation, to maximize project results, it was important to understand why some customers purchased stoves and why others did not and what drove customers to take such decisions. To this end, between August and October 2018, a behavioral diagnostic study was commissioned to provide insights into consumer decision-making, and it provided actionable recommendations to be implemented through a market activation campaign. The study was carried out in collaboration with the World Bank's Mind, Behavior, and Development Unit and was authored by consultants at the Decision Lab. The project benefited from an understanding of the psychological and economic nature of consumer decision-making and behavior change, which was crucial in adjusting the



course of action when the project trends showed that more could be done to understand and unlock consumer adoption.

31. The study used a behavior change framework to identify ‘beneath the surface’ behavioral barriers to understand consumer choices, including the preferences and roles of men and women. The interventions implemented, because of the study recommendations, included use of market activations; radio advertisement announcements; digital marketing; and social media outreach (Facebook, Twitter, and Instagram) including trivia competitions, use of community influencers, and so on. Four long-term and five short-term sales access points were set up by the campaign organizers located in strategic locations in Kampala and Wakiso districts. These interventions became crucial in raising awareness about the set of products supported by the program and provided a medium through which users could explore different models and decide which product was right for them. As a result, sales rose during implementation of the campaign by about 20 percent compared to the quarter before the campaign took place.

32. Throughout implementation of the project, the World Bank coordinated with the German Agency for International Cooperation (*Deutsche Gesellschaft für Internationale Zusammenarbeit*, GIZ), which was supporting artisanal manufacturers of biomass stoves through improved kilns and production facilities. The role of the World Bank became to introduce new products into the market, including those that were industrially manufactured, and strengthen the supply chain to enable more efficient distribution.

33. Second, KPMG, in association with the Centre for Integrated Research and Community Development Uganda (CIRCODU), undertook monitoring and verification activity under Component 2. The monitoring activities covered households that were using cookstoves for the period when the following consortia became active: SmartHome International Lifeline Fund (SHS ILF), SmartHome Bold (SHS Bold), Potential Energy Limited, and BurnLab (Jikokoa). KPMG conducted surveys and monitored target end user households to track and report on the results of the project. The monitoring approach entailed physical visits to project stove users, including conducting interviews with the specific stove users; undertaking fuel consumption measurements in users’ kitchens; and conducting fuel price surveys.

34. Third, for Component 3, it was agreed with the client that due to the modest amount originally allocated and lack of progress with implementation, the MEMD would establish a more ambitious and comprehensive program that will look at the market and suitable technologies for both public and private institutions, including schools, restaurants, hotels, and other businesses, that could benefit from improvements in cooking technology. This strategy would then be integrated in the future, together with other clean cooking activities, currently being prepared under the Uganda EASP) (P166685). Hence, from the original component (Public Sector Outreach and Demonstration of Institutional Stoves) US\$70,000 of the US\$140,000 allocated was reallocated to fund the technical assistance activities including supporting the demand-side activities of the DCF while the remaining US\$70,000 will be used to fund the MEMD market assessment of the public and private institutions and businesses. The market survey on institutional cooking in Uganda that was undertaken established a baseline on how institutions, in different segments, are cooking today; what clean cooking technology products are available to institutions; factors affecting supply; and uptake and possible interventions to enhance the use clean cooking fuels and technologies.



Table 4. Summary of Achieved Results

Indicator	Baseline	Target	Target Achieved	Achievement Rate (%)	Remarks
PDO Indicator One: Households that gained access to more energy-efficient cooking and/or heating facilities	22% of 880,000 HH (182,600 HH)	45,000	72,535*	161	Target exceeded
PDO Indicator Two: Average reduction of household expenditure on cooking fuels (percentage)	Consumption of 51 kg/HH/month	20% reduction, equivalent to consumption of 40.8 kg/HH/month	31.5%**	156	Target exceeded
PDO Indicator Three: Reduction of CO ₂ emissions (Tons/year)	Emission of 0.00882 tons of CO ₂ /HH/day	20% reduction, equivalent to 0.007056 tons of CO ₂ /HH/day	31.5%**	156	Target exceeded
Intermediate Results Indicator One: Number of new enterprises in the clean cooking sector	4***	Increase by 7	7****	100	Target achieved

Note: HH = Household.

* Confirmed stove sales were 73,535, but the stoves manufactured and sold to distributors were 94,622

** This is average reduction. See Appendix 1 for reductions of household expenditure on cooking fuel and emissions by each project stove.

*** UGASTOVE, Bold Energy, ILF, and Biolite.

**** Potential Energy, AREM, Fenix International, Ezylife, BRAC, Bidhaa sasa, and Simoshi.

35. The total number of distributed stoves (72,535) represents almost 1.6 times the total target (45,000 stoves), far exceeding the target set under the first PDO indicator. The project implementation progress was slow during the initial year but started to show consistent improvements starting in the second year of implementation. The project implementation picked up substantially toward the end of 2018 through an average increase in the sales of stoves by the participating consortia and additional companies joining the program. The quarterly sales under the DCF started to increase consistently in each quarter starting FY17 Q4 and has soared substantially since then, with the exception of the quarter March–June 2020 when only 6,000 units were sold because business activities diminished due to COVID-19.

36. The project promoted the establishment of eight consortia (distributor-manufacturer joint ventures) that are actively selling products across Uganda. Of these, four consortia were selected originally and an additional four were onboarded in March 2019, which has given the sector growth an even greater momentum. A total of 13 companies (which are part of the 8 participating consortia) are considered new market entrants. Awareness and market activation campaign activities have enhanced the marketing strategies of the distribution partners for the participating products. The umbrella brand



name—Supa Sigiri—was launched in September 2018 to represent the eligible stoves participating in the project, which have gone through quality verification and performance processes and customer acceptance trials.

37. The climate impact from the project, due to reduction of net CO₂ emissions from inefficient combustion of biomass, translates to 60,831 tons of CO₂ avoided each year from the stoves currently in operation—a 30 percent emission reduction rate compared to the baseline. This has resulted in a savings rate of 23,470 tons of charcoal per year, which represents about a 36 percent average monthly fuel consumption reduction at the household level and an equivalent amount in financial savings. Also, the project yielded 30–90 minutes per day in time savings for women who reported using the freed time for other household chores, spending time with children, and resting.

38. During the first phase of project implementation, the MEMD, together with the PSFU, established that there was limited local and regional experience in designing, manufacturing, operating, and maintaining gasifier institutional cookstoves. It was, therefore, decided to not pursue the activity of installing institutional demonstration gasifier stoves in public schools. Instead it was agreed that a market survey on institutional cooking in Uganda be carried out to make practical recommendations to scale up the uptake and ensure wider adoption of clean cooking solutions in institutions in Uganda.

39. **Overall efficiency of the project is rated Substantial.** Project resources and inputs were converted adequately toward achieving project results. The costs involved in the project are considered reasonable—if some weightage is given to the diverse set of activities that were undertaken for achieving project results. The project completion period agreed under the financing agreement was found challenging and had to be extended by 18 months initially and thereafter by another 9 months in two steps. This is considered reasonable given the diverse array of services completed under the project and impact of COVID-19.

40. Table 5 summarizes the estimated annual fuel savings and emission reductions.

Table 5. Estimated Annual Fuel Savings and Emission Reduction for Stoves Delivered

No.	Manufacturer	Distributor(s)	Estimated Fuel Savings (in absolute terms) (kg/HH/year)	Estimated Emission Reductions (percentage)
1.	Ecozoom East Africa Limited	Fenix International	321.20	32.7
2.	Uganda Stove Manufacturers	WWF, Simoshi, ENventure, and Save Energy	313.90	33.3
3.	Envirofit	FINCA Bright life, Build Uganda, AREM	281.05	25.5
4.	Biolite	FINCA Bright Life, Africell	1,051.20	44.2
5.	BURN Manufacturing	Ezylife, Paradigm	346.80	30.0
6.	Bold Energy	UpEnergy	281.05	31.3
7.	Potential Energy	BRAC, Daraja Plus, RESI	408.80	30.5
8.	International Life Fund	UpEnergy	197.10	25.9

Note: RESI = Rural Environmental Sustainability Initiative; WWF = World Wildlife Fund.

41. **Benefits to suppliers.** The project supported the recent establishment of two stove manufacturers working with three pay-as-you-go solar companies. Under these new partnerships, the



solar companies offer stoves to their customers as add-on appliances that can be paid on pay-as-you-go basis, revealing an innovative business model emerging in the clean cooking sector. The solar companies can function both as a distributor and consumer financier, which are important functions in addressing the flexible payment methods for customers.

Overall Outcome Rating

42. **The overall outcome of the project is rated Satisfactory**, based on high relevance of the PDO, substantial efficacy of project objectives, and substantial efficiency. The team was proactive in restructuring the project, undertaking new activities, and extending the project time lines to maximize project outcomes. The target set under Component 1 during project conception was revised down to align the target with the results, Component 3 was amended during the first project restructuring and the resources were reallocated where they could yield the most benefits, market and behavioral assessments were undertaken to ensure penetration of project outcomes, and the time lines were revised as the project gained momentum and to allow for continuity between the current project and upcoming World Bank projects.

Other Outcomes and Impacts

43. **Gender.** The role of women and an active women's network was crucial for the project. Women held top positions within the distribution network and were able to speak authentically and present the benefits of improved cookstoves, playing a key role in changing minds. Women as primary users of cooking solutions stand to benefit from the project that has reached over 72,000 households.

44. **Institutional strengthening.** The PSFU and MEMD have emerged from institutions with limited understanding of clean cooking into institutions with the knowledge to undertake large-scale expansion of clean cooking access. The sector know-how that has been built through this project will be incorporated into upcoming World Bank projects like the Uganda EASP that will aim to concurrently address the three impediments to clean cooking scale-up identified through the project—distribution, awareness, and affordability.

45. **Private sector impact.** As Uganda gradually transitions away from decentralized and artisanal produced biomass stoves toward clean solutions such as LPG, biogas, and electricity, interim solutions such as quality-assured biomass stoves will need to curb the use of charcoal and firewood. The supply chain enabled by this project can help jump-start that transition. Moreover, introduction of private sector, even in a small way, provides encouragement for improved delivery and higher efficiency in providing improved access of energy.

46. **Poverty reduction.** The project directly contributed to a reduction in household expenditure of fuels for cooking to the tune of 36 percent average monthly fuel consumption reduction and an equivalent amount in financial savings for households that adopted the clean cookstoves as seen in the project monitoring reports. Job opportunities become available to the direct or indirect beneficiaries and to those who participated in the project as suppliers, experts, and actual users of stoves. The increase in access and reduction in household expenditure on cooking fuels resulted from the project.



III. KEY FACTORS THAT AFFECTED IMPLEMENTATION AND OUTCOME

A. KEY FACTORS DURING PREPARATION

47. In 2014, discussions were held between the GoU and IDA regarding the project design. In November 2015, a WTP assessment and Consumer Acceptance Assessment for clean cooking in Uganda was carried out to inform the design and implementation of a competitive support scheme to help Ugandan distributors enhance consumer access to high performance clean cookstoves made locally and internationally. The results of the assessment showed that many local consumers preferred industrially produced stove models that were not readily available in the Ugandan market and a price range that they were prepared to pay for them. It also showed differentiation in product preferences that played a role in the weighing of the product evaluations for admission to the program.

B. KEY FACTORS DURING IMPLEMENTATION

48. Although project effectiveness was declared on October 28, 2016, the project's actual implementation began mid-June 2017. The following are the key challenges faced during implementation:

- At the outset, implementation faced challenges due to delays in contracting the IVA, a first disbursement condition, that emanated from contracting and clearance requisites pertaining to the bid document by the contracts committee and subsequent protracted negotiations period between the vendor and PSFU.
- Other factors for slow initial implementation include reorganization and reconfiguration of the project consortia, which typically take some time to form and mature into full-fledged partnerships. It is typical for implementation of grant facilities to start slowly because facilitation of partnerships in the sector and building trust for those partnerships to flourish over time is one of the key factors. To this effect, the withdrawal of a key distributor (Up Energy) from the program also presented a setback for several manufacturers who had signed memoranda of understanding with them as their primary distributor and thus were forced to begin looking for new distribution partnerships. The withdrawal was a result of reorganization within Up Energy at the management level and the partnerships that they had at the time. The manufacturers subsequently created new partnerships with new distributor entrants. The reorganization and reconfiguration of the project beneficiaries in the light of this, prolonged project time lines. Given the unexpected delays in the beginning of the project, there were delays in receipt of shipments and/or sale of products.
- There were also logistical bottlenecks because operations of three participating consortia were based in Kenya, which was undergoing a fragile political situation during the early period of the project. Project implementation was also affected by the unpreparedness of international manufacturers to effect technology transfer to local manufacturers. The participating international stove manufactures were not ready to collaborate with local manufacturers citing the need for more time to understand the trend of the clean cookstove business in Uganda.
- Overall, the financial management tools applied during implementation were effective and safeguarded project funds. However, there were operational challenges within the PSFU



pertaining to processing payments using project funds that were placed with the Bank of Uganda (BoU), that included delays in submitting bank instructions of unavailability of the BoU's e-connection. This resulted in occasional delayed payments to beneficiaries.

- Most distributors sold stoves on cash basis, which stifled sales growth, especially in the high-cost stoves category because the end users could not afford to pay the entire cost of purchasing the stove up front.
- Limited local and regional experience in designing, operating, and maintaining institutional gasifier stoves for cooking necessitated the modification of results indicators during restructuring.
- Proper record keeping was not embraced by all consortia, which led to some claims being disallowed especially for the inventory replenishment grant line of support.

49. **Impact of COVID-19.** Sales were significantly affected due to the pandemic, falling to less than 50 percent of pre-pandemic levels. The change in demand was owing to end user affordability constraints and because cookstoves are not a priority purchase. On the distribution side, group demonstrations that were a key tool to create awareness and promote sales had to be abandoned since the onset of the pandemic. Manufacturers faced inventory shortages in June and July.

IV. BANK PERFORMANCE, COMPLIANCE ISSUES, AND RISK TO DEVELOPMENT OUTCOME

A. QUALITY OF MONITORING AND EVALUATION (M&E)

M&E Design

50. The M&E design was adequately planned. The indicators selected covered the project objectives and outputs and were aligned with achieving the PDO. However, the project paper did not include a theory of change or results chain, which was not required at the time. The project paper included PDO, indicators, targets, rationale behind the project design, and implementation parameters. The monitoring and impact assessment subsequently tracked these indicators in the monitoring reports and the Implementation Status and Results Reports (ISRs). A clear results chain would have been more helpful to monitor progress toward the PDOs and assess the project outcome. The results indicators and the intermediate indicators were revised during the restructuring based on data from sales and consultation with the consortia and on the assumption that some consortia will perform better than others over the course of the project period. The institutional indicator has also been dropped to allocate resources to achievable outputs.

51. The M&E process engaged CIRCODU in association with KPMG as the IVA that conducted surveys and monitored target end user households for purposes of tracking and reporting on the results of the project.

52. The M&E process entailed review of the customer sales databases provided by the PSFU and selected districts with high project sales using which a minimum of 24 stove users per consortia were selected from the databases and appointments for physical visits to the user households were made



through phone calls. Thereafter, field-based monitoring activities were conducted that included user surveys in all households visited and KPTs.

53. Periodic arrangements were developed for M&E of the project. The IVA periodically monitored and provided project results. In addition, the DCF performance tracker provided regular updates. The World Bank's supervision was adequate and effective implementation support was made available to the PSFU. Much of the coordination during the implementation period was vested in the PSFU to assist in assessment of project progress with relation to ongoing activities, targets for results indicators, and key issues. No difficulties toward coordination with the PSFU were found during project implementation.

M&E Utilization

54. The M&E data were used to track project implementation and performance. Findings in the KPMG's Monitoring Report were used to estimate the impact of hitherto unknown gaps on project achievements related to the indicator on household monthly reduction in expenditure on cooking fuels and the household annual reduction in emissions. The data fed into the decision about seeking extension to fully exploit the benefits of the project.

Justification of Overall Rating of Quality of M&E

55. The overall rating of quality of M&E is High. Adequate emphasis was given to the M&E design and implementation. Both the PSFU and World Bank were able to efficiently use the information on project status to monitor progress and undertake adjustments. Missions were held regularly throughout the project. During project preparation, missions were held in May 2015, September 2015, and May 2016, and during project implementation, missions were held in February 2017, July 2017, November 2017, May 2018, November 2018, May 2019, October 2019, March 2020, and August 2020 (local consultant only). The project team was also proactive in monitoring the results as they came and quickly restructuring the project to maximize the project results. Based on the results preceding the first restructuring, the funds were reallocated, and targets were recalibrated as shown in the restructuring papers.

B. ENVIRONMENTAL, SOCIAL, AND FIDUCIARY COMPLIANCE

56. Given that the project was rated as environmental category C, no World Bank safeguard policy was triggered.

C. BANK PERFORMANCE

Quality at Entry

57. **Quality at entry was Satisfactory.** The project components were established with a view to establish a baseline before project implementation and in consort with the PSFU. During project preparation, baseline data were collected on cookstove availability and adoption, performance, households depending on cooking fuels, and household pollution including greenhouse gas and black carbon to provide a sufficiently robust basis for measuring the results indicators. However, the original target was revised by more than 50 percent and there were delays in actual disbursement that emanated from disbursement conditions in the project design. For a market building project, such as this one, market



activation activities and targeted awareness could have been carried out at project inception and could be held continuously throughout project implementation.

Quality of Supervision

58. **Quality of supervision was Satisfactory.** Project supervision was facilitated by the PSFU. This helped in dealing with implementation issues rather proactively. Given the relatively short implementation period of the project, hands-on support by the task team on the World Bank's process (financial management and procurement) helped in the smooth flow of funds. By June 2019, almost 50 percent of the approved amount was already disbursed. The project's restructuring was done on time to recalibrate targets for results indicators and extend the project closing date. Annual missions were undertaken during project preparation and implementation. In the virtual project mission undertaken in August 2020 due to COVID-19, important aspects of project competition, including drafting of the Implementation Completion and Results Report (ICR) by the PSFU and the World Bank, were discussed.

Justification for Overall Rating of Bank Performance

59. **Overall Bank performance was Satisfactory.** The PDO was in line with the GoU's country strategy for 2010–205, National Development Plan II, Renewable Energy Policy for Uganda (2007). Sufficient preparatory missions and studies were conducted. The project feasibility elicited a quick response from commercial distributors; however, it was awareness and market activation that finally boosted stove sales. Arrangements for financial management, procurement, and compliance as well as M&E were well developed. There was prompt reallocation of funds and restructuring during the project life cycle to yield the best results. The task team leaders' support and guidance were invaluable, and the mission reports were informative and provided guidance on follow up actions.

Risk to Development Outcome

60. Energy access is recognized as the key challenge for the Sub-Saharan Africa region and Uganda attaches high importance to efforts toward meeting this challenge. The business model of building and expanding the distribution supply chain for qualified stoves with a central role for the PSFU and quality assurance of stoves sold through the IVA has definite merits. Through the 'catalytic' design of the intervention, market growth will be driven by the creation of an even and competitive playing field between project beneficiaries and by freeing up manufacturers' and distributors' resources for investment in building economies of scale and efficient distribution channels.

V. LESSONS LEARNED AND RECOMMENDATIONS

61. **Early and continuous awareness and market activation is crucial.** The design of the project provided for a consumer engagement line of support to be used by the distributors for their own sales and marketing activities. However, as the project progressed, it was found necessary to enhance the consumer engagement line of support by carrying out a separate project-implemented awareness and market activation activity benefitting all distributors, which greatly catalyzed the uptake of clean cookstoves. Therefore, for a market building project, targeted awareness and market activation should be carried out at the onset of project implementation and should be continuous throughout project implementation.



62. **Results from market building activities take time to manifest.** Market building activities, for example, sales and marketing, which are supported through a grant line in the DCF, took time to materialize into sales, especially because many of the participating stove models represented a new product category in Uganda. Therefore, the consortia required more time to see the impact of these activities in the field.
63. **Economies of scale is key.** Manufacturing and selling of cookstoves is a low-margin business that reaches financial viability through economies of scale. Maintaining working capital for players in the supply chain is key. In administering results-based financing, the 15-day delay between delivery and receipt of payment, when coupled with interest rate of 24 percent, can eliminate the margin.
64. **Follow-on projects can help stakeholders plan better.** A clear indication as to subsequent projects will allow the private sector participants to mobilize more effectively, plan ahead, and execute longer business plans.
65. **Last-mile distribution needs some rethinking.** Adding distribution capacity to improve outreach does not always yield results. This calls for an incentive structure at various stages of the supply chain.
66. **Grant facilities, once established, do not take off organically.** It cannot be expected that once a grant facility is established, the implementation will take off immediately. There needs to be a concerted effort to facilitate partnerships in the sector and build trust for those partnerships to flourish over time.
67. **Savings and credit cooperative societies play a key role.** If products are offered on credit, it is important to work with the village savings group, which maintains data of credit history, and leverage the fact that members know each other to lower default rates.
68. **Product demonstrations are important to establish product merits.** Cookstoves often face competition from lower-tier stoves that have lower price points. To justify the price differential, product demonstrations are a critical tool.
69. **Access points can be efficacious and cost effective.** Creating awareness and providing access points near end users are important and could be cost-effective as sales of about 40 cookstoves per month can offset the operational cost of providing an access point.
70. **Flexibility in project implementation can lead to efficient use of resources.** The funds absorption risk was managed by proactively seeking the GoU and World Bank approval. The GoU and World Bank flexibly restructured and reallocated funds and approved extensions of project duration. In addition, following the review of prevailing information and situation, two activities were shelved: the twinning grant line of support and the installation of gasifier stoves in public schools. This helped direct the resources where they would yield the most value.
71. **Promote clean cooking products with complementary products can be efficient model going forward.** Bundling clean cooking products with other clean energy products can help leverage existing distribution networks, reduce the financial burden of employing and training additional sales force, and allow consumers to access credit at one point.



72. **Availability of appropriate consumer financing mechanisms.** The market for clean cookstoves is challenging, especially for high-priced stoves, because of the availability of cheap, non-improved cookstoves. The distributors who offered their customers a flexible payment mechanism directly or through a partner institution performed better than others. Clean cooking solutions are considered expensive purchases, and for projects of this nature, consumer financing is critical.

73. **Private sector anticipation over project length.** The multiple extensions and the short implementation segments sent a signal to the companies that the project would be short-lived at best. The private sector mobilizes better when there is a longer implementation period in sight and there are follow-up projects for sustained support during the early stages of sector development. Hence, one of the lessons learned and a recommendation is to work with longer implementation time lines from the outset, which sets longer-term support expectations with the private sector.

74. **Applying lessons learned from the Uganda EASP.** Drawing from the lessons learned, the new Uganda EASP will concurrently address the three challenges of distribution, awareness, and affordability. The project also proposes development of local capacity, especially of women entrepreneurs, for promotion, distribution, and sales of clean cooking products. The Uganda EASP also seeks to address operational capacity and support pipeline development building the lessons learned from the current project on the importance of providing technical assistance support.



ANNEX 1. RESULTS FRAMEWORK AND KEY OUTPUTS

A. RESULTS INDICATORS

A.1 PDO Indicators

Objective/Outcome: 72, 535 households gained access to energy-efficient cooking appliances

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Households that gained access to more energy-efficient cooking and/or heating facilities	Number	0.00 28-Oct-2016	100,000.00 28-Oct-2016	45,000.00 30-Mar-2018	72,535.00 30-Sep-2020

Comments (achievements against targets):

Objective/Outcome: The average expenditure reduction on cooking fuels as measured through fuel savings was estimated at 36%

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Household average expenditure reduction on cooking fuels	Percentage	0.00 28-Oct-2016	20.00 28-Oct-2016	20.00 30-Mar-2018	36.00 30-Sep-2020



Comments (achievements against targets):

Objective/Outcome: The annual reduction of CO2 emissions for the above households compared to the business as usual scenario is estimated at 60,831 tCo2.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Climate impact - reduction of net CO2 emissions from inefficient combustion of biomass	Tones/year	0.00 28-Oct-2016	83,864.00 28-Oct-2016	37,369.00 30-Mar-2018	60,831.00 30-Sep-2020

Comments (achievements against targets):

A.2 Intermediate Results Indicators

Component: A total of 13 new enterprises in the clean cooking sector were supported through partnerships, matchmaking, and investment support

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Number of new enterprises in the clean cooking sector	Number	0.00 28-Oct-2016	7.00 28-Oct-2016	7.00 30-Mar-2018	13.00 30-Sep-2020

Comments (achievements against targets):





ORGANIZATION OF THE ASSESSMENT OF THE PDO

Objective/Outcome 1 Reduce economic burden on households	
Outcome Indicators	1. Household average expenditure reduction on cooking fuels (percentage).
Intermediate Results Indicators	None
Key Outputs by Component (linked to the achievement of the Objective/Outcome 1)	Component 1: Distribution Challenge Fund (DCF) (a) Creating new partnerships between quality-verified stove manufacturers and local distributors. (b) Supporting the above partnerships with competitive upfront and results-based grants for start-up working capital. (c) Quality assurance: the grant support is only available for approved stove models that comply with minimum performance criteria based on the ISO TC285 standards.
Objective/Outcome 2 Reduce negative impact on the environment	
Outcome Indicators	1. Households that gained access to more energy-efficient cooking and/or heating facilities (number). 2. Climate impact: reduction of net CO₂ emissions from inefficient combustion of biomass (ton/year)
Intermediate Results Indicators	None
Key Outputs by Component (linked to the achievement of the Objective/Outcome 2)	Component 2: Quality Assurance and Technical Support 1. Provision of technical advisory services for quality control and testing of improved cookstoves by the CREEC. 2. Supporting monitoring and verification of improved cookstoves adoption and performance under DCF. Component 3: Public Sector Outreach and Demonstration (a) Market study on institutional cooking in Uganda



ANNEX 2. PROJECT COST BY COMPONENT

Table 2.1. Project Costs

	Amount at Approval (US\$, millions)	Actual at Project Closing (US\$, millions)	Percentage of Approval
Distribution Challenge Fund	1.85	1.125	61
Quality Assurance and Technical Support	0.14	1.025	732
Public Sector Outreach and Demonstration	0.14	0.07	50
Total	2.20	2.22	100

Table 2.2. Project Benefits - Key Performance Indicators

Indicator	Unit of Measure	Original Target	Revised Target	Achieved Result	Achievement Rate (%)
PDO Indicator One: Households that gained access to more energy-efficient cooking and/or heating facilities	Number	100,000	45,000	72,535*	161
PDO Indicator Two: Household average expenditure reduction on cooking fuels (percentage)	Percentage	20% reduction, equivalent to consumption of 40.8 kg/HH/month	20% reduction, equivalent to consumption of 40.8 kg/HH/month	31.5%**	156
PDO Indicator Three: Climate impact - reduction of net CO ₂ emissions from inefficient combustion of biomass (Tons/year)	Percentage	20% reduction, equivalent to 0.007056 tons of CO ₂ /HH/day	20% reduction, equivalent to 0.007056 tons of CO ₂ /HH/day	31.5%**	156
Intermediate Results Indicator One: Number of new enterprises in the clean cooking	Number	Increase by 7	Increase by 7	7****	100



Indicator	Unit of Measure	Original Target	Revised Target	Achieved Result	Achievement Rate (%)
sector					
Demonstration of economic and environmental benefits of modern combustion technology for public schools relying on wood fuel	Number	55 gasifier stoves	—	—	—

Note: HH = Household.

* Confirmed stove sales were 73,535, but the stoves manufactured and sold to distributors were 94,622

** This is average reduction. See Appendix 1 for reductions of household expenditure on cooking fuel and emissions by each project stove.

*** UGASTOVE, Bold Energy, ILF, and Biolite.

**** Potential Energy, AREM, Fenix International, Ezylife, BRAC, Bidhaa sasa, and Simoshi.

Table 2.3. Budget and Expenses during Implementation

Stage of Project Cycle	Staff Time and Cost	
	No. of Staff Weeks	US\$, Thousands
Supervision and ICR		
FY16	45	90,000
FY17	45	85,000
FY18	35	75,000
FY19	35	80,000
FY20	37	80,000
FY21	37	85,000
Total	234	495,000

Note: Staff cost figures include travel and consultant costs.



ANNEX 3. RECIPIENT, CO-FINANCIER AND OTHER PARTNER/STAKEHOLDER COMMENTS

Section 1: Project Design and Results

Project Design

1. The project was designed to provide targeted assistance to a limited number of large, more established manufacturers and foster technology transfer through partnerships between Ugandan and international industry leaders, rather than to extend more generic support to a large number of local artisans. In addition, the project was designed to primarily focus on the two largest and most accessible market segments (i) of urban and peri-urban charcoal users and on (ii) peri-urban households using firewood or looking to convert from the increasingly expensive charcoal to firewood. By design, this approach was expected to have little, if any, impact on rural “base-of-the-pyramid” populations during the duration of the project.

Project Implementation

2. The project was implemented by the Private Sector Foundation Uganda in close consultation with the Ministry of Energy & Mineral Development.

Original Project Components (as approved)

3. The project had three components, namely, the Distribution Challenge Fund, Quality Assurance & Technical Support and Public Sector Outreach and Demonstration.

Component 1 – Distribution Challenge Fund – DCF (Total Component Funding: US\$1,850,000)

4. Under this component, working capital and transaction cost support was provided in the form of competitive grants to help both existing and new commercial distributors expand the supply chain for improved cook stoves eligible under the program, carry out high-impact marketing and sales campaigns, and build partnerships with international manufacturers. Three lines of support were originally envisaged, namely, Startup Working Capital Grant, Inventory Replenishment Grant, Consumer Engagement Grant and, a one-time Twinning Grant.

Component 2 - Quality Assurance & Technical Support (Total Component Funding: US\$140,000)

5. Under this Component, an Independent Verification Agent (i) verified claims submitted by the consortia participating in the DCF (ii) carried out product testing in the households/field, and (iii) monitored and verified stove adoption and performance.

Component 3 – Public Sector Outreach and Demonstration (Total Component Funding: US\$140,000).

6. Under this Component, MEMD was to demonstrate both the economic and environmental benefits of modern combustion technology, gasifier technology in particular, for public schools relying on wood fuel for their daily cooking needs.



Revised Components, including Restructuring

7. The UCCSCEP project was subjected to 5 design changes (i) Closing date – the closing date of the project was changed 3 times; from June 30, 2018 to December 31, 2019; from December 31, 2019 to June 15, 2020 and from June 15, 2020, to September 30, 2020; (ii) Restructuring - The UCCSCEP project was restructured twice, in July 2018 and in June 2020. The first restructuring reallocated project funding for all Categories, including the removal of the one-time Twinning Grant support line; the restructuring also revised the overall total cook stove sales target from 100,000 to 45,000 and provided for facilitation of an awareness and market activation activity. The second restructuring reallocated project financing across all Categories. The final financing schedule by Components is as detailed in Table 1:

Table 6: Financing Schedule

Financing Category	Original Allocation Cost (US\$)	After reallocation in July 2018 (US\$)	After reallocation in June 2020 (US\$)
1. Goods, non-consulting services, consultants services, training & operating costs under Component 1 & 2 of the Project	310,000	850,000	1,075,000
2. Competitive Grants under Component 1 of the Project (Distribution Challenge Fund)	1,750,000	1,300,000	1,055,000
3. Goods, non-consulting services, consultants services, training & operating costs under Component 3 of the Project	140,000	50,000	70,000
4. Total Project Financing	2,200,000	2,200,000	2,200,000

Original Project Development Objective (PDO) and Key Results

Project Development Objective

8. At Project appraisal, the PDO Objective was to reduce both (i) the economic burden on households and (ii) the negative impacts on the environment, of the inefficient use of solid biomass fuels for cooking by fostering sales and adoption of cleaner and more efficient cooking technologies.

Key Results

9. The original key results expected from the Project were:

- (a) Increased market penetration of improved cookstoves that meet the minimum performance standards as defined by MEMD by at least 100,000 households (measured as incremental sales of stove models supported under the project);
- (b) Reduced household expenditures on cooking fuels (kg/household/month for sampled households in comparison with control group) of verified incremental stove buyers by an average of at least 20%;



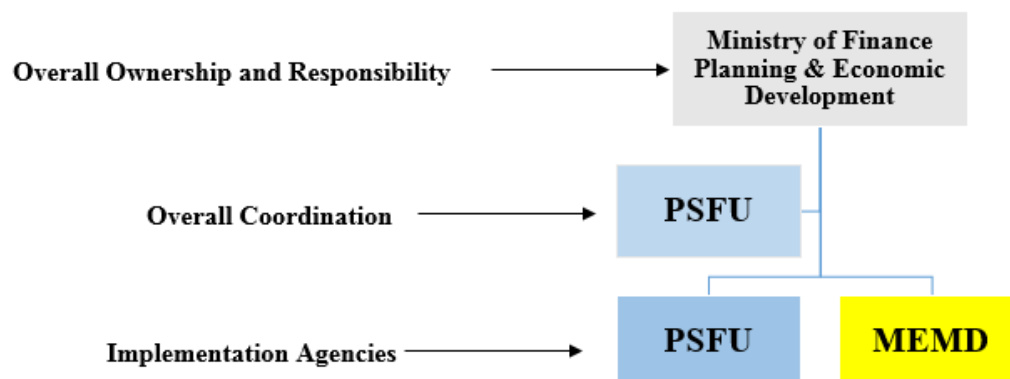
- (c) Reduced climate impact of household emissions resulting from the inefficient use of biomass (tons of CO₂ emissions/household/year) by an average of at least 20 %;
- (d) Increased number of new enterprises in the clean cooking sector by at least 7;
- (e) 55 institutional gasifier stoves installed in public schools

Revised Objectives and Key Results

10. There were no changes to the PDO. However, one of the Key Results, namely, the incremental sales of stove, was revised from the project target of 100,000 to 45,000 units for the revised project closing date of December 31, 2019.

Implementation Framework

11. The UCCSCEP implementation framework is as in Figure 1 below:



Institutional Arrangements

12. UCCSCEP was designed to be implemented by the PSFU and MEMD with PSFU managing Components 1 and 2, and MEMD Component 3. Oversight and advisory support was to be the responsibility of the multi-sectoral steering committee (SC) comprising of members of relevant MDAs. The Project was domiciled in the Ministry of Finance Planning and Economic Development in the Economic Development Policy and Research Department.

Implementation

13. The PSFU was responsible for all activities including procurement, financial management, monitoring, and evaluation. The Project was under the direct stewardship of the PSFU Executive Director and directly coordinated by one of the PSFU Directors (Director, BUDS-ERT). The Project had a dedicated Grant Management Officer. The Project was supported by other PSFU staff for finance and procurement activities. The MEMD nominated the Assistant Commissioner, Energy Resources Department, as the Project Liaison Officer.



14. The responsibilities for PSFU as the implementing agency are listed under key management functions below:

Project Planning

15. Preparation and submission of costed work plans

Procurement

- (a) Preparation and regular updates of the procurement plan;
- (b) Execution of procurement of goods and services;
- (c) Monitor contract implementation;
- (d) Record keeping and management;

Financial Management

16. One designated account was opened and operated. Financial management at PSFU comprised:

- (a) Preparation of books of accounts;
- (b) Preparation and submission of quarterly Interim Unaudited Financial Reports (IUFRs) and semi-annual projections, in line with the approved work plan, to the World Bank;
- (c) Preparation and submission of withdrawal applications for disbursement;
- (d) Verification and processing payments to service providers;
- (e) Arranging for financial reviews and audits, and submission of audited financial statements to the World Bank.

Monitoring and Evaluation

17. An Independent Verification and Project Results Monitoring Agent was procured to provide services for verification/auditing consortia outputs under each line of support, and for surveying and monitoring of target end user households for purposes of tracking and reporting of the project results.

Environmental and Social Safe guards Compliance

18. The DCF did not support the construction of new physical distribution infrastructure such as warehouses and handling facilities. As such, an Integrated Safeguards Data Sheet (ISDS) was not deemed necessary or appropriate at the appraisal stage.



World Bank/IDA

19. A Bank supervision team, headed by a Task Team leader, provided support to GOU in the following areas:

- (a) Review and approval of the procurement of goods and consulting services, in accordance with the Grant Agreement and subsequent fund re-allocations;
- (b) Disbursement of funds in accordance with Grant Agreement and the subsequent fund re-allocations
- (c) Review and approval of annual work plans and budgets.

Project Results

20. The Project Results are detailed below in Table 2:

Table 7: Project Results

Project Design Element	Baseline	Original Target	Revised Target	Achieved	Achievement rate	Comments and reasons for variance
Improved market penetration of improved cook stoves	22% of 880,000 HH (182,600 HH)	100,000	45,000	72,535*	161%	Target exceeded
Reduced HH expenditure on cooking fuels (kg/HH/month)	Consumption of 51 kg/HH/month	20% reduction, equivalent to consumption of 40.8 kg/HH/month	-	31.5%**	156%	Target exceeded
Reduced climate impact of HH emissions resulting from the inefficient use of biomass (tons of CO ₂ emissions/HH/year)	Emission of 0.00882 tons of CO ₂ /HH/day	20% reduction, equivalent to 0.007056 tons of CO ₂ /HH/day	-	31.5%**	156%	Target exceeded
Increase in the number of new enterprises in the clean cooking	4***	Increase by 7	-	7****	100%	Target achieved



Project Design Element	Baseline	Original Target	Revised Target	Achieved	Achievement rate	Comments and reasons for variance
sector						
Demonstration of economic and environmental benefits of modern combustion technology for public schools relying on wood fuel	0	55 gasifier stoves	0	0	0%	Gasifier stoves were not installed due to limited local and regional experience in designing, manufacturing, operating and maintaining gasifier institutional cookstoves

*Confirmed stove sales were 73,535 but the stoves manufactured and sold to distributors were 94,622

**This is average reduction; See Appendix 1 for reductions of hh expenditure on cooking fuel and emissions by each project stove

***UGASTOVE, Bold Energy, ILF and Biolite;

****Potential Energy, AREM, Fenix International, Ezylife, BRAC, Bidhaa sasa and Simoshi

Expected Socio-Economic Benefits

21. The expected benefits of the UCCSCEP was to foster private sector growth in commercial distribution and large-scale, centralized production of improved cook stoves, in order to drive the necessary economies of scale which would progressively reach lower income segments and rural households.

Section 2: Key Factors Affecting Implementation

Project Preparation

22. In 2014, discussions were held between GOU and IDA regarding the project design. In November 2015, a Willingness to Pay and Consumer Acceptance Assessment (WTP & CAA) for clean cooking in Uganda was carried out to inform the design and implementation of a competitive support scheme to help Uganda distributors enhance consumer access to high performance clean cook stoves made locally and internationally. Despite the consultative project preparations, a number of factors affected implementation of the project.

Implementation delays

- (a) There were implementation delays, especially for the DCF, arising from:



- (i) delayed contracting of the IVA, which was a first disbursement condition; this was a result of delays in internal approvals by the PSFU tender and GOU legal authorities and;
 - (ii) the withdrawal of a key distributor (Up Energy) from the program presented a setback for several manufacturers who had signed Memoranda of Understanding with the distributor as their primary distributor and thus were forced to begin looking for new distribution partnerships; As such, apart from one consortium, Envirofit Kenya Ltd, the other four participating consortia started gearing up for sales only in the last quarter of 2017.
- (b) **Logistical bottlenecks:** The operations of three participating consortia were based in Kenya which was undergoing a fragile political situation during the early period of the project.
- (c) **Slow materialization of market building activities into sales:** Many of the participating stove models presented new product categories in Uganda, which led to slow materialization of market building activities into sales.
- (d) **Unpreparedness of international manufacturers to effect technology transfer to local manufacturers:** The participating international stove manufactures were not ready to twin with local manufacturers citing the need for more time to understand the trend of the clean cook stove business in Uganda.
- (e) **Financial Management:** Overall, the financial management tools applied during implementation were effective and safeguarded project funds. However, there were internal operational challenges that resulted in occasional delayed payments to beneficiaries
- (f) **Limited availability of appropriate consumer finance products applicable to the ICS sector:** Most distributors sold stoves on cash basis, which stifled sales growth especially with the high cost stoves category.
- (g) **Limited local and regional experience in designing, operating and maintaining institutional gasifier stoves for cooking:** One of the UCCSCEP project output targets was the installation of 55 institutional gasifier stoves in PUBLIC schools. During the first phase of implementation of ICCSCEP, the MEMED together with PSFU established that there was very limited local and regional experience in designing, manufacturing, operating and maintaining gasifier institutional cook stoves. It was, therefore, decided not to pursue the activity of installing institutional demonstration gasifier stoves in public schools. Instead it was agreed that a Market Survey on Institutional Cooking in Uganda be carried out to make practical recommendations to scale up the uptake and wider adoption of clean cooking solutions in institutions in Uganda.
- (h) **Poor record keeping by some distributors:** Poor record keeping was not embraced by all consortia, which lead to some claims being disallowed especially for the Inventory Replenishment Grant line of support.



Section 3: Assessment of Outputs

23. The project outputs were number of improved cook stoves sold and number of institutional gasifier stoves installed.

Relevance

24. The UCCSCEP project objectives are directly linked to the NDP II, on promotion of Improved Cook stoves, the Sector Policy Objectives (Renewable Energy Policy of Uganda of 2007), regarding increasing the rate of adoption of efficient charcoal and wood stoves and introduction of improved institutional cook stoves, and, the Bank's Country Assistance Strategy (2010-2015).

Ownership

25. GOU demonstrated commitment to the project through allocation of resources, restructuring and re-allocation of funds, and extensions of project duration.

Sustainability

26. There are indications that the majority of the direct beneficiaries, namely the manufacturers and distributors, will continue to build economies of scale and product innovation needed to remain competitive and meet evolving consumer demands.

27. Two of the international manufacturers with their distributors (BURN/Ezylife and Envirofit/Arem) have put in place systems to ensure sustainability of their production and distribution businesses. BURN/Ezylife sells to a group of farmers in Eastern Uganda on credit and has proper credit recovery mechanisms. They are also planning to extend their operations to Kampala. AREM, the distributor for Envirofit, took over the selling points used during the awareness and market activation exercise, to ensure increase in sales

28. Regarding the local consortia of manufacturers and distributors, ILF/UpEnergy have a large network for distribution and have continued to pick up new hubs during the project; Also, Bold Energy/UpEnergy have many hubs and continued to expand during the project; UGASTOVE with its multiple distributors will be able to continue with the distribution chain.

Contribution towards achievement of PDO

29. The project PDO was to reduce both (i) the economic burden on households and (ii) the negative impacts on the environment, of the inefficient use of solid biomass fuels for cooking by fostering sales and adoption of cleaner and more efficient cooking technologies.

30. For the purpose of assessing the achievement of this objective, the project is rated on a scale of 1-to-6 for each of the five indicators, as detailed in Table 3 below:



Table 8: Assessment of achievement of the PDO

Project Design Element	Baseline	Original Target	Revised Target	Achieved	Achievement rate	Rating
Increased market penetration of improved cook stoves	22% of 880,000 HH=182,600 HH	100,000	45,000	72,535*	161%	6
Reduced household expenditures on cooking fuels - kg/household/month	Consumption of 51 kg/household/month	20 % reduction, equivalent to consumption of 40.8 kg/household/month	-	31.5%**	156%	6
Reduced climate impact of household emissions resulting from the inefficient use of biomass - (tons of CO ₂ emissions/household/year)	Emission of 0.00882 tons of carbon dioxide/household/day	20% reduction in emissions equivalent to 0.007056 tons of carbon dioxide/day	-	31.5%	156%	6
Increase in the number of new enterprises in the clean cooking sector	4***	Increase by 7	-	7****	100%	5
Demonstration of economic and environmental benefits of modern combustion technology for public schools relying on wood fuel	0	55 gasifier stoves	-	0	0%	1

Six-point rating scale: Highly Satisfactory (6), Satisfactory (5), Moderately Satisfactory (4), Moderately Unsatisfactory (3), Unsatisfactory (2) and Highly Unsatisfactory (1)

Section 4: Assessment of Bank and Borrower Performance

Bank Performance

Overall Bank Performance

Table 9: Overall Bank Performance

Criteria	Rating
Ensuring Quality at Entry	Satisfactory
Quality of Supervision	Satisfactory
Overall Rating	Satisfactory



Ensuring Quality at Entry

Table 10: Bank Performance during Project Preparation and Design

Criteria	Rating	Key Notes
Strategic relevance and approach	Satisfactory	The PDO was in line with the GOU country strategy for 2010-205, NDP II, Renewable Energy Policy for Uganda (2007).
Technical, Financial and Economic Aspects	Moderately satisfactory	The project feasibility projected a quick response from commercial distributors; however, it is awareness and market activation that finally boosted stove sales
Fiduciary Aspects	Satisfactory	Arrangements for financial management, procurement and compliance were developed
Implementation Arrangements	Satisfactory	Clear implementation modalities were defined for PSFU
Monitoring and Evaluation Arrangements	Satisfactory	Periodical and quarterly arrangements were developed
Risk Assessment	Satisfactory	Assessments were done for country, sector and project risks
Bank Inputs and Processes	Satisfactory	Sufficient preparatory Missions and studies were conducted
Overall Rating	Satisfactory	

Quality of Supervision

Table 11: Bank Performance during Implementation

Criteria	Rating	Key Notes
Focus on Development Impact	Satisfactory	There were reallocation of funds and restructuring during the project life cycle
Supervision of Fiduciary Aspects	Satisfactory	Follow up was promptly done
Adequacy of Supervision Inputs and Processes	Highly Satisfactory	The TTL provided quick response and guidance
Quality of Performance Reporting	Satisfactory	Mission reports were informative and provided guidance on follow up actions
Overall Rating	Satisfactory	

Borrower Performance

Overall Borrower Performance

Table 12: Overall Borrower Performance

Criteria	Rating
GoU	Satisfactory
IAs	Satisfactory
Overall Rating	Satisfactory



GOU Performance

Table 13: GOU Performance

Criteria	Rating	Key Notes
Government ownership and commitment to achieving development objectives	Satisfactory	Approval for budget expenditure, restructuring requests and time extension of the project were readily provided
Enabling environment including supportive macro, sectoral, and institutional policies	Satisfactory	Supporting policies were in place
Adequacy of beneficiary/stakeholder consultations and involvement	Satisfactory	Strategic level stakeholders were available for consultations
Readiness for implementation, implementation arrangements and capacity, and appointment of key staff	Satisfactory	IAs set up were designated
Fiduciary role (financial management, governance, procurement, compliance with covenants)	Satisfactory	Approvals were readily provided
Overall Rating	Satisfactory	

I Agencies' Performance

Table 14: Implementing Agency Performance

Criteria	Rating	Key Notes
Agency commitment to achieving development objectives	Satisfactory	Quarterly track of DCF performance was carried out
Adequacy of beneficiary/stakeholder consultations and involvement	Satisfactory	Regular consultations were conducted with the participating consortia and the Bank.
Readiness for implementation, implementation arrangements and capacity, and appointment of key staff	Moderately Satisfactory	The Project Officer was recruited in time and one PSFU Director was tasked to provide oversight to the implementation of the Project. However, procurement of the IVA was delayed.
Timely resolution of implementation issues	Satisfactory	Advice and approvals during implementation were readily provided by the Bank
Fiduciary role (financial management, governance, procurement, reimbursements, compliance with covenants)	Moderately Un Satisfactory	Financial management and procurement were carried out as per Grant conditions. However, the Steering Committee was formed but did not meet
Adequacy of monitoring and evaluation arrangements, including the utilization of M&E data in decision-making and resource allocation	Satisfactory	The IVA periodically monitored and provided project results. In addition, the DCF performance tracker provided regular updates.



Criteria	Rating	Key Notes
Relationships and coordination with donors/ partners/stakeholders	Satisfactory	Key stakeholders, MEMD and MOFPED, were provided with periodical progress
Overall Rating	Satisfactory	

Section 5: Lessons Learned

31. The lessons learned are discussed in 6 broad categories.

Testing project assumptions

32. At project design, it was assumed that commercial distributors in the country would immediately agree to participate in the project. It was further assumed that expertise in gasifier technology for clean cooking was available. The two design assumptions should have been subjected to further scrutiny to ensure that they are realistic.

Continuous dialogue with stakeholders

33. Continuous dialogue with key project stakeholders greatly contributed to the resolution of logistical bottlenecks that were stifling implementation.

Flexibility in project implementation

34. The funds absorption risk was managed by proactively seeking GOU and Bank approval. GoU and the Bank flexibly restructured and re-allocated funds, and approved extensions of project duration. In addition, following review of prevailing information and situation, two activities were shelved, namely, the Twinning Grant line of support, and the installation of gasifier stoves in public schools.

Early and continuous awareness and market activation

35. The design of the project provided for a consumer engagement line of support to be used by the distributors for their own sales and marketing activities. However, as the project progressed, it was found necessary to enhance the consumer engagement line of support by carrying out a separate project implemented awareness and market activation activity benefitting all distributors, which greatly catalyzed the uptake of the clean cook stoves. Therefore, for a market building project, targeted awareness and market activation should be carried out at the onset of project implementation and should be continuous throughout project implementation.

Availability of appropriate consumer financing mechanisms

36. The market for clean cook stoves was challenging, especially for high priced stoves, because of cheap, non-improved cook stoves. The distributors who adopted credit sale mechanisms generally performed better than others. Therefore, a project of this nature should have its own financing mechanism to capitalize providers of appropriate end user finance products.



Updating baselines

37. The project baseline for household expenditure and carbon dioxide emissions was based on a study carried out in 2015 although the project effectively picked traction towards the end of 2017. As a result, households involved in the baseline measurements were different from the households involved in the project monitoring activities. Hence, self-reported baselines on fuel consumption were used for each project stove. The lesson is that project baselines should be as current as possible.



ANNEX 4. SUPPORTING DOCUMENTS (IF ANY)

1. Project Paper, July 29, 2015
2. Grant Agreement, July 29, 2015
3. Integrated Safeguards Data Sheet, July 29, 2015
4. Project Information Document, July 29, 2015
5. Mission Aide Memoires and Management Letters, 2015–2020
6. Three Project Restructuring Papers, June 29, 2018; December 30, 2019; and June 14, 2020
7. Five ISRs, from 2017 to 2020



ANNEX 5. BANK LENDING AND IMPLEMENTATION SUPPORT/SUPERVISION

Task Team Members

During Preparation

Names	Role	Title	Unit
Jan Kappen	TTL	Senior Energy Specialist	IAEE1
Besnik Hyseni	Consultant	Energy Specialist	IEEES
Olivia Byanyima	Consultant	Energy Specialist	IEEES
Grace Munanura	Procurement	Senior Procurement Specialist	EAERU
Paul Kamuchwezi	Financial Management	Senior Financial Management Specialist	EAEG1
Martin Fodor	Safeguards	Senior Environmental Specialist	SEAE2
Paivi Koskinen-Lewis	Safeguards	Senior Social Development Specialist	SAWS4
Mazhar Farid	Legal	Legal Analyst	LEGAS

During Implementation and Completion

Names	Role	Title	Unit
Richard Hosier	TTL	Senior Energy Specialist	IAEE1
Federico Querio	TTL	Senior Energy Specialist	IAEE1
Besnik Hyseni	Co-TTL	Energy Specialist	IEEES
Olivia Byanyima	Consultant	Energy Specialist	IEEES
Grace Munanura	Procurement	Senior Procurement Specialist	EAERU
Paul Kamuchwezi	FM	Senior Financial Management Specialist	EAEG1
Chita Obinwa	Team Member	Operations Analyst	AFEDE
Martin Fodor	Safeguards	Senior Environmental Specialist	SEAE2
Paivi Koskinen-Lewis	Safeguards	Senior Social Development Specialist	SAWS4
Mazhar Farid	Legal	Legal Analyst	LEGAS
Fowzia Hassan	Strategy/Operations Quality Assurance Review	Senior Operations Officer	IAEE3
Shaukat Javed	Team Member	Senior Program Assistant	IAEE1
Raima Oyenyin	Team Member	Operations Analyst	IAEE1