



EFA/IMPACT MICRO-RETAILERS

DEVELOPMENT INNOVATION VENTURES

PROGRAM REVIEW: UGANDA

FINAL REPORT

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USAID/UGANDA LEARNING ACTIVITY

DEVELOPMENT INNOVATION VENTURES (DIV)

PROGRAM REVIEW UGANDA

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LIST OF ACRONYMS

ATC	Appropriate Technology Centre for Water and Sanitation
AWF	African Wildlife Foundation
BDA	Business Development Associate
B&MGF	Bill & Melinda Gates Foundation
BoP	Bottom-of-the-pyramid
BVV	Bear Valley Ventures
BURN	BURN Manufacturing
CEO	Chief Executive Officer
CLA	Collaborating, Learning & Adapting
CREEC	Centre for Research on Energy and Energy Conservation
CRM	Customer Relationship Management
d.light	d.light design
DANIDA	Danish International Development Agency
DFID	Department for International Development
DIV	Development Innovation Ventures
DUNS	Data Universal Number System
DQA	Data Quality Assessment
EAC	East African Community
EFA	EcoFuel Africa
ERA	Energy Regulatory Authority
FTE	Full-time Equivalent
GG	Global Good
Green Heat	Green Heat International
Green Light	Green Light Planet
IP	Intellectual Property
IPs	Implementing Partners
IPA	Innovations for Poverty Action
LRUS	Lighting Rural Uganda with Solar
KCCA	Kampala Capital City Authority
KIIs	Key Informant Interviews
KPIs	Key Performance Indicators
KS	Knowledge Sharing
MEL	Monitoring, Evaluation, and Learning
MFI	Microfinance Institutions
MIT D-Lab	Massachusetts Institute of Technology D-Lab
MWE	Ministry of Water and Environment
NWSC	National Water and Sewerage Corporation
NGOs	Non-governmental Organizations
ODK	Open Data Kit
OGS	Off-grid Solar
PAYGo	Pay-as-you-go
PEDN	Private Education Development Network
PIRS	Performance Indicator Reference Sheet
POC	Point of Contact
PUE	Productive Use of Energy
QED	QED Group
SACCOs	Savings and Credit Co-Operative Societies
SDGs	Sustainable Development Goals

SHS	Solar Home System
SOPs	Standard Operating Procedures
SOW	Scope of Work
SST	Slurry Separation Technology
ULA	Uganda Learning Activity
UN	United Nations
UNCDF	United Nations Capital Development Fund
URA	Uganda Revenue Authority
USAID	United States Agency for International Development
USG	United States Government
VAT	Value-added Tax
VCA	Viva con Agua
W2E	W2E Uganda
WASH	Water, Sanitation and Hygiene
WfP	Water for People

EXECUTIVE SUMMARY

INTRODUCTION AND BACKGROUND

United States Agency for International Development's (USAID) Development Innovation Ventures (DIV) is designed to test and scale bold development ideas and creative solutions to development challenges¹. Since 2010, DIV has funded more than 225 innovations in 47 countries and reached 55 million beneficiaries². In Uganda, DIV has made a total of 22 grants since 2010 to support the development and scaling of innovations. DIV is conducting Program Reviews of a sample closed grants to learn from grantee experiences. DIV commissioned the Uganda Learning Activity/QED to conduct a Program Review of 11 DIV grantees that operated in Uganda between 2010-2020. The goal of the review is to assess the degree to which Ugandan DIV grantees were able to scale innovations following receipt of USAID funding.

PURPOSE AND AUDIENCE

The purpose of this Program Review is to examine the trajectory of innovations following DIV support and better understand success factors for those innovations that continued to expand after award for DIV grantees, in addition to factors that lead to some innovations having relatively less success post-grant. Furthermore, we provide possible follow-up actions and guidance based on lessons learned. This is based on an examination of the extent to which DIV grants achieved their intended outcomes and results according to the activity's design and expected implementation plans. This report documents DIV grant activity performance within Uganda from 2010 to 2020, outcomes, lessons learned, and any issues encountered during the implementation process.

Program Review objectives included the following:

- To determine the current operating status of the grantees and to establish which factors led to the success or failure of each grantee while scaling their innovation following DIV's grant.
- To obtain the cumulative and current data for six core KPIs specified by DIV.
- To derive lessons on innovation processes for both USAID/Uganda and for USAID DIV.
- To derive lessons on grant management for both USAID/Uganda and for USAID DIV.
- To assess the structures, systems, and processes that are used for data management (manage, collect, clean, store, and report) within the KPIs.

The primary audience for this final evaluation is USAID/DIV and the USAID Mission in Uganda, which can use the program review findings and recommendations to inform its future programming. Additional stakeholders may include DIV grantees, other innovators, other development actors, government actors, and the general public.

METHODOLOGY

ULA used a mixed-methods approach to inform the objectives of this Program Review, which included a desk review of existing DIV and grantee documents, data, and reports; an online survey, assessments of grantees' Monitoring, Evaluation, and Learning (MEL) systems, and remote qualitative key informant interviews (KIIs) with key personnel who were involved with the grant that were identified by the grantee. From October – November 2020, ULA conducted a total of 14 unique virtual data collection events with 11 grantees. Data analysis involved the following techniques: creation of an analysis

¹ USAID (2020). Development Innovation Ventures. <https://www.usaid.gov/div>

² Kremer, M., Gallant, S., Rostapshova, O., & Thomas, M. 2019. Is development innovation a good investment? Which innovations scale? Evidence on social investing from USAID's Development Innovation Ventures. Working paper. https://scholar.harvard.edu/files/kremer/files/sror_div_19.12.13.pdf

framework, and inductive analysis with coding to capture emerging themes. Online survey findings were supplemented and triangulated with desk review and KII data.

FINDINGS

Objective 1: Current Operating Status of Grantees and Scaling of DIV Innovations

- 11 DIV grantees in study were supported with \$6.4 million reaching a total of 13.6 million beneficiaries, with grantees raising a total of \$209 million in funding since receiving the grants.
- 8 of the 11 DIV grantees in this study are still delivering (selling/providing) the innovation financed by DIV in Uganda.
- 9 of the 11 grantees noted a hybrid pathway to scale, and two indicated public (IPA, BVV).
- Of those grantees that scaled, grantees noted a wide variety of factors that were key to achieving scale, with resource mobilization (d.light, EFA/ IMPACT, Solar Sister, BrightLife, SPOUTS, W2E/ Green Heat, BURN), strong partnerships (d.light, EFA/ IMPACT, Solar Sister, BrightLife, SPOUTS, W2E/ Green Heat) and pivoting (d.light, EFA/ IMPACT, Solar Sister, BrightLife, W2E/ Green Heat, BURN) noted most frequently among grantees.
- Among the 9 hybrid pathway grantees, vertically integrated business models (d.light, EFA/ IMPACT, SPOUTS, W2E/ Green Heat, BURN), and replicable business units (EFA/ IMPACT, Solar Sister, BrightLife) were noted most among grantees that indicated a business model as a key factor of success for scaling.
- All DIV grantees made some type of pivot, with Customer pivots (e.g., BURN and Solar Sister Geographical³, EFA/ IMPACT from end consumers to women micro-entrepreneurs) W2E/ Green Heat from industrial to household) being the most common type. Among grantees that were able to raise over \$600,000 in funding (i.e., BURN, d.light, Solar Sister, W2E/ Green Heat, EFA/ IMPACT, BrightLife), there is great variation in the types and timings of pivots.

Objective 2: Cumulative and Current Data on DIV's Core Key Performance Indicators

- 513,167 innovation units were reported as being deployed by grantees at project closure (whether product, service, or process)⁴; while 8,474,1305 units were deployed from October 2019 – March 2020, and 8,434,895 units were deployed from April 2020 – September 2020.
- DIV grantees reached a total of 13.6 million beneficiaries. The vast majority of beneficiaries served to date were reached by d.light (5 mil) and BURN (4 mil), followed by Solar Sister (2.1 mil) and EFA/ IMPACT (1.5 mil).
- Grantees raised a total of \$209 million in follow-on funding since receiving the grants. The vast majority of follow-on funding was raised by former grantee d.light, which raised \$184 mil, followed by Solar Sister with \$14 mil. Of the \$209 mil the majority was private funding at \$200.5 mil, with \$4.6 public funding and the remaining categorized as other.
- Collectively grantees reported 53 new resource partners contributing additional funding after the start of the grant.
- Grantees collectively noted semi-annual sales of \$54,594,584 during the last semi-annual period (April 2020 – September 2020).

³ Geographical pivoting in this context does not refer to scaling into new markets, but instead refers to making a major change in target market due to problems with product to market fit, challenges related to a disabling environment (e.g., corruption, radical change in policy regulations) or sudden disaster or escalating security risks.

⁴ "Innovation unit" is an indicator tracked more broadly by USAID and means different things in the context of different grants. For example, in the case of clean cookstoves, it could mean the number of clean cookstoves sold/distributed by the grantee during the period of performance. For a solar home system (SHS) provider, it could mean the number of SHSs sold by a given organization. In some cases (e.g., training), it was possible that the innovation unit count was similar to the beneficiary count. ULA proposed an innovation unit in the context of each grant and received confirmation from its DIV point of contact (POC) that the chosen innovation unit was appropriate prior to interviewing the grantee.

⁵ The number grew substantially in the last year as W2E / Green Heat innovation unit data was based on the number of kg of fertilized produced.

- Demonstrated uptake of the innovation by types of organizations were reported as follows: At Project close 5 grantees reported demonstrated uptake as private, 3 as hybrid, 2 as source unknown, and 1 public. At the previous semi-annual period, October 2019 - March 2020, 4 grantees reported demonstrated uptake as private, 4 as hybrid and 3 as source unknown and in the most recent semi-annual period, April 2020 - September 2020, 4 grantees reported demonstrated uptake as private, 5 as hybrid and 2 as source unknown.

Objective 3: Lessons Learned on Innovation Processes

- 4 of the grantees indicated subsidizing the cost of their products for beneficiaries. The four grantees were SPOUTS, BURN, BVV/ WfP/ ATC, and W2E/ Green Heat. Other grantees, although not subsidizing prices, do use consumer financing mechanisms that allow customers to have multiple years to repay loans for the product.
- With respect to government bodies, grantees reported evidence of demonstrated uptake in only a few instances. In Uganda, when considering those grantees that mobilized significant resources (i.e., BURN, d.light, Solar Sister, W2E/ Green Heat, EFA/ IMPACT, BrightLife), two organizations (led by Ugandans) Green Heat and EFA/ IMPACT reported government uptake. Although BURN did not experience uptake by the Government of Uganda, it reported strong demonstrated uptake by government bodies in Somalia and Kenya. Another grantee, BVV noted limited government uptake through its partnership with Appropriate Technology Centre for Water and Sanitation (ATC)⁶ and WfP.
- Evidence exists from grantees (d.light, Agriworks Uganda, SPOUTS, W2E / Green Heat) or from the literature⁷ (BrightLife) that finding and incentivizing local staff with the capabilities required to scale the funded innovations offered challenges for a variety of reasons such as finding appropriate incentivizing mechanisms, new types of required soft skillsets and/or issues with fraud.

Objective 4: Lessons Learned on Grant Management

- Grantees reported the overall experience with DIV to be generally positive, ranking their experience with DIV during their grants at 8.4 out of 10 and 8.2 at Pre-award. During the award this was primarily due to DIV's flexibility which allowed grantees to pivot and adjust business models
- 2 grantees specifically noted that DIV provided technical assistance (TA) in areas such as connecting the grantees to potential scaling partners (SPOUTS), serving as a sounding board (SPOUTS), and rethinking business models (EFA/ IMPACT). While grantees were not directly asked if DIV provided TA, grantees noted a range of reactions to the value of TA from donor organizations, though in general they expressed satisfaction with the level of TA provided by DIV. Most noted a minimal need for TA from donors. Others explicitly noted that assistance from donors was not often provided at a high enough technical level to be of benefit.
- Most of the DIV grantees noted the value of the DIV funding which allowed grantees to have opportunities to network and connect to new partners during implementation of their DIV pilots. Some grantees expressed appreciation for such opportunities and suggest that DIV expand opportunities even more. Other grantees noted that their partnerships and networking opportunities originated from other sources.
- 3 grantees appreciated the DIV process being very hands-off, although the partners would have welcomed more discussion and thought conversations with DIV related to resource

⁶ Appropriate Technology Centre for Water and Sanitation is the research department for the Uganda Ministry of Water and Environment (MWE) www.atc.mwe.go.ug

⁷ Green Powered Technology (2020). De-risking pay-as-you-go solar home systems in Uganda refugee settlements project final report <https://data2.unhcr.org/en/documents/download/78496>

mobilization and scaling. Particularly, the grantees would have welcomed having DIV to help shape growth after the grant, instead of just ensuring that the grantee was meeting milestones.

- Grantees spoke highly of the value of the DIV grant, but grantees did not frame their relationships with DIV as collaborative or as partnerships. 3 grantees noted room for improvement related to the processing time for grants startup.

Objective 5: Assessment of Structures, Systems, and Processes Used for Data Management Within KPIs

- All grantees reported having trained staff in place and sufficient IT infrastructure to manage data.
- All grantees reported data regularly to DIV with a large majority using reporting templates provided by DIV.
- 9 of 11 grantees conducted regular quality control processes on their data.
- Grantees utilized a combination of manual, analog, and digital methods to ensure the protection of beneficiary data.
- Most grantees implemented internal learning activities with some acting upon critical lessons learned to pivot and strengthen their programming.
- On average, grantees reported having over 80% of all required data-related SOPs
- Based on the Rapid MEL systems assessment findings of the 11 grantees, the MEL systems that were in place during the implementation of the DIV grants were adequate and effective⁸ in collecting and ensuring that the data reported to DIV was of good quality and could be used for decision making.

CONCLUSIONS

- DIV grants appear to have been transformational for most grantees allowing grantees to procure targeted TA, hiring staff, and pivoting business approaches. Grantees raised a total of \$209 million in follow-on funding since receiving the grants and reached a total of 13.6 million beneficiaries.
- DIV's hands-off nature enabled more flexible management among grantees yet constituted a missed opportunity for critical TA in some cases for those who chose hybrid pathways (Agriworks Uganda - securing MOUs with MFIs) and (BVV/ WfP/ ATC, BrightLife, and LRUS – creating roadmaps for scaling, resource mobilization post DIV award). One grantee, Agriworks Uganda, noted that DIV could have played more of an active role in helping the grantee to develop partnerships for example. During implementation Agriworks Uganda brought up the challenges it was having but did not request or receive any specific TA, as it was unsure if DIV could influence in this regard.
- Partnerships and networking facilitated by DIV grantmaking were instrumental in helping grantees to face their problems and achieve scale.
- Pivots—facilitated by DIV grants and management style—played a critical role in catalyzing positive change for most of the grantees either during the implementation or shortly after the grant ended.
- DIV's limited interactions with grantees post-grant award contributed to some missed opportunities for learning. In a global knowledge economy, it is important to capture tacit knowledge from innovation projects, especially where knowledge can inform science, technology, and innovation (ST&I) policies⁹.

⁸ "Investments in MEL must provide decision makers in the Mission, at the Agency and in partner organizations with information and analyses that improves the effectiveness of the activities and projects as they unfold..." Pg 43; Uganda Country Development Cooperation Strategy (CDCS) 2016 – 2021 <https://www.usaid.gov/uganda/cdcs>

⁹ Hall, A. (2008). Embedding research in society: Development assistance options for supporting agricultural innovation in a global knowledge economy

- Demand-side financial constraints and weak uptake in the public sector threaten sustainability of some DIV-funded grantee achievements.

RECOMMENDATIONS

- Promote a stronger culture of collaboration and learning between DIV and grantees throughout the entire grant process.
- Assess the landscape for actors and systems that could help to strengthen consumer finance options to assist grantees in securing working capital to provide innovations. This will address some of the demand-side financial constraints related to end-user affordability and sustainability of some DIV-funded grantee achievements.
- Collaborate with other USAID projects and/or entities working in the OGS energy and other relevant sectors to expand resource mobilization options for grantees.
- Increase engagement with grantees to strengthen grant management for those that experience challenges with scaling.
- Continue to provide customized, bespoke technical assistance, when requested by grantees, with input from grantees in a co-creation process.

BACKGROUND

USAID's Development Innovation Ventures (DIV) program is designed to test and scale bold development ideas and creative solutions to development challenges¹⁰. Since 2010, DIV has funded over 225 innovations in 47 countries and reached 55 million beneficiaries¹¹. By building a strong evidence base, DIV can provide further support to those innovations that demonstrate potential for widespread impact and cost efficiency. Innovations span all sectors and countries where USAID operates.

DIV has iterated every year to improve across its portfolio. The 2020 description of DIV's tiered stages is outlined in Table 1¹².

Table 1 DIV Stages

DIV Stage	Description	Typical Funding Amount
Stage 1	Focused on testing the proof of concept of a solution within a developing country. Aimed at programs that are beyond prototype/ideation and are beginning implementation	Up to \$200,000
Stage 2	Continue to test solutions to build rigorous evidence for the innovation's model, while positioning the innovation for scale.	\$200,000 - \$1.5m
Stage 3	Have a clear evidence base for transition to scale and are required to leverage additional external funding or partnership.	\$1.5m - \$5m

INTRODUCTION TO ASSIGNMENT

In Uganda, DIV has made a total of 22 grants since 2010 to support the development and scaling of innovations. DIV conducts Program Reviews of closed grants to learn from grantee experiences. This Program Review focuses on the 11 grantees who opted into the study.

DIV has invested significant innovation funding in the 11 grantees with \$6,394,905 provided during this period. The funding from DIV is noteworthy and is in line with other documented funding opportunities. Uganda ranks number 4 in relation to innovation funding opportunities according to the Global Innovation Exchange and it is ranked number 3 for innovation ecosystems behind Kenya¹³.

The grants awarded spanned a variety of sectors, including Economic Growth (3 of 11); Water, Sanitation, and Hygiene (WASH) (2 of 11); Energy (4 of 11); Agriculture/Food Security (2 of 11), and Education and Training (1 of 11).

¹⁰ USAID (2020). Development Innovation Ventures. <https://www.usaid.gov/div>

¹¹ Kremer, M., Gallant, S., Rostapshova, O., & Thomas, M. 2019. Is Development Innovation a Good Investment? Which Innovations Scale? Evidence on Social Investing from USAID's Development Innovation Ventures. Working paper. https://scholar.harvard.edu/files/kremer/files/sror_div_19.12.13.pdf

¹² USAID (2020). Development Innovation Ventures. <https://www.usaid.gov/div>

¹³ GIE (2019). Global Development Innovation Landscape Report - Q2 2019. Global Innovation Exchange. <https://www.globalinnovationexchange.org/resources/global-innovation-exchange-landscape-report-q2-2019>

Figure 1 Summary of Grants in Program Review

Organization Product/Service	Time Period of Grant Implementation (Years)											BSD	FFR
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020		
LRUS Solar Lanterns	\$98,360 Rural Solar Accessibility via Consumer Cooperative Enhanced Society											24,000	\$0
IPA School Microsavings	\$181,537 Smoothing the Costs of Education: Micro-savings in Ugandan Primary Schools											60,000	\$0
d.light PAY Go Solar Home Systems (SHS)	\$1,020,126 \$1,000,000 Affordable Access to Energy for All: Innovative Financing for Solar Systems											5,000,000	\$184,000,000
Solar Sister Solar Lanterns, SHS	\$1,000,000 Women's Network to Improve Clean Energy											2,100,000	\$14,000,000
W2E/ Green Heat Biogas Digesters, Fertilizer	\$110,433 Transforming Africa's Waste Problem to Energy & Fertilizer Opportunities											400,000	\$790,000
EFA/ IMPACT Ecofuel products/ Briquettes/Stoves	\$100,000 \$1,000,000 Village Level Clean Energy Micro-Factories that Create Jobs											1,528,500	\$2,000,000
BVV/Wfp/ ATC Tiger Toilets	\$173,420 Field Evaluation of an Affordable, Effective On-site Sanitation System.											70	\$13,754
FINCA Plus/ BrightLife Solar Lanterns, PAYGo SHS	\$100,013 FINCAPlus: Life-improving Product Distribution Model											N/A	N/A
Agriworks Mobile Irrigation Systems	\$142,516 Mobile Irrigation Solutions - A new class of irrigation for African Smallholders											4,634	\$78,641
BURN Improved Cookstoves	\$100,000 \$1,218,500 Pay-As-You-Go Clean Cookstoves for East Africa Commercial Cookstove Business for Scale throughout Sub-Saharan Africa											3,996,901	N/A
SPOUTS Water Filtration Systems	\$150,000 Large Scale Distribution of Ceramic Water Filters in Uganda											350,000	\$166,000

Agriculture/Food Security ■ Economic Growth ■ Education & Training ■ Energy ■ Water Sanitation & Hygiene ■

BSD: Beneficiaries Served to Date **FFR:** Follow-on Funding Raised

¹⁴ d.light design is now branded as d.light. W2E Wisconsin LLC no longer exists in Uganda but has emerged as a new company, Green Heat International (Green Heat). EcoFuel Africa (EFA) changed its name to IMPACT. FINCAPlus launched BrightLife as a social enterprise to carry out the innovation. Bear Valley Ventures (BVV) worked fully through IPs Water for People (Wfp), an NGO; and Appropriate Technology Centre (ATC), a government entity affiliated with the Ministry of Water and Environment (MWE). IPA worked through implementing partners in Uganda, primarily Private Education Development Network (PEDN) and FINCA Uganda.

METHODOLOGY

OBJECTIVES

- To determine the current operating status of the grantees and to establish which factors led to the success or failure of each grantee while scaling their innovation following DIV's grant.
- To obtain the cumulative and current data for six core KPIs specified by DIV.
- To derive lessons on innovation processes for both USAID/Uganda and for USAID DIV.
- To derive lessons on grant management for both USAID/Uganda and for USAID DIV.
- To assess the structures, systems, and processes that are used for data management (manage, collect, clean, store, and report) within the KPIs.

DATA SOURCES AND METHODS

ULA employed a mixed-method approach to this Program Review, collecting both qualitative and quantitative data as well as a combination of primary and secondary data. Primary data was collected from the 11 grantees through an online survey and KIIs which included KPI data, and MEL system assessments. Secondary data was obtained from the Desk Review. A summary of the full methodology is outlined in this section, and the full methodology is detailed in the Appendix 1.

SAMPLING

Relevant staff and/or former staff of the grantee organizations were identified as key respondent groups to take part in both the online survey and KIIs. Grantee organizations refer to the organization that directly received DIV funding as the prime. USAID DIV used census sampling to select grantees, with only closed DIV grants invited to participate in the study. Figure 1 provides detailed information related to the 11 grants that are part of the study. Of the 22 grants DIV funded in Uganda, 17 have closed and are no longer operational as of April 2020.

DESK REVIEW

ULA reviewed documents provided by DIV to gain insight and understanding into both the review objectives and the 11 grants under review. Documents provided by DIV included: the SOW, grantee awards and reports. Additionally, ULA reviewed publicly available information on DIV's website, individual grantee websites, and relevant USAID technical reports, among others.

ONLINE SURVEY

The online survey collected both quantitative KPI data and quantitative data related to the study objectives from the identified study respondents. Quantitative data related to the study objectives included resource mobilization partners, data management structures, systems, and processes and DIV performance data as identified by respondents. The full online survey tool can be found in Appendix 2.

KEY INFORMANT INTERVIEWS

With the support of DIV, ULA contacted respondents to schedule KIIs. The interviews were conducted via online and mobile platforms (e.g., Zoom, WhatsApp), with each interview lasting a maximum of 60 minutes. The KII guide can be found in Appendix 3.

RAPID MONITORING, EVALUATION AND LEARNING SYSTEM ASSESSMENT

The MEL systems assessment examined the structures and processes each grantee used to collect data for DIV reporting. ULA adapted a USAID MEL System Assessment tool which consisted of obtaining an abridged version of the tool since this was a rapid assessment. The adapted MEL system assessment tool can be found in Appendix 4.

UPDATING CONTACTS

ULA verified and updated grantees' key personnel contact information, including names, titles, phone numbers and e-mail addresses. The contact data collection template can be found in Appendix 5.

REVIEW OF KEY PERFORMANCE INDICATORS

DIV's approach for tracking KPIs has evolved over time and now includes a set of 6 core indicators required for all new grantees. The full set of cumulative and current data for the six core KPIs specified by DIV found in Appendix 6

RESPONDENT CONFIDENTIALITY

Respondents were assured that the publicly available version of the final report would be redacted or anonymized as appropriate to protect sensitive information and to allow for complete reporting of data. Grantees were asked to approve the draft Program Review document and reach an agreement regarding any items that required redaction or edits prior to the final document being published.

DATA QUALITY CONTROL

To control data quality, ULA ensured that the tools used were consistent across all respondents with each grantee receiving the same online survey, KII questions, and MEL assessment. To ensure data reliability, strategies such as triangulation checks with respondents, and peer review¹⁵ were utilized.

DATA ANALYSIS

Key Informant Interview qualitative data was triangulated with the data collected through the online survey, and available information within grantee reports and award documents provided by DIV. ULA created an analysis framework, which provided necessary linked concepts and categories, such as success factors, business models, and challenges, that, when meaningfully organized, allowed the team to capture emerging themes. An inductive analysis approach was used, and other themes that emerged from the qualitative interview were integrated into the analysis framework during the data analysis and coding process.

LIMITATIONS

- Some of the grants closed as far back as 2011, which presented a challenge in verifying information.
- Virtual interviews lasting approximately 60 minutes per grantee; presented the possibility that the respondents would experience interview fatigue.
- Given the varied changes and the length of time since DIV grants ended, it was difficult for some grantees to provide detailed data for the KPIs and other relevant indicators requested as part of this study, some of which were new KPIs instituted by DIV.
- ULA was not able to assess the quality of the data reported by the grantees during grant implementation.
- Restricting all the reported KPI data to include only Uganda based results was problematic for all grantees that delivered their innovation across multiple locations. In some cases, grantees had expanded operations or pivoted to other countries outside of Uganda.
- In relation to the qualitative portions of this study, generalizability to other DIV grantees may not be achievable given the small sample size.

¹⁵ Nowell, L.S., Norris, J. M., White, D. E., & Moules, N. J. (2017). <https://doi.org/10.1177/1609406917733847> International Journal of Qualitative Methods.

FINDINGS

OBJECTIVE I: CURRENT OPERATING STATUS OF GRANTEES AND RESULTS ON SCALING OF DIV INNOVATIONS

One of the aims for the DIV Program Review was to determine the current operating status of the grantees, and to establish which factors led to grantees' success or failure while scaling their innovation following DIV's grant. In this section, the researchers present information about which grantees are still delivering DIV funded innovations and how their scaling models function, as well as strategies and success factors utilized by grantees. Where possible, quantitative and qualitative data related to the experience of scaling each innovation is provided. Furthermore, grantees shared any qualitative data related to the reasons for any changes made since initial implementation of the DIV.

CURRENT STATUS OF GRANTEES

Data collected revealed that 8 of the 11 DIV grantees in this study are still delivering (selling/providing) the innovation financed by DIV in Uganda. Of those still delivering the innovation in Uganda, five are Stage 1 grantees, one received a Stage 2 grant, and two received both Stage 1 and Stage 2 grants. Three grantees are no longer offering their innovation- Solar Sister, LRUS, and IPA, cited reasons for not continuing with innovations funded by DIV grants as focusing on new markets, market competition and innovation not financially viable respectively. Solar Sister is now focused on other markets in Tanzania and Nigeria as the grantee experienced challenges with national regulatory bodies in Uganda. LRUS reported that it introduced a better innovation (sand stoves) although no detailed information was provided about the improved innovation. Although LRUS intended to move towards a commercial pathway to scale, the grantee noted that a lack of continued funding affected success. Most importantly the grantee noted there was direct competition from its key manufacturing partner (Green Light International) that hindered success. IPA worked with partners to incorporate learnings into work with implementation partners, but the specific service (a bank account) was not financially viable to continue. IPA's partner, PEDN, continues to deliver components of the innovation with new resources and a different banking partner. ULA was not able to determine if the new banking partner finds the innovation to be financially viable. Additionally, grantee BURN, although originally targeting Uganda and Tanzania in its Stage 2 DIV grant, has only recently begun to focus again on Uganda, refocusing efforts on value engineering the Jikokoa stove to offer a lower cost product.

BENEFICIARIES SERVED / FOLLOW-ON FUNDING RAISED

Data collected for the Program Review revealed, most of the follow-on funding was raised by former grantee d.light, which raised \$184 million, (Table 2). Most beneficiaries served to date were reached by d.light (5 mil) and BURN (4 mil), followed by Solar Sister (2.1 mil) and EFA/ IMPACT (1.5 mil) (Figure 1).

Table 2 provides data on the grantees in relation to number of direct beneficiaries reached at project close as well as served to date. 10 of the 11 grantees reported their methods of calculating the number of beneficiaries reached. Of the 10 grantees targeting households, 9 reported basing their calculations on the number of innovation units multiplied by the household (HH) size. Household sizes for Ugandan HHs varied from 4.5 - 7 depending on grantee.

9 of the 11 grantees were able to mobilize some additional resources since the award of the DIV grant, however LRUS and IPA did not report any additional funding raised (Table 2) as visualized in Figure 2.

Table 2 Direct Beneficiaries by Grantee with Method of Calculation with Follow-on Funding Raised

GRANTEE	PROJECT CLOSE	SERVED TO DATE	METHOD OF CALCULATION	FOLLOW-ON FUNDING RAISED
LRUS	24,000	24,000	Not provided	0
IPA	60,000	*60,000	Number of students benefitting from the program in the 136 schools.	0
d.light	176,865	*5,000,000	Number of HHs multiplied by the client HH size.	\$184,000,000 ¹⁶
Solar Sister	193,805	*2,100,000	Uses GOGLA calculations to determine # beneficiaries per product sold.	\$14,000,000
W2E/ Green Heat	1,500	*400,000	For HH installations, counts the average HH size as 7 persons while institution population average is 1000.	\$790,000
EFA /IMPACT	262,500	1,528,500	Counts the micro-franchise groups and the number of HHs reached.	\$2,000,000
BVV/ WfP/ ATC	50	70	Number of toilets multiplied by HH averaging 5 people (per toilet).	\$13,754
FINCA PLUS/ BrightLife	28,200	N/A	Sales multiplied by average Ugandan HH size (4.7).	N/A
Agriworks Uganda	40	4,634	Tracks equipment sales and the number of users per set of equipment and multiply the number of users by the average household size,	\$78,641
BURN	1,594,665	3,996,901	Calculated as a client HH. The average HH is approximately 4.5 people in the regions where BURN sells to in Kenya and approximately 6 people in Somalia.	N/A
SPOUTS	210,000	350,000	Number of beneficiaries is based off the average household size in UG (5) and the average household in refugee camps in UG (ranging from 7-10).	\$166,000
Totals	2,551,625	N/A		\$208,884,754

¹⁶ A large portion of d.light's follow-on funding is debt financing required to extend consumer financing customers through the PayGo model. The majority of the grant funding that d.light currently receives is related to Results Based Financing (RBF) facilities that are available to all companies in the OGS sector in certain countries (Kenya, Tanzania, Nigeria, etc.). These grant programs are industry subsidies rather than individual company subsidies. d.light also receives a small amount of grant funding related to entry into new countries.

Figure 2 Follow-on Funding Raised Disaggregated by Grantee



PATHWAYS TO SCALE

Data collected for the Program Review revealed, among all grantees receiving awards, nine grantees noted a hybrid pathway to scale, and two indicated public.¹⁷ Of those grantees that were able to achieve scale, all had chosen a hybrid pathway. DIV considers an organization’s pathway to scale when evaluating whether to fund an innovation.

Hybrid pathways to scale:

Examples of three successful grantees using hybrid pathways are found below, followed by two examples of grantees that utilized a public pathway.

BrightLife. The grant funding allowed BrightLife to hone their model, build a track record, and gather repayment data that has made BrightLife more attractive to private debt markets. During the DIV grant period, the business initially sold to FINCA Uganda’s client base, with customers receiving financing from FINCA Uganda, but as it scaled to target Ugandans outside of FINCA’s base, it began to offer pay-as-you-go (PAYGo) financing.

Solar Sister. Since its initial founding, Solar Sister has adopted a hybrid approach in its pathway to scale. Solar Sister saw success in scaling due to keeping the business model simple and keeping the organization’s attention focused. The organization’s pathway to scale is closely tied to its business model, which relies on an agent-based network. Each business development associate (BDA) relies on trust-based social networks to grow her network of entrepreneurs.

BURN. BURN chose a hybrid pathway to scale and has managed to raise significant private equity and carbon finance funds to support scaling but also used grant monies for research and development, pilots, and new country expansion.

Public pathways to scale:

Two grantees initially noted a public pathway to scale during their award: IPA (with IPs PEDN and FINCA Uganda) and Bear Valley Ventures (with IPs WfP and ATC). The innovation implemented by IPA, a non-profit research organization, was not found to be effective and did not scale. Bear Valley Ventures now reports having a hybrid pathway to scale. IPA’s partners, PEDN and FINCA Uganda, implemented a

¹⁷ A hybrid organization is defined as a mix between commercial and public within the context of this study.

savings program for primary school children in Uganda. This was an early-stage innovation, and IPA's primary role was to carry out research related to the innovation. The specific service (a bank account) was not financially viable to continue at the end of the grant and the innovation did not scale.

Bear Valley Ventures partnered with two local IPs, WfP and ATC, to facilitate the piloting of Tiger Toilets within Uganda. During the pilot of the Tiger Toilets project, 10 toilets were installed. Since the completion of the grant, ATC and MWE trained masons in the process of constructing the Tiger Toilets and installed three additional units. Although the Tiger Toilet pilot has not successfully scaled in Uganda, the IPs do point to success factors (i.e., training local masons, continuing to partner with ATC) that ensure the project remains a viable solution to sanitation issues in Uganda.

FACTORS TO ACHIEVE SCALE

Grantees noted a wide variety of factors that were key to achieving scale, with resource mobilization, strong partnerships, and pivoting mentioned most frequently among grantees. Successful scaling examples include simplifying business processes or models, adopting PAYGo models, finding strong design/manufacturing partners, as well as utilizing data evidence for decision-making. Relevant examples utilized by grantees are found in Appendix 7.

Qualitative data collected as part of this study provides a more nuanced understanding of which of these components existed at the grant award and which developed during implementation. Successful grantees seem to possess good *Business Strategies* and build on *Core Values* and *Core Teams* that helped the organizations know which competencies needed to be strengthened and expanded throughout implementation.

Several grantees noted that DIV funding allowed the team to source strong technical expertise when needed by contracting or recruiting, hiring, and training staff. For example, BURN noted the funding allowed it to secure a technical expert in carbon markets. Others noted the criticality of solid partnerships, especially in relation to manufacturing *Technical Assistance*. BrightLife and d.Light, despite some initial partnership failures, pivoted towards vertically integrated business models, which they cited as critical features for success.

According to qualitative data collection, grantees mentioned the following factors as pivotal for scaling, ordered by most frequently mentioned to least frequently mentioned:

- Strong business strategies;
- Strong partnerships;
- Strong technical expertise within the organization's *Core Team*;
- Ability to pivot quickly; and
- Ability to mobilize additional capital.

A glossary explaining key terminology is provided in Appendix 8.

BUSINESS MODELS

Among all types of business models utilized by hybrid pathway grantees, vertically integrated business models (d.light, EFA/ IMPACT, SPOUTS, W2E/ Green Heat, BURN) and replicable business units (EFA/ IMPACT, Solar Sister, BrightLife) were mentioned most among the 9 grantees that indicated a business model as a key factor of success for scaling. BURN has a vertically integrated business model, whereas BrightLife uses manufacturing partners to supply it with off-grid solar (OGS) products and uses some vertical integration. Solar Sister and EFA/IMPACT used micro-franchising models. Utilizing a vertically integrated model allows a

company to have more control over its supply chain. Employing a replicable business unit allows enterprises to scale quickly into new geographical areas. Appendix 9 provides data on key business model features described by KIs, found in grantees program documents, or found in the secondary literature review.

BrightLife offers a *PAYGo* business model to reach rural and remote populations with innovative development products in a commercially viable manner. BrightLife's initial model combined consumer financing (provided by FINCA) along with consumer education, sales, and service, but today the organization has primarily moved to *PAYGo* consumer financing targeting Ugandans beyond FINCA's existing customer base. BrightLife's partnership with FINCA Uganda proved critical during its initial startup phase. FINCA was the primary conduit to early customers and a source of Consumer Financing. During the DIV grant, BrightLife relied heavily on the FINCA partnership, tapping into its large branch network. The 27 branches across Uganda served as stock warehousing points, where agents were able to pick up stock and receive training. The ready availability of physical branches saved BrightLife on the expensive logistics costs of setting up branches on its own. This is a go-to-market strategy that BrightLife intends to adopt in other markets.

Solar Sister employs a replicable business unit that consists of a Business Development Associate (BDA) that works within the community to recruit, train and support women entrepreneurs. A replicable business unit allows organizations to quickly scale and is often used in micro-franchising models. Each BDA supports approximately 40 entrepreneurs, 20 of which are typically active, and 4-5 of which are 'superstars' as part of its *Agent Network*. The pod, or unit, varies across communities based on the context, but the simplicity allows Solar Sister to replicate the unit and scale consistently and rapidly.

EFA/ IMPACT offers green technology through micro-franchises (*Agent Network*) that help decentralize the process to make the model more sustainable. The enterprise sells technology to groups of marginalized women who then make and sell green bio-mass briquettes in their communities; this expands the organization's ability to train users who operate remotely eliminating the need for transporting agricultural waste to a central factory.

Agriworks Uganda Uganda created an innovation aimed at reducing the capital cost of irrigation systems by developing a mobile irrigation system for groups of farmers. This was ineffective given that farmers were unwilling to purchase the systems as a group, and Agriworks Uganda had challenges finding financial institutions willing to extend credit on terms acceptable to the farmers. This led to a major pivot in which, Agriworks Uganda offered a new model providing irrigation services for a fee in a *Direct to Consumer* model to individual farmers.

Green Heat (previously W2E) uses a *Direct to Consumer* model for its bio-digester. It also packages training and technical support in addition to equipment sales. Green Heat has also negotiated with DFCU Bank for a contract facility to enable farmers to purchase bio-digesters through serviced contracts. Recently, Green Heat has begun to sell bio-mass briquettes and employs a last mile distribution network for its model.

CASE STUDY PAYGO BUSINESS MODEL

The experiences of DIV grantees may inform the off-grid solar (OGS) market and other markets for selling high ticket items, providing deeper learning about what works and what does not work in relation to selling and financing products. One example where the experiences may provide insight is in the area of PAYGo systems. In 2019, Uganda ranked second globally by volume of products sold via PAYGo, claiming 12 percent of the global volume share and eastern Africa is considered the largest PAYGo market globally¹⁸. Uganda did register a small decrease in PAYGo sales from the 2018 report, and despite an increase in lantern sales, there was a 25 percent decrease in multi-light and SHS systems that experts have not been able to explain¹⁹.

Multiple grantees (Solar Sister, d.light, BrightLife) reported beginning to offer larger Productive Use of Energy (PUE) products as add-ons to the solar home systems (SHS) currently offered. d.light and BrightLife are offering PAYGo models. Additionally, Agriworks Uganda initially tried to sell innovative irrigation systems directly to Ugandan farmers, but faced challenges with affordability, even when trying to secure consumer asset funding. Recent industry reports validate the concern that larger appliances bring affordability issues and suggest that PAYGo systems may be instrumental in seeing adoption rates grow²⁰. Agriworks Uganda's experiences testing their model could inform the sector. Additionally, BrightLife's experiences piloting PAYGo systems in a refugee settlement context may also prove informative.

The trend for the use of OGS and PAYGo models to provide consumer finance for larger appliances is expected to rise substantially in the near future. The OGS sector continues to have a solid growth curve and there is a trend towards PAYGo enabled products which are generally higher priced and have potential for productive use beyond lighting²¹. Additionally, PAYGo as a business model is moving beyond just the energy sector with consumer PAYGo data becoming valuable for companies planning to offer other non-energy products and services. With the potential for PAYGo to play a greater role beyond the energy space, the tacit knowledge held by former and current DIV grantees may provide insights that can help shape current and future USAID funded innovations.

Additionally, other grantees sold items that could be considered high-ticket items (W2E/ Green Heat – biogas digesters, BVV/ WfP/ ATC – improved toilets, BURN – improved cookstoves, Agriworks Uganda – modular irrigation units). Each of these grantees also faced challenges with affordability related to consumer purchasing. More research is needed to understand consumer financing needs for households in the eastern African context.

PIVOTING

In the analysis framework, a pivot is a significant change to a product, service, delivery method, model, etc. from what was funded by DIV. Pivots are often critical in innovation projects and are embraced in the start-up space.

¹⁸ GOGLA (2019). Global off-grid solar market report semi-annual sales and impact data: January – June 2019, Public report https://www.gogla.org/sites/default/files/resource_docs/global_off-grid_solar_market_report_h1_2019.pdf

¹⁹ IBID.

²⁰ IBID.

²¹ GOGLA 2020 (2020). Off-grid solar market trends report 2020: March 2020 <https://www.gogla.org/resources/2020-off-grid-solar-market-trends-report>

In this study, there was evidence that all DIV grantees made some type of pivot, with Customer and Solutions pivots being the most common types. Among grantees, there is great variation in the types and timings of pivots that were able to raise significant amounts of funding (BURN, d.light, Solar Sister, SPOUTS, W2E, EFA/ IMPACT, BrightLife). Two of the most successful grantees that scaled only reported pivots related to targeted markets – Solar Sister and BURN.

Customer Pivots:

Two grantees shifted geographies during the implementation of their DIV grants: BURN shifted to sell its innovation in Somalia after finding that there was not a good product market fit in Uganda, and Solar Sister shifted its operations to Tanzania and Nigeria after experiencing a less than favorable enabling environment with Ugandan government agencies. d.light experienced challenges with its first IP. Two other grantees experienced challenges with their manufacturing partner, Green Light. Both LRUS and BrightLife experienced challenges when Green Light began to compete directly with their partners.

W2E/ Green Heat encountered complex distribution challenges as it initially tried to target city municipal waste, it pivoted and changed its scale to target household waste. By designing smaller scale systems, Green Heat could work with institutions (prisons, schools, etc.) as well as farms that were the sole owners of all three processes which helped it find success.

EFA/ IMPACT encountered challenges with male participants failing to repay loans and making life decisions that had significant negative impacts on family dynamics. EFA/ IMPACT began providing loans only to women and the organization reports that it has seen and continues to realize more positive impact within the household (payment of school fees, increase in food available for family, etc.).

Solutions Pivots:

Agriworks Uganda experienced unexpected challenges in obtaining partners willing to offer consumer asset financing for their irrigation equipment. Agriworks Uganda pivoted and began to offer fee-based irrigation services after the DIV grant ended and is beginning to see success in the new model.

W2E/ Green Heat experienced significant challenges in transporting biowaste products due to expense. To solve these challenges the company pivoted and developed the Slurry Separation Technology (SST) which allowed better management of water and less expense when transporting the resultant fertilizer.

Growth Pivots:

EFA/ IMPACT encountered a problem related to sourcing affordable waste when it began to scale. The cost of transporting waste scattered throughout small villages was expensive. Through its partnership with DIV, the organization determined to pivot to a new model which required decentralizing production, training marginalized women to produce and sell the biomass briquettes previously produced and sold directly by EFA. This pivot is noted as a critical factor in the success, growth, and scaling of EFA/ IMPACT.

Additional specific examples of pivots among grantees may be found in Appendix 10.

OBJECTIVE 2 FINDINGS: CUMULATIVE AND CURRENT DATA FOR DIV'S SIX CORE KEY PERFORMANCE INDICATORS (KPIs)

In DIV's portfolio, for much of the last decade KPIs were selected or defined by each respective grantee based on their innovation and delivery model. However, for this study DIV chose to investigate the data available from closed grants related to the set of six core KPIs that DIV currently requires of grantees²². Some of these indicators were new to the grantees under study, therefore only KPIs with relevant findings are discussed in the body of this report. Data reported by grantees for the full six KPIs are found in Appendix 6,

OBJECTIVE 3 FINDINGS: LESSONS LEARNED ON INNOVATION PROCESSES

CHALLENGES IN ACHIEVING SCALE FOR SOME GRANTEES

There is evidence that some grantees were able to scale their innovations as noted by the amount of follow-on funding received and beneficiaries reached. For example, BURN, W2E/ Green Heat, BrightLife, EFA/ IMPACT, Solar Sister, and d.light were able to raise a significant amount of funding post-DIV (Figure 2). d.light raised the majority of funding and it should be noted that a large portion of funding raised was debt capital and convertible notes. There is evidence that some hybrid and commercial enterprises funded by DIV have proof point data around customer demand, however data was not collected related to profits for grantees. There is also evidence from recent semi-annual sales that indicates that grantees were able to scale their innovations at different levels. d.light, BURN, W2E / Green Heat; Eco-fuel/ IMPACT, BrightLife, Solar Sister and SPOUTS all report healthy semi-annual sales for the last period.

Four of the grantees indicated subsidizing the cost of their products for beneficiaries. The four grantees were SPOUTS, BURN, BVV/ WfP/ ATC, and W2E/ Green Heat. Other grantees, although not subsidizing prices, do use consumer financing mechanisms that allow customers to have multiple years to repay loans for the product. For example, BrightLife, and d.light reported offering PAYGo models whereas W2E/ Green Heat, Agriworks Uganda, and LRUS offer more traditional loan products while Eco-fuel/ IMPACT offers microloans through their revolving fund. Those enterprises offering PAYGo face capital restraints due to long repayment periods for most products purchased with this model.

With respect to government bodies, grantees provided limited evidence of strong demonstrated uptake. Two organizations led by Ugandans were the only ones that reported both significant resource mobilization and strong success with demonstrated uptake within government bodies in Uganda. With respect to government bodies, grantees reported evidence of strong demonstrated uptake in a few instances. In Uganda, when considering those grantees that mobilized significant resources (i.e., BURN, W2E/ Green Heat, BrightLife, EFA/ IMPACT, Solar Sister, d.Light), two organizations (led by Ugandans) Green Heat and EFA/ IMPACT reported government uptake. W2E/Green Heat reported adoption with some government contracts for their bio-digesters after the grant ended, and EFA /IMPACT noted uptake by local government bodies. BURN noted government uptake at policy level in Kenya and the Somali markets, but not in Uganda. Although not reporting success at scaling in Uganda, BVV's implementing partners, WfP and ATC found some limited uptake with the Ministry of Water and Environment (MWE).

In some respects, it is not surprising that scaling in a one-two year period is difficult, given that innovation in emerging economies is often challenging. Although emerging markets offer incredible

²² DIV provided ULA with a KPI Selection Matrix template that provided Performance Indicator Reference Sheet (PIRS) information, including: Indicator Definition, Disaggregation Type and Values, Unit of Measure, Outcome, Data Type, Data Collection Method, Data Source, Frequency, and Rationale for each of the 6 core KPIs.

opportunity for innovation and are critical to global economic growth, these markets also have their own unique challenges²³.

STAFF CHALLENGES

Several grantees (d.light, Agriworks Uganda, SPOUTS, W2E/ Green Heat, BrightLife) experienced challenges finding and incentivizing local staff with the capabilities required to scale the funded innovations. This gap may widen over time as more jobs are being created in some of the targeted markets and will require more staff with needed skillsets. In eastern Africa, the second largest off-grid solar market, rapid growth is expected, offering an estimated 350,000 full-time equivalent (FTE) jobs by 2022 with most in the PAYGo service delivery model in the region²⁴. The PAYGo service delivery model requires companies to create longer-term, on-going relationships with customers which demands different skillsets in sales and after-sale services²⁵. In addition, PAYGo models require skills beyond sales, as noted in large churn rates and problems with agents focusing too much on sales while neglecting customer relationship management (CRM)²⁶. Several DIV grantees stressed the importance of training staff well in CRM, skills that new hires do not usually have when onboarding.

PARTNERSHIPS

9 of the 11 DIV grantees noted the value of having opportunities to network and connect to new partners during implementation of their DIV pilots. Some grantees (W2E/ Green Heat, EPA/ IMPACT, Agriworks Uganda) expressed appreciation for such opportunities and suggest that DIV expand opportunities even more. Other grantees noted that their partnerships and networking opportunities originated from other sources.

Agriworks Uganda noted that DIV could have played a stronger role in connecting them with financial sector partners. The grantee would have specifically welcomed TA from DIV in the form of introduction to local financial institutions working with USAID's partners that may have had interest in providing commercial asset financing for farmers interested in the grantee's innovation product. The grantee noted that having a DIV team member on the backend to help with the challenges that grantees had and to help solve problems by being involved in the day-to-day operations would have been welcomed. This embedded team member approach is similar to an approach taken by the African Enterprise Challenge Fund (AECF), which often embeds expertise within sub-Saharan African startups²⁷ while concurrently offering seed funding for agriculture and agribusiness, renewable energy, adaptations to climate change, rural financial services, and communications systems²⁸.

However, Agriwork's suggestion that DIV become more engaged may not be a view that is equally shared across grantees. Enterprising organizations vary in terms of founders who bring with them different backgrounds²⁹, including the level of international and/or business experience that a founder may have. These experiences may play a role in the organization's comfort level in finding their own

²³ Shankar, V., Narang, U. Emerging market innovations: unique and differential drivers, practitioner implications, and research agenda. *J. of the Acad. Mark. Sci.* 48, 1030–1052 (2020). <https://doi.org/10.1007/s11747-019-00685-3>

²⁴ GOGLA (2019). Off-Grid Solar. A growth engine for jobs off-grid solar: on the level, nature and wider impact of employment opportunities in the off-grid solar sector <https://www.gogla.org/resources/off-grid-solar-a-growth-engine-for-jobs>

²⁵ IBID

²⁶ Winiacki, J. & McCaffrey, M. (2018). Rethinking agents to scale PAYGo businesses: How to leverage agents for critical customer relationship management <https://medium.com/f4life/rethinking-paygo-agents-to-scale-businesses-9c0740bde6d1>

²⁷ Bryant, D. E., Shields-Haas, L. J., Gitta, B., Mohamoud, M.O., Dalmar, A.A. & Jimale, M.A., (2019). Response Innovations for Somalia Emergencies (RISE): The innovation ecosystem mapping report. <https://reliefweb.int/sites/reliefweb.int/files/resources/RISE-Ecosystem-Mapping-Report-Final.pdf>

²⁸ AECF (2020). Who we are. *African Enterprise Challenge Fund* <https://www.aecfafrica.org/about-us/who-we-are>

²⁹ Shepherd, D.A., & Gruber, M. (2020). The lean startup framework: Closing the academic-practitioner divide. *Entrepreneurship Theory and Practice*. <https://doi.org/10.1177/1042258719899415>

technical expertise, whether through hiring experts or negotiating strong partnerships. Generally, the organizations that expressed strong preferences for securing their own TA were those that are led by non-Ugandans (e.g., Solar Sister, BURN, d.light, SPOUTS, BrightLife). However, more research would be needed to better understand the more nuanced TA needs of DIV grantees, as well as the perceived gaps grantees may have noted at the award stage.

During the implementation, W2E/ Green Heat noted a *Networking* opportunity that it took advantage of with the Center for Research in Energy and Energy Conservation (CREEC)³⁰. The grantee worked closely with CREEC, which is seen as a hotbed for growing young engineers and offers unique training and opportunities for the engineers to work on small contracts and projects. CREEC has a cookstove testing facility, and space to work on solar innovation. The grantee recruited heavily from CREEC and it also received key advice from the organization during the pilot. The grantee recommends strongly that DIV invest in and support CREEC's work.

OBJECTIVE 4 FINDINGS: LESSONS LEARNED ON GRANT MANAGEMENT

Grantees reported the overall experience with DIV to be generally positive. Grantees were asked to rank DIV on a scale of 1-10, related to how satisfied the grantees were with DIV during the pre-award process, as well as during the life of the grant with a score of one being equal to extreme dissatisfaction and a score of ten being equal to extreme satisfaction. At pre-award, the average ranking for DIV was 8.2. and the average ranking for DIV's performance during the life of the grant was 8.4.

FLEXIBILITY OF DIV APPROACH

Grantees noted that the flexibility built into DIV's process has allowed the organizations to pivot as needed to respond to changes in the market and local context. DIV's straightforward, hands-off process has given grantees opportunities to work with DIV to adjust indicators when pivots occur. Additionally, some grantees have noted that major pivots, such as those requiring entry into different markets, have been possible within the DIV grants process. The grantees have noted that DIV's management approach is often more flexible than the approach utilized by other donors. Grantees have expressed appreciation for an approach that aligns well with the iterative nature of innovation projects.

Individual grantees noted specific instances of how DIV impacted them positively. W2E / Green Heat found DIV funding to be crucial to the piloting of the biogas digester pilot. The DIV support was a catalyst for moving the model in a new direction and allowing a pivot from the original proposed model. BVV / Wfp/ ATC indicated that the grant made a massive difference to the Tiger Toilets pilots, allowing the partners to lay a foundation for the innovation. The hands-off process allowed BVV to test the technology in three countries with different partners. SPOUTS found difficulties when DIV closed due to lack of funding for 5 quarters 2017-2018 and lost almost all of its staff and noted limited continuity in the transition from the old to new DIV team.

Grantees did point out a few areas that could be improved in processes for DIV management: 1) Shortening the grant application (EFA/ IMPACT); 2) Easing the process of getting a DUNS number (EFA/ IMPACT); and 3) Shortening the time for receiving the initial funds (EFA/ IMPACT, d.light).

When grantees were asked about their preferences for targeted assistance to help develop better systems, or unrestricted funding post-award, grantees expressed a preference for receiving unrestricted funding, or a blend of both. Grantees noted an appreciation for the flexibility offered by DIV to operate unhindered, which allowed grantees to pivot more easily.

³⁰ Centre for Research in Energy and Energy Conservation (CREEC) <https://www.creec.or.ug>

BrightLife's DIV grant allowed us to pilot an innovative clean energy business model, that we otherwise might not have had the opportunity to pursue. PAYGo solar has now grown into the leading sector delivering clean energy to those currently off-grid, so it is evident that DIV is backing winning ideas that can deliver transformative impact.

- BrightLife CEO Laurynas Vaičiulis.

TECHNICAL ASSISTANCE

Grantees noted a range of reactions to the value of technical assistance (TA) from donor organizations, though in general they expressed satisfaction with the level of TA provided.

Most noted a minimal need for TA from donors, while others explicitly noted that assistance from donors was not often provided at a high enough technical level to be of benefit. Most grantees reported a preference for finding their own technical experts as needed, but there are instances when more USAID connections to partners may have been useful to some grantees. For example, Agriworks Uganda noted it would have been helpful it had opportunities to be connected to financial institutions within USAID's network. Curiously, researchers were surprised by the limited discussion from grantees regarding specific positive examples of DIV's technical assistance efforts. Although grantees did not report any specific examples of poor technical assistance, the absence of any strong positive examples of DIV providing crucial TA was surprising.

Solar Sister noted that while money is the most efficient way to make things happen, TA can be helpful if well targeted. The same grantee noted a high management burden in the course of receiving TA from donors. BURN noted a strong preference for discretionary cash to hire the TA required. A third grantee, SPOUTS, noted that it prefers a combination of TA and funding. SPOUTS noted that DIV did well with non-financial assistance, helping the organization to scale operations on the ground. The organization reported that the monthly calls served as a sounding board, and DIV generally provided feedback in a timely manner.

BrightLife indicated that when it experienced a major challenge with manufacturing partners, it did not receive any specific TA from DIV, but instead relied on its parent company to connect it with another entity to find new manufacturing partners.

Several grantees including BVV/ WfP/ ATC, Agriworks Uganda, LRSU and PEDN noted that DIV TA would have been welcomed to help map out post-award next steps, especially related to resource mobilization. BrightLife, while not explicitly indicating that it would have wanted TA for resource mobilization, did express a disappointment that DIV did not fund a Stage 2 award at a critical juncture in its pathway to scale. TA for the grantee in relation to resource mobilization mapping may have been valuable to the social enterprise.

EFA/IMPACT, while not describing in detail how DIV provided TA, did note that DIV was crucial in its pivot from a business model of direct selling to its micro-franchising model. The organization specifically credits DIV for being the inspiration for the creation of the revolving fund that helps the grantee provide funding for entrepreneurs. A separate grantee noted that it received adequate TA from a separate prime grantee during the pilot, however the former grantee expressed that additional TA would have been helpful during scale-up (after the pilot) from DIV to map out other resource mobilization options.

AFTER GRANT DISCUSSIONS, AND COLLABORATING AND LEARNING

Partners BVV, WfP, and ATC **appreciated the DIV process being very hands-off, although the partners would have welcomed more discussion and thought conversations with DIV.**

Particularly, the grantees would have welcomed having DIV to help shape growth after the grant, instead of just ensuring that the grantee was meeting milestones. WfP expressed that it would have been useful

to have a call three or four months after the project, similar to the KII that took place in the Program Review study. Such a conversation shortly after the end of the project would have helped DIV better understand the partners' plans and challenges with scaling. WfP also noted that having follow-on funding to support the scale-up activities (e.g., marketing, gaining support from the local town councils) would have been welcomed as many projects provide support for pilots but not for scale-up.

Grantees spoke highly of the value of the DIV grant, but grantees did not frame their relationships with DIV as collaborative or as partnerships. Although there is great potential for learning more about what works in relation to innovations that have scaled within Uganda and other African countries, there is little evidence from the grantees in this Program Review of collaborative, learning partnerships.

OBJECTIVE 5 FINDINGS: ASSESSMENT OF STRUCTURES, SYSTEMS, AND PROCESSES USED FOR DATA MANAGEMENT WITHIN KPIS

Using the adapted MEL System Assessment tool, ULA selected significant aspects under each category that were used as a standard to measure the existence and functionality of a MEL system in an organization. The section below presents the findings from the rapid MEL system assessment that was conducted among the 11 participating DIV grantees.

ORGANIZATIONAL GOVERNANCE/LEADERSHIP, MONITORING, EVALUATION AND LEARNING, STRUCTURES AND FUNCTIONS

All grantees reported having trained staff in place and sufficient IT infrastructure to manage data. The leadership of an organization is expected to be engaged in decision-making for program improvement based on evidence. Organizations should establish structures at all levels that produce reliable evidence and encourage use of data for program management³¹. The 11 DIV grantees that participated in the Program Review had personnel that were designated to periodically report on the grant progress. On average, five staff members of a grantee were involved, with the highest number being 12 staff members (IPA), and the lowest with three MEL staff members.

Five of the grantees had suitable M&E personnel with titles such as: M&E Officers, and Impact Managers. However, other grantees designated the data management roles to other personnel including: Project Coordinators, Team leads, Senior Management Teams, Researchers, and Grant Administrators. Despite the differences in titles, the various personnel were responsible for the data management function on the grant. All 11 grantees reported that the personnel that took on the roles were trained to manage data related issues and the organization had sufficient IT infrastructure to adequately manage the data that related to the innovation.

DATA COLLECTION³²

All grantees reported data regularly to DIV with a large majority using reporting templates provided by DIV. The DIV Program Review results show that all 11 grantees were gathering the required data on the indicators/milestones that were in the project/award documents, and the data collected was shared with DIV regularly. Three grantees reported semiannually (Agriworks Uganda, IPA, and BrightLife), three others reported quarterly (EFA/ IMPACT, Solar Sister, and d.light) and four grantees reported on a monthly basis (SPOUTS, W2E/ Green Heat, LRUS, BVV/ WfP/ ATC). The reporting frequency of one grantee (BURN) varied depending on the indicator.

³¹ USAID MEL Systems Assessment Tool, 2017

³² The relevant ADS component on data collection is as follows: "Monitoring, evaluation, and CLA for activities should emphasize the systematic process of collecting and analyzing performance data and other information to track progress toward planned results. Monitoring and evaluation should influence the planning of activities, decision-making and the allocation of resources, and to make changes as needed. (ADS 201.3.4.10.)"

However, some of the grantees collected additional indicators/information about the innovation, which they used internally for planning and decision making for effective grant implementation.

In terms of reporting guidelines and templates, nine of the II grantees received reporting guidelines/templates from DIV. However, two grantees (EFA/ IMPACT and Solar Sister), did not receive the reporting guidelines at the start of the project from DIV. Solar Sister developed a reporting template which they shared with DIV, which was later adopted and approved. EFA/ IMPACT used the indicators in the award document to guide the reporting.

Nine of the II grantees provided reports to other funders/donors that supported the innovation either in kind or financially. Only W2E/ Green Heat and LRUS reported having not received any additional or complementary funding during the grant time period and therefore were not gathering or reporting additional information on the grant.

DATA QUALITY³³

Nine of eleven grantees conducted regular quality control processes on their data. All of the grantees had data quality control systems in place and conducted data supervision to assess reliability, validity, accuracy, timeliness, and completeness of the data collected for required indicators at the different levels of data collection. Nine out of II grantees had established mechanisms to address data quality issues including: late, incomplete, inaccurate, and/or missing reports, including following up with sub-reporting levels on quality of information reported. However, Agriworks Uganda and Solar Sister did not have a system in place to address data quality issues that arose during data collection and reporting.

BENEFICIARY DATA PROTECTION

Grantees utilized a combination of manual, analog, and digital methods to ensure the protection of beneficiary data. All II grantees had systems for protecting beneficiary data and preventing unauthorized access to data. Some of the strategies were as basic as not sharing customer data with outside parties, occupying secure offices, and obtaining lockable file cabinets. Other grantees also had child and beneficiary protection policies, coded beneficiary data to maintain anonymity, and sought for written consent from beneficiaries prior to their participation in the innovation activities; in some instances, these were translated to local languages.

On the other hand, other grantees had more improved technologies and digital systems that were effective for beneficiary protection. These included: Open Data Kit (ODK) systems and ATLAS platform, which offered more secure ways of protecting beneficiary data. Other grantees (IPA, LRUS) followed approved research protocols, while others (BrightLife/ FINCA PLUS) benefitted from secure financial institutions systems of the partners they were working with.

Password protection on computers was another way that grantees ensured data was not accessible to unauthorized personnel and the beneficiary data was protected. Three of the II grantees (Solar Sister, d.light and BVV) had computerized filing systems while all the rest had both the computerized and manual filing systems for the duration of the grant.

³³ The relevant ADS component on data quality is as follows: "High-quality data are the cornerstone for evidence-based decision-making. OU Program and Technical Offices must ensure the appropriate collection, management, and reporting of data to support management needs. Data that do not meet USAID's data-quality standards could cause an erosion of confidence in our programs and result in poor decision-making (ADS 201.3.5.7.)"

ORGANIZATIONAL LEARNING AND COLLABORATION³⁴

A majority of grantees implemented internal learning activities with some acting upon critical lessons learned to pivot and strengthen their programming. The results from the Program Review indicate that nine of the 11 grantees participated in various learning forums; these varied from organizing and participating in international conferences, being members of technical local and global forums, and participating in internal and external capacity building opportunities among others. Two of the grantees (Agriworks Uganda and BrightLife) did not specifically report any learning events during the grant.

However, for those grantees that were involved in one way or another in learning reviews and forums, critical lessons that informed the implementation of the grant and in some instances significantly guided the organization's pivoting. For example, BrightLife determined through research that the health benefits of the water filtration product are more useful to the customer than the cost saving aspect and this informed BrightLife's marketing strategy. BURN's M&E efforts pointed BURN towards producing a lower cost product to meet market demand. EFA/ IMPACT, through the data collected by PWC, realized the need to design a stove to increase uptake of the briquettes. IPA noted a need to include a parent outreach program as a result of studies conducted. SPOUTS learned from an impact study, that adding a small user fee would increase usage and uptake. The impact study also revealed to SPOUTS that especially when selling to NGOs, there is a need to require training for the end users of the filters on how to use the innovation effectively. It was through learning forums, that BVV/ WFP/ ATC learned about the existence of the Africa Night Crawler worms available in Uganda; which worked as well as the Tiger Worms that were being imported from South Africa,

Although the data collection for this study did not specifically focus on the relationship between the existence of MEL systems and future success (e.g., beneficiaries reached, additional funding raised), grantees that conducted internal evaluations to assess progress and /or impact of the innovations identified lessons that were acted upon and sometimes helped the organization to pivot. Some grantees noted that pivoting attracted additional funding, but a causal relationship across grantees could not be established/confirmed in this study.

DOCUMENTATION DETAILING STANDARD OPERATING PROCEDURES (SOP)

On average, grantees reported having over 80% of all required data-related SOPs. To ensure quality practices, the processes for robust MEL systems need to be standardized through the use of Standard Operating Procedures (SOPs), Job Aids and Guidelines. SOPs may be developed for data collection, data storage, data quality checks, data aggregation, analysis, confidentiality, reporting, and dissemination and other MEL functions³⁵.

Although not all the SOPs that guided good data quality were in place, the grantees had most of the SOPs according to the responses in the study. Table 3 shows the findings in line with availability of SOPs:

³⁴ The relevant ADS component on organizational learning and collaboration is as follows: "During the implementation of a Strategy, a Mission generates knowledge and learning by overseeing projects and activities; participating in learning activities, such as portfolio reviews and stocktaking exercises; conducting monitoring, evaluation, and other research, analysis, and learning activities ...; engaging stakeholders; and making use of the experiential knowledge of staff, partners, and counterparts, among other activities (ADS 201.3.2.18.)"

³⁵ USAID MEL Systems Assessment Tool, 2017

Table 3 Results on Existence of SOPs Among Grantees

	DID THE GRANTEES HAVE SOPs FOR:	YES	NO	NOT SURE
1	Data collection and storage	9	2	0
2	Back up procedures for data processing	8	2	1
3	Data quality control	10	1	0
4	Data aggregation where relevant	9	1	1
5	Data analysis and reporting	8	2	1
6	Data dissemination, use and learning	6	3	2
7	Data confidentiality and security	8	2	1

Since the grant period ended several years ago for most of the grantees, ULA did not find it feasible to ask for the verification of the SOPs, as would have typically been appropriate for this study.

Although most of the available SOPs were distributed and accessible to all staff including the sub reporting levels, two grantees (Agriworks Uganda and BVV/ WfP/ ATC) did not distribute the available SOPs to staff or the other sub reporting levels.

CONCLUSION ON MEL SYSTEM ASSESSMENT FINDINGS

Based on the Rapid MEL systems assessment findings of the 11 grantees, the MEL systems that were in place during the implementation of the DIV grants were adequate and effective in collecting and ensuring that the data reported to DIV was of good quality and could be used for decision making. The grantees had designated structures to manage the data management roles of the grants, and the personnel were trained on the roles. The grantees had systems and procedures to ensure data quality at all levels, including the sub reporting levels apart from two grantees (Solar Sister and Agriworks Uganda) who did not have these systems in place. It was not in the scope of this study did to establish the quality of the data that was reported by the grantees.

There was a strong sense of appreciation for data collection and MEL across grantees, and grantees did find value in M&E beyond merely satisfying DIV requirements. The focus for the grantees seemed to be on beneficiaries reached and social impact. Apart from IPA, all other grantees did not report having any direct link with the national systems in terms of reporting and/or data management.

Although in that period DIV did not provide the grantees with standard KPIs to be tracked and reported across all grantees, they provided indicators to each of the grantees that were specific to their grant and were incorporated in the grantee award documents. Given the wide of variety of indicators on which grantees reported, measuring and comparing grant performance, and tracking and standardizing results across grantees was not possible for this study.

CONCLUSIONS

DIV grants appear to have been transformational for most grantees. 11 DIV grantees in study were supported with \$ 6.4 million reaching a total of 13.6 million beneficiaries with grantees raising a total of \$209 million in funding since receiving the grants. 8 of the 11 DIV grantees in this study are still delivering (selling/providing) the innovation financed by DIV in Uganda. Grantees collectively noted semi-annual sales of \$54,594,584 during the last semi-annual period.

Data collected in this assessment indicates that DIV grants allowed grantees to make largely positive decisions to strengthen and scale their businesses. These included hiring more people, procuring targeted TA (BURN - carbon market expert), assessing product market (All grantees), pivoting business approaches (EFA/ IMPACT, Agriworks Uganda, W2E/ Green Heat, and acquiring new partners (d.light, EFA/ IMPACT, Agriworks Uganda, Solar Sister, SPOUTS, BrightLife, W2E /Green Heat, BURN). For Green Heat, the DIV grant through W2E helped the startup learn how to tell its story, to build robust accounting and HR systems, and leverage international funding. LRUS reported that with DIV support the enterprise gained many insights about how to launch new innovations by partnering with SACCOs. Agriworks Uganda, although not able to scale during the DIV grant, felt that the DIV award did provide the business the ability to test models, pivot and learn about the interest of farmers in acquiring debt for irrigation equipment.

On the whole, grantees perceived DIV positively, scoring DIV at 8.2/10 on average for pre-award and 8.4 during the course of the grant and grantees expressed general satisfaction with DIV grants. Grantees did point out a few areas that could be improved in processes for DIV management: 1) Shortening the grant application (EFA/ IMPACT); 2) Easing the process of getting a DUNS number (EFA/ IMPACT); and 3) Shortening the time for receiving the initial funds (EFA/ IMPACT, d.light).

DIV's hands-off nature enabled more flexible management among grantees yet at times constituted a missed opportunity for critical TA. Across the board, grantees noted satisfaction with the relatively unique hands-off nature of DIV and linked it to allowing them to be more flexible with their funding and programming as compared to traditional donors. However, many grantees also mentioned that they could have benefitted from more targeted and frequent TA (Agriworks Uganda, BVV/ WfP/ ATC, LRUS), either from DIV itself or other organizations. Some grantees noted that while unrestricted cash is most important, occasional, targeted TA is important and complementary to cash (SPOUTS, LRUS), particularly to help grantees navigate critical junctures (resource mobilization at end of grants, scaling, local production/assembly expertise) in their business journeys. Technical assistance, the provision of services³⁶ instead of money³⁷, can be broad but could be activities that involve: the sharing information, knowledge or data, skills training, or other consulting services. As DIV provides customized or bespoke TA to grantees, it is important to have feedback mechanisms that allow grantees to feel at ease with DIV's TA request processes. Small-to-medium enterprises (SMEs), often the target

³⁶ The relevant ADS component on TA is as follows: "The provision of goods or services to developing countries and other USAID recipients in direct support of a development objective-as opposed to the internal management of the foreign assistance program (USAID Automated Directives System - ADS - Chapter 306)."

³⁷ USAID (2018). Glossary of ADS Terms 04/18/2018 Partial Revision
https://www.usaid.gov/sites/default/files/documents/1868/ADS_glossary.pdf

of DIV's grants, particularly may need different types of TA than what is required in a typical donor/grantee relationship. For example, SMEs may need TA related to entering a new market, developing a new product/process, or structuring an investment³⁸.

Partnerships and networking facilitated by DIV grantmaking were instrumental in helping grantees to face their problems and achieve scale but some grantees hoped for more in this respect. Key activities with partners that contributed towards scaling included, introduction to new markets (Solar Sister), manufacturing (BrightLife), and product design (Agriworks Uganda, W2E/Green Heat), with academic, international, and local partners as a result of DIV grants were cited most often. Grantees consistently noted that access to these partners allowed them to pivot into new markets more easily. Likewise, some grantees mentioned that when they did not have ready introductions to potential partners (Agriworks Uganda, LRUS), it contributed to challenges in resource mobilization. Several grantees expressed that an area of improvement could be for DIV to provide more opportunities to connect with and network with actors that provide various types of funding for scaling the grantee innovations.

Pivots—facilitated by DIV grants and management style—played a critical role in catalyzing positive change for most of the grantees either during the implementation or shortly after the grant ended. But DIV has more to learn from grantees' pivots. DIV funding and flexibility in part was cited as having facilitated grantees' ability to pivot. For example, d.light noted that DIV was collaborative when structuring milestones to achieve the goals required to make the project a success, noting DIV's flexibility and understanding of the need for pivoting when approaching local markets in Uganda and Kenya.

While pivots were deemed important, current data is unavailable to determine the impact of pivots on the success of scaling and financial outcomes of grantees. More research could be conducted to better understand what market research the grantees had conducted prior to award to determine if there were any signals or indicators that could have pointed to risks in the landscape. A better understanding of the factors and the context that lead grantees to pivot would aid DIV in project award and project management.

DIV's limited interactions with grantees post-grant award contributed to some missed opportunities for learning. Most grantees described DIV as primarily hands-off with periodic engagement for project check-ins. DIV's grantees are primarily private sector actors, and it is critical to learn and document what works and what does not work. Yet, few DIV grantees reported significant opportunities for sharing learning during the grant, particularly around partnerships and resource mobilization.

Private sector partners may in fact have disincentives for sharing learning with others given the need to protect company Intellectual Property (IP) and competitive advantage. Despite potential disincentives, DIV grantees stated being willing to share tacit knowledge and other expertise when engaged in specific

³⁸ Runde, D., Bandura, R., Staguhn, J. (2020). The DFC: Delivering Technical Assistance in High-risk Context. <https://www.csis.org/analysis/dfc-delivering-technical-assistance-high-risk-contexts>

knowledge sharing opportunities. Likewise, grantees with deep technical expertise showed interest in opportunities for collaboration in development ventures.

Demand-side financial constraints and weak uptake in the public sector threaten sustainability of some DIV-funded grantee achievements. Most of the grantees discussed resource constraints and challenges around resource mobilization. Nearly all grantees employed some form of subsidization for their products for beneficiaries, or a payment plan, which contributed to reduced cash flows. Appliance-related products in the energy sector are documented as oftentimes being prohibitively expensive for potential buyers. In terms of sustainable future scaling, government institutions proved to be large barriers to uptake. However, the relatively short period assessed for this assignment combined with noted bureaucratic hurdles associated with public sector procurement may have contributed to these findings.

RECOMMENDATIONS

Promote a culture of collaboration and learning between DIV and grantees throughout the entire grant process. Though DIV's hands-off and flexible management style was noted as a major facilitator of success for grantees, DIV could have done more to facilitate a culture of learning between DIV and individual grantees and among the entire cohort of grantees. DIV could facilitate periodic learning events such as pause and reflects and documenting of lessons learned through workshops or produce and disseminate learning products such as case studies that highlight successes and failures of grantees. Pause and reflects and after-action reviews with grantees would be essential in helping DIV and grantees better understand how they are performing and what can be improved. Disseminating key learnings across DIV-funded innovations could be helpful for current and future funded grantees, as well as for others working to create similar or complementary innovations. Specifically, gaining a better understanding of the successes and failures of grantees around their use of Networking, R&D Partnerships, Pivoting, PAYGo systems, Policy Input, Enabling Environments, and Sourced vs. Local Manufacturing models could benefit other innovators. Opportunities exist for DIV grantees to share candidly about lessons learned during implementation, including key points such as during the launch of new products/services, pivots, and other key milestones. DIV could also encourage grantees to share their knowledge in local, regional, and international forums. While DIV grantees noted a limited need for TA, offering opportunities for relevant USAID/Mission staff to interact with grantees during implementation could provide avenues for cross-learning. Innovation is intrinsically linked to knowledge sharing (KS)³⁹ and considered an important component to create enabling environments for clean energy work in Africa⁴⁰. KS between DIV and grantee post-award may promote ease of business operations for enterprises as grantees pause and reflect on successes and challenges. Capturing the tacit knowledge from innovation projects such as those funded by DIV is important for advancing the global knowledge economy, and may hold particular value that can inform science, technology, and innovation (ST&I)

³⁹ Castaneda, D. I, & Cuellar, S. (2020). Knowledge sharing and innovation: A systematic review. Knowledge and Process Management. The Journal of Corporate Transformation <https://doi.org/10.1002/kpm.1637>

⁴⁰The Roadmap: A guide to reaching 30,000 megawatts and 60 million connections https://www.usaid.gov/sites/default/files/documents/1860/USAID_PA_Roadmap_April_2016_TAG_508opt.pdf

policies⁴¹. in countries in which DIV operates. This shared learning may help accelerate enterprise driven development and contribute to the Journey to Self-Reliance⁴².

Assess the landscape for actors and systems that could help to strengthen consumer finance options for Bottom of the Pyramid (BOP) consumers. Of the 10 grantees selling products, all but one expressed challenges with offering consumer financing options for their customers. Four of the 10 grantees selling products offer OGS products and all four noted challenges related to financing due to the capital required to maintain stock. One of the primary means of providing consumer finance for OGS⁴³ products is via PAYGo and yet, competition for limited debt capital restricts companies from reaching exponential growth⁴⁴. If DIV continues to fund OGS initiatives, it is recommended that DIV further strengthen its collaboration with other USAID programs working in this sector, such as Power Africa, to better understand the role of PAYGo systems. As noted, PAYGo has potential to be productive beyond lighting,⁴⁵ and documenting learnings that may inform this trend is critical. DIV grantees who have experienced success with PAYGo models (i.e., BrightLife, d.light) may have tacit knowledge that may benefit DIV's grantees globally. Agriworks Uganda initial use of a traditional financing model with their mobile irrigation system for Ugandan farmers was not scalable within the target market. DIV may consider conducting a case study to better understand the nuances of the pilot. PAYGo has been identified as a potential driver of financial inclusion and has been seen in the market for solar home systems (SHS). However, there is more research to be done to see how well it may work with Productive Use of Energy (PUE) such as Agriworks Uganda' mobile irrigation system. Lessons from W2E/ Green Heat's failed attempt to offer PAYGo systems for biogas systems could also hold valuable learnings. Other grantees offered their products at a subsidy (e.g., SPOUTS, BURN, and BVV/ WfP/ ATC) to address issues of affordability. These grantees offer products (i.e., water filtration, improved cookstoves, and improved toilets,) that are not affordable without subsidies or consumer financing.

Collaborate with other USAID projects and/or entities working to expand resource mobilization options for grantees. 9 of the 11 grantees expressed lack of financial capital as a major challenge constraining their efforts to scale. Grantees also noted that DIV may be able to offer additional support to connect grantees to new resource providers within USAID's network. It is recommended that DIV consider how it may offer periodic updates or technical support for grantees needing to learn of new strategies and/or connect with potential resource partners. DIV could also consider providing grantee-specific TA in the form of advising and/or facilitating connections with partners to help mobilize resources.

Increase engagement with grantees to strengthen grant management. It is recommended that DIV explore ways that it can offer increased engagement to grantees that identify gaps. The study revealed that most grantees were satisfied with the level of DIV support, however other grantees noted that targeted engagement with DIV could be helpful. Ideally, the engagement would be unobtrusive and structured such that grantees see the efforts as value-added. One approach would be to ask grantees to

⁴¹ Hall, A. (2008). Embedding research in society: Development assistance options for supporting agricultural innovation in a global knowledge economy

⁴² USAID (2020). The journey to self-reliance. <https://www.usaid.gov/selfreliance>

⁴³ MTR (2020). 2020 Market trends report: Key highlights. A gap exists in financing for the off-grid solar (OGS) sector globally, with an additional US 6.6-11 billion needed to ensure universal access for the millions who use OGS as the main source of electricity

⁴⁴ Lighting Global 2018 (2018). Off-grid solar market trends report 2018 https://www.lightingglobal.org/wp-content/uploads/2018/02/2018_Off_Grid_Solar_Market_Trends_Report_Summary.pdf

⁴⁵ GOGLA 2020 (2020). Off-grid solar market trends report 2020: March 2020 <https://www.gogla.org/resources/2020-off-grid-solar-market-trends-report>

self-assess and identify the level of support that the organization anticipates needing from DIV, both at grant award and at periodic intervals throughout the implementation.

Continue to offer technical assistance to grantees. Over the last 4 years, DIV has continually expanded and refined its venture assistance offerings, but it is not broadly known among DIV grantees (particularly among alumni grantees). For organizations that anticipate needing technical assistance to address key skills or capacity gaps, DIV should continue to offer such support by working with the organization to procure service providers with deep expertise in the areas identified by the grantee. In cases where the grantee welcomes external consultants to conduct a third-party assessment to identify areas of improvement, it is anticipated that initial rapport building would be needed to ensure that the grantee feels at ease with revealing gaps to DIV. As noted above, founders/team leads of innovative enterprises may have different skill sets, and therefore may need varying levels of support. DIV's approach of providing customized venture assistance support is consistent with the learnings from the grantee interviews. Potential suggested areas for increased support, as identified from lessons learned during this report, include anti-fraud/corruption training for those grantees who see those areas as a threat to implementation, and market expansion analysis to understand country/sector opportunities and risks for new market entry.

One grantee, W2E, noted the TA role it played in helping the innovation grow past the life of the grant by helping Green Heat grow from a small idea to a larger enterprise by providing access to international actors. W2E functioned as an intermediary helping Green Heat learn how to tell its story, build robust accounting and Human Resource systems, and leverage international connections. W2E's feedback for DIV would be to find ways to remove the middleman, as the involvement of international partners such as W2E is expensive whereas a DIV ground team providing mentorship and support similar to what W2E provided could be more cost effective.

SPOUTS indicated a preference for both funding and TA when given the option. In general SPOUTS found DIV to be very helpful during the beginning of the grant, connecting it with investors, partners, and the public sector, which helped it to scale operations on the ground, and served as a springboard for ideas.