Completion Report

Green, Scalable, Affordable and Portable Power to off grid families in Tanzania, Tanzania, NCF8,

NCF-C8-0203

Grantee: Peoples Portable Power ApS Denmark

Local Partner(s): Kakute Projects, PPP TZ, PG Consulting

Other Partner(s): None

Project start date: *19/08/2019*

Project end date*: 31/05/2022*

4th September 2023

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1. EXECUTIVE SUMMARY

Peoples Portable Power (hereafter referred to as PPP) has developed a portable, green energy solution for families and small businesses living without public electricity supply. We partner up with companies and organizations who install Solar PV-installations and micro-grids in off-grid, rural villages. Our solution makes it possible to expand the micro-grid to families and homes further away without the use of expensive grid-extensions. Instead of using expensive grid extensions, we use high-capacity, online controllable, GPS-enabled, portable batteries and an attractive business model. The overall project goal was to demonstrate large-scale viability of our business concept through deployment of 1,000 units in Tanzania, paving the way for our market scale-up. Furthermore, we aimed to:

- Reduce CO_2/black carbon emissions from black energy sources used today
- Stimulate local Tanzanian entrepreneurship and innovation by bringing green and affordable electricity to rural Tanzania
- Analyze risk associated with the used leasing model (Pay-As-You-Go) and how to address this.

Our solution enables significant energy cost savings for the customers, and new revenue streams for the important collaborating Tanzanian distribution and micro-grid operation ventures. The solution offers a sound business concept, which will benefit locals, while also improving the climate.

This has been tested and evaluated in this NCF project.

Even if we have not fulfilled all the goals for our NCF project due to many challenges etc. COVID-19, supply chain difficulties, fire in our warehouse, fraud and global inflation and extreme food prices, we are still convinced that we, with more normal market conditions and with the right competencies and organizational setup in Africa, can become a good business with a big impact on the living conditions of families in Africa who do not have access to electricity and are therefore limited in terms of access to education, health and income from own small businesses. We will have to work hard on getting awareness towards PPP and this will mostly be done through engagement with NGO's where we in the beginning finance the equipment either by ourselves, our investors or by donors. Our original budgets on income and expenses, with the right staffing and organization are still valid. We will of course need new investments, but we can now with our built up knowledge and partners in Tanzania over time make a sustainable business with great impact.

2. ACHIEVEMENT OF RESULTS

2.1 Achievement of outcomes and outputs

Indicator	Target	Progress	Achieved	Explanation
1.1.1 Number of jobs created	50	51	Yes	Some of the jobs have been terminated again, but in total we have had more than 50 jobs created over the project time At the moment we have 33 agents working part-time, 6 employees at Kakute, and 2 employees at PPP TZ. We have right now knowledge of 11 entrepreneurs creating income with the PPP solution. In total 51 jobs.
1.1.2 Black carbon reduced, kg	5000	1835	Partly	We have not reached our target because we have not yet reached our sales target.
1.1.3 Number of people with improved income-generating opportunities	25	51	Yes	At the moment we have 33 agents working part-time, 6 employees at Kakute, and 2 employees at PPP TZ. 11 Entrepreneurs is generating income from the batteries, by hair-cutting, restaurants with TV, fixing and charging mobile phones, pop-corn machines, security lights etc.
1.1.4 Beneficiaries, persons	5000	2569	Partly	We have not reached our target because we have not yet reached our sales target, mainly because of Corona. Each battery sold to a family of on average 7 people. See table on Key NCF Indicators
1.1.5 CO2 Savings, tons	184	135	Partly	We have not reached our target because we have not yet reached our sales target, mainly because of Corona. See also GGG sheet
1.1.1.1 Number of batteries delivered to Tanzania	1000	1000	Yes	Import from China don i milestone 1

1.1.2.1 Number of battery units sold	1000	367	Partly	We have delivered more batteries primarily to clients that have earlier on shown interest in our solution through market campaigns. Many of the new clients have not yet been able to pay for the battery, but their feed-back is valuable and we make an impact by doing so. We had a fire in our warehouse and lost a 1/3 of our stock. Due to Corona we have not been able to achieve our target of a 1000 batteries sold.
1.1.3.1 Number of local entrepreneurs trained	25	25	Yes	Kakute has trained 25 entrepreneurs
1.1.3.2 Number of local authorities and NGO's knowing about the battery concept	5	28	Yes	List of 13 promising NGOs made by Kakute have been visited together with visiting 15 ward leaders in villages
1.2.1 Number of business concepts tested	1	1	yes	MoU with the retail company Nordic Computers in Dar.
1.2.1.1 Number of partnerships with financing partners	1	1	Yes	We have made a MoU with one Micro-finance company DCK Microfinance in Arusha
1.2.1.2 Number of partnerships with micro-grid companies	2	1	Partly	We have identified several companies to partner up with and have held several meetings, but the crisis has only allowed us to sign an MoU with PowerGen in Arusha.
1.2.1.3 Number of partnerships with NGOs for scaling up business	1	1	Yes	Meeting with 2 NGOs with purpose of signing MoU - List of 13 promising NGOs made by Kakute. Signed one MoU with KenyaHelp helping us setting up a trial on the Tanzanian side of the border at lake Victoria
1.2.1.4 Number of partnerships with recycling partners	1	1	Yes	We have made a MoU with eWaste organization WEEE Center in Nairobi who operates in Kenya and Tanzania, but not yet started collection of used batteries, because no batteries have reached

				end of life.
1.2.2.1 Certification by Global Lighting	1	0	No	We will wait with this until we have a final solution. Until then we use the CE certificate. The reason for this is that we want to make a new version of or product based on the feedback from our customers gathered by Arusha Technical College. (ATC)
1.2.2.2 Certification by TABS Tanzania Bureau of Standards	1	0	No	We will wait with this until we have a final solution. Until then we use the CE certificate. The reason for this is that we want to make a new version of or product based on the feedback from our customers gathered by Arusha Technical College. (ATC)
1.2.3.1 Number of payment models tested	3	3	yes	We have so far been testing 1) B2C by cash sales and instalment plans; 2) B2B through our distributing partner I Dar Es Salaam. We have tested B2G through a Kenyan NGO helping us on the Tanzania side of the border at lake Victoria.
1.2.3.2 Number of financing solutions tested during project	2	3	Yes	We have tested financing through a micro-finance company in Arusha and we have financed the solution by means of donors and our own financing.

2.2 Deviations from the planned outputs and activities

Se above paragraph 2.1, where the deviations from the planned outputs and activities are explained.

2.3 Achievement of NCF indicators

NCF core indicator	*Results (quantitative)*			*Clarifications/Means of verification*
Number of beneficiaries reached (average number of family members)	women		1284	Number of distributed batteries **(367)** x family members: average number of family members: **7** (source: https://www.worldometers.info/demographics/tanzania-demographics/)
	men		1285	
	total		2569	
Number of people with increased resilience to climate change	women		1284	Number of distributed batteries **(367)** x family members: average number of family members: **7** (source: https://www.worldometers.info/demographics/tanzania-demographics/ This is hard to determine and we have used a survey conducted by Arusha Technical College (ATC) they did for us among our customers. (See Annex 3)
	men		1285	
	total		2569	
Number of people with improved livelihoods	women		1284	Number of distributed batteries **(367)** x family members: average number of family members: **7** (source: https://www.worldometers.info/demographics/ta
	men		1285	
	total		2569	
New decent jobs created	full-time	women	2	In total 51 people with decent jobs created until now. The full-time jobs are primarily within the partner group where part-time jobs primarily are agents and entrepreneurs.
		men	6	
		total	**8**	
	part-time	women	10	
		men	33	
		total	**43**	
	seasonal	women		
		men		
		total		

3. CLIMATE CHANGE

We have monitored the climate change impact from our IT system which is aligned with the calculations in the GHG calculation sheet developed by NCF:

Payments until now	Number of Leads	Number of Contracts	Number of Agents
15,076 USD	196	367	33
Expected Monthly Revenue	**Number of Batteries**	**Power delivered**	**CO2 reduced (Kerosene)**
1,850	655	3,832 kWh	135 t
Saved Kerosene	**Saved Black Carbon**	**Saved Disposable Batteries**	**Saved Candle Lights**
56,250 L	1,835 kg	37,556	28,742

Sep Target	MTD	DRR	Sales Yesterday	BOM
45	0	11	0	45

Contracts	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Target	25	25	25	25	40	60	40	40	45	45	40	40
Realised	18	21	19	14	20	0	0	0	0	0	0	0

Out of at total of 655 batteries in Tanzania 367 batteries are at customers. The rest 288 batteries are at our warehouse. At the end of the project we had 196 lead from customer that also what to get a battery, but at that time did not have the funds to do so.

One can see calculations on CO2 emission saved as well as black carbon, kerosene etc. These calculations are done from the estimated savings on Kerosene, candle-lights and batteries used in torches. The figures on CO2 emission are recalculated/reviewed on the basis on the calculation in the Excel-sheet which NCF developed for this purpose.

The basis for this where kerosene for lighting is the baseline scenario, the small scale CDM methodology AMS-III.AR, 'Substituting fossil fuel based lighting with LED/CFL lighting systems' is used to calculate emission reductions when switching from kerosene based lighting. The methodology is based on a default lamp emission factor of 0.092tCO2 per lamp per year. This figure is based on a fuel use rate of 0.03 liters/hour, a lamp utilization rate of 3.5 hours/day for 365 days/year and a fuel emission factor of 2.4kgCO2/liter.

The proposed system consists of 3 lights, it is assumed that it effectively replaces 2 kerosene lamps per household resulting in emission reductions of 0.184tCO2 per household per year.

For batteries it is assumed from interviews that a family save two batteries a week and approx. 6 candlelight a month.

4. DEVELOPMENT IMPACTS AND CROSS-CUTTING ISSUES

367 batteries are sold to customers. They have delivered 3835 kWh electricity from solar PV's and have saved the environment for 135 t CO2, 1835 kg black carbon, 56250 l Kerosene, plus several thousands of disposable batteries and candle lights.

Our customers have been able to use electricity, for setting up small business (phone charging, hair cutting, popcorn shops, kiosks open during night time, restaurants, small movie theater etc.), do homework and accounting in the evenings, scare wild animals away from crops and farming animals.

All in all access to Pay-As-You-Go electricity saves money, create opportunities for a better livelihood and health, save the environment from CO2, black carbon and eWaste from disposal batteries.

5. ASSESSMENT OF THE RESULTS AND IMPACTS OF THE PROJECT

5.1 Relevance

It is still very important to find solutions on how to give rural families access to power so the objective for the project is still very relevant.

Grid power is available to 37.7% connected homes. Solar PV technology electrifies 30.4 percent of residences [April 2020 survey by the Rural Energy Agency, "REA"].

The Pay-As-You-Go solution in this project will be one of many different approaches and the most important issue to solve is how to partner up with financial institutes so that the risk on this loan-based business model can be shared among different partners, organizations and NGO's.

5.2 Effectiveness and efficiency

We have implemented the project during 2020 – 2022 under the worldwide corona pandemic and we were highly impacted by this – this mainly had the consequence that we were not able to setup an efficient sales organization, and the sales organization that we did manage to setup was not able to go out and meet potential costumers due to corona restriction for a large part of the project duration. We saw that when the Nordic partner was not able to follow the project on site it was not easy to monitor and guide our local partners.

Overall, we still have made the project implementation as efficient as possible under these difficult circumstances and have faced and tried to overcome the challenges we faced (See also paragraph 8):

5.3 Impact

Economic: Additional income opportunities have been provided for hundreds of people. Tens of new green jobs have been created directly and the project is expected to indirectly

contribute to the creation of thousands of jobs more. Permanent employment of approx. 50 entrepreneurs have been established.

Gender: Women are engaged in both the sales, marketing and use of the batteries, allowing livelihoods improvements and empowerment in line with gender equality. I our local partners 3 of 10 employees are woman, and among entrepreneurs approx. 30% of the users of batteries are women.

Institutional: The project has supported the government in its efforts to expand power into rural areas in line with National Strategy for Growth and Reduction of Poverty Plan. The Ministry of Natural Resources and Tourism has expressed its strong support for the project, and there has been ongoing, supportive dialogue with the local authorities on the local level.

We have tried to overcome the risk of making market disturbance by not donate our equipment, but make people pay the actual and relevant price for the use of our battery solution.

5.4 Sustainability

The project has paved the way for establishing a local sales organization that will continue to sell and distribute batteries into rural areas of Tanzania. The main challenge here is to supply the local company with new stock because the prices on solar panels and battery equipment have increased because of the global need for goods after the Corona pandemic and now also because of rising prices on fuel and transportation due to the war in Ukraine.

The way forward for PPP in Tanzania will be to engage with a larger NGO like World Vision for them to operate on the very local level. Then PP Power can concentrate on bringing the best technology and service to the market. The right way would be that PP Power donate an amount of PPP Solutions to the NGO's, getting the PPP Solution introduced in the NGOs and giving the NGOs the needed time to mobilize funding for payment through their donor networks.

We will be able to do so by getting an improved version of our solution introduced to the market as a result of the customer and technical feedback obtained in this project. This we have already prepared for and instead of making a full batch of one container with 1000 new units we will be testing with smaller batches first.

PP Power Denmark have not yet attracted new capital, but this project will make it easier for us to do so due to the pilots and experience this has provided us with. There is still a huge demand for product that can give access to electricity for rural families and small business.

5.5 Coherence

Where many other project initiatives and local Tanzanian policies concentrate on developing and implementing long-term energy infrastructures in rural areas even before an actual energy consumption need/culture is established, this project focused on the step before the long-term plans and policies can be realized. The project focused on providing easy and affordable access to electricity for vulnerable people – this in order to create the need and demand for more fixed, long-term energy infrastructures, which subsequently can then be implemented with a higher potential of success both in terms of use and financials. In this way, the project supports local energy policies by stimulating the user need/demand for the establishment of longer-term energy infrastructures.

The project also experienced a high degree of coherence in terms of the interlinkages between the project's overall purpose and the supporting knowledge transfer facilitation and training activities performed by our project partner Kakute, who are very experienced in the field of facilitating adoption of new energy technologies in local settings/contexts similar to those of this project. The Kakute partnership in this project – and the experience this organization has in the field has provided valuable extra experience from Kakutes portfolio of other energy technology projects in Tanzania. Furthermore, Kakute has brought valuable knowledge and coordination efforts to the project in terms of providing complementary support to local initiatives/policies.

6. INNOVATION

All partners behind the project agree that this was a highly innovative project. The project has documented that the PPP solution can improve quality of life to vulnerable people with no little access to electricity. The portability (light weight and ability to bring the battery with you) of the PPP solution showed to be very innovative for the target group offering both access to electricity and ability to be "on the move" at the same time. The project proved that this powerful combination can help new business opportunities develop and grow – the example of the mobile barber/hair-cutter who managed to increase revenues by being able to use an electric trimmer with the PPP solution and thus visit more customers each day act as a specific example of the innovative nature of the project.

7. POTENTIAL FOR SCALING UP AND FOLLOW-UP INVESTMENTS

We will have to work hard on getting awareness towards PPP to attract investors and donors the way forward.

This will mostly be done through engagement with NGO's where we in the beginning finance the equipment either by ourselves, our investors or by donors.

Our original scale-up budgets on income and expenses, with the right staffing and organization are still valid. We will of cause need new investments, but we can now with our built up knowledge and partners in Tanzania over time make a sustainable business with great impact.

Until we get new investors onboard, we will be able to scale up a tenth of our original strategy plan.

We are in dialogs with different international actors on how to support our business and it is our expectation that when the markets normalize after COVID-19, Ukraine War, Inflation, shortages on freight and supply, we will be able to find a solution to be able to scale up our business.

8. RISKS

Project risk description	Impact on project	Mitigating measures and responsibility
Covid-19	Delay on sales connected deliveries. People were under the pandemic short of income due to missing income from etc. tourism	Things are now getting better, and PPP DK will hopefully be able to visit TZ again soon to help coordinate marketing
Fire in warehouse	Approx half of our stock was distinguished, and we did not yet have our insurance in place.	We now have Insurance in place and will start producing small batches when we get out of stock during 2022. Our new warehouse is an iron shipping container with separating walls to secure batteries in case of fire.
Damaged batteries	Many of the remaining batteries have been damaged by the heat from the fire and needs to be carefully inspected and re-charged. This have been slowing down delivery of batteries to new potential clients	Some of the batteries that survived the fire have been sent to PPP DK for inspection. Conclusions from this have led to making a new procedure for inspection and charging of batteries before handing them over to clients. Remaining batteries in Tanzania are stored in shipping containers with iron sheets to prevent fire from spreading
Bureaucratic burden on setting up bank accounts and mobile wallets IT integration	We have not been able to setup the automatic response to defaulting payments through mobile wallets and this have made credit sales very difficult.	We will engage and partner up with a Tanzanian ITC company (solaris off-grid) to help us fixing this. They have done

	We thought this was an easy task because we did so in Kenya with the same companies. But bureaucracy was very different in Tanzania	so for other companies
Bad communication and partner distrust	Because travel have been restricted, we have had a lot of misunderstanding among the partners	Weekly online meetings with PPP TZ and the Steering Committee (PG, PPP TZ and Kakute) by PPP DK has made communication better, but PPP DK have to have presence in TZ to make communication and trust better
War in Ukraine	Prices are going up making new stock more expensive and making local people more careful to what they buy and invest in. Electricity is not the primary need when in short for income and food prices goes up	We will try to get small batches of our new version into the market and to deliver the batteries through NGOs at a discounted price or for free to develop trust and confidence. Hopefully in the longer run prices will stabilize and decrease as has been the trend for batteries and solar panels for a long period before corona, the global logistic crises and the war in Ukraine.
Internal fraud	Lack of trust and more time spend from PPP DK on following up on new procedures	Developed new procedures by PPP DK and hire trusted personnel recommended by trusted organizations like ATC.

9. MONITORING AND EVALUATION

Besides the grantee's and NCF's monitoring efforts in the project, specific project activities have been monitored by associate project partners. As an example, we have chosen to perform technical stress testing of the PPP batteries through a local university (Arusha Technical College - ATC) with access to the necessary technical lab facilities. On the customer side, ATC has on our behalf asked end users about their experiences and collected as much information/knowledge from them as possible through semi-structured interviews about their experiences, ideas for improvement etc. These monitoring/evaluation activities, together with NCF's monitoring of the project has provided the necessary documentation to provide a valid overall evaluation of the project.

10. LESSONS LEARNT

Covid19 was a major thing for the project not only in terms of the Danish team not being able to visit the project country since March 2020, a close to two years break when momentum started showing, but also for the local partners in terms of financing and conducting simple activities like meetings, traveling and other logistics.

We should have been doing a better planning of how best to go to market than we did, we were too much driven by individual beliefs, a bit of stubbornness and too little by facts. We would probably have been much better off donating the first 500 units to the right organizations / markets, letting them build awareness and providing data and then make qualified decisions on how best to go about the remaining 500 units. Going straight to selling without having built sufficient local credibility about the solution and the company behind was probably a mistake and resulted in the very slow moving of the sale.

11. OUTREACH

- Fairs and local trade shows by PPP TZ
- Local demonstrations by PPP TZ and KAKUTE
- Engaging local entrepreneurs and village leaders
- www.pp-power.com covering our journey during the project
- Radio spots to attract customers
- Engaged with Arusha Technical College to be able to maintain and repair batteries as well as train local entrepreneurs in installing batteries at customers
- WhatsApp and Facebook - www.facebook.com/PoaPortablePowerTanzania

12. FINANCIAL SUMMARY

Table 1. Project financing per partner

	Financing, EUR					
Expenditures, EUR	NCF	PP Power	KAKUTE	PG Consulting	Revenues from the project	Total
PP Power	230,057	175,438			0	405,494
KAKUTE	71,440		32,083		0	103,523
PG Consulting	37,035			9,556	0	46,591
Total	**338,532**	**175,438**	**32,083**	**9,556**	**0**	**555,608**

13. CONCLUSIONS AND RECOMMENDATIONS

We should have stuck longer to the strategies we believed in the most instead of shifting or adjusting strategies. Things take time to work and mature and we might have been doing the right things but didn't give it sufficient time to materialize. Other conclusions:

- We were too quick to launch our first product in the market – the 1000 units. We needed more time to test and should have continued with smaller batches even though this was at higher unit cost
- Local presence from the Danish team is very important and was a success until Corona hit us
- We should have attracted stronger competences and capital within local sales and international supply.
- We should have offered a bigger share to larger institutional investors earlier in the Danish company. Our Danish organization has been too weak and small, but we did not have the funds to do otherwise
- We should not have entered Tanzania as a second market before the technical setup was fully tested in our first market in Kenya
- Partnering up with strong value chain companies (distribution and micro-finance) has been too weak
- We have not been able to setup a complete and competent sales organization in Tanzania
- We should have got local help on setting up administrative and ITC-tasks (bank, mobile payment, credit due diligence, etc.) up in Tanzania even that we had positive experience from Kenya and not started in Tanzania until this was finalized.

Lastly the Ukrainian war have made component, food and freight prices go up making new stock significantly more expensive and making local people more careful of what they buy and invest in. Electricity is not the primary need when in short for income and food prices goes up.

Annex 1 Project completion fact sheet

Project Name:	**Green, Scalable, Affordable and Portable Power to off grid families in Tanzania**		
Project no.	NCF-C8-0203		
Country:	Tanzania	**Financing:**	
		EUR	**%**
Nordic Partner:	PP Power ApS	175,438	31.58
Local Partner:	Kakute Ltd	32,083	5.77
Local partner:	PG Consulting Ltd	9,556	1.72
	NCF grant disbursed	338,532	60.93
	Total	**555,608**	**100.00**
Classification:	Combination		
Project cycle:	Project start date: 19/08/2019 Original closing date: 28/02/2022 Actual closing date: 31/05/2022		
Short project description:	Peoples Portable Power is a portable, green energy solution for families and small businesses living without public electricity supply. We partner up with companies and organizations who install Solar PV-installations and micro-grids in off-grid, rural villages. Th solution makes it possible to expand the micro-grid to families and homes further away without the use of expensive grid-extensions.		

Project performance:	**Expected Outcomes and Outputs**	**Achieved**	**End-of-project status**
	1000 batteries manufactured and delivered to Tanzania	Yes	367 batteries sold
	50 jobs created	Yes	Complete
	25 local entrepreneurs trained	Yes	Complete
	5 local authorities and NGO's knowing about the battery concept	Yes	Complete
	1 business concepts tested	Yes	Complete
	4 partners have been found	Yes	Complete
	3 payment models tested	Yes	Complete
	3 financing solutions tested during project	Yes	Complete

Climate change outcomes and impacts:	Out of a total of 655 batteries 367 batteries are at customers. They have delivered 3835 kWh form solar PV's and have saved the environment for 135 t CO_2 , 1835 kg black carbon, 56250 l Kerosene, plus several thousands of disposable batteries and candle lights
Development outcomes and impacts:	Our customers have been able to use electricity, for setting up small business (phone charging, hair cutting, popcorn shops, kiosks open during night time, restaurants, small movie theater etc.), do homework and accounting in the evenings, scare wild animals away from crops and farming animals.

NCF core indicators

NCF core indicator	*Results (quantitative)*			*Clarifications/Means of verification*
Number of beneficiaries reached	women		1284	Number of distributed batteries **(367)** x family members: average number of family members: **7** https://www.worldometers.info/demographics/tanzan
	men		1285	
	total		2569	
Number of people with increased resilience to climate change	women		1284	The beneficiary families realized increased resilience to climate change through decreased consumption of kerosene and increased access to electricity
	men		1285	
	total		2569	
No. of people with Improved livelihoods	women		1284	The beneficiary families enjoy improved livelihoods because of monthly fuel savings by switching to Pay-As-You-Go electricity, and being able to create income
	men		1285	
	total		2569	
New decent jobs	full-time	women	2	In total 51 people with decent jobs created

	created		men	6	until now. The full-time jobs are primarily within the partner group where part-time jobs primarily are agents and entrepreneurs
			total	**8**	
		part-time	women	10	
			men	33	
			total	**43**	
		seasonal	women	0	
			men	0	
			total	0	

Annex 2 Pictures

All pictures by PP Power ApS Denmark ©

Kick-off meeting in Tanzania, Aug. 19th, 2019

Visiting villages with potential customers, Sep., 2019

Testing at Kakute office, Sep., 2019

Planning of sales and marketing strategies, Oct. , 2019

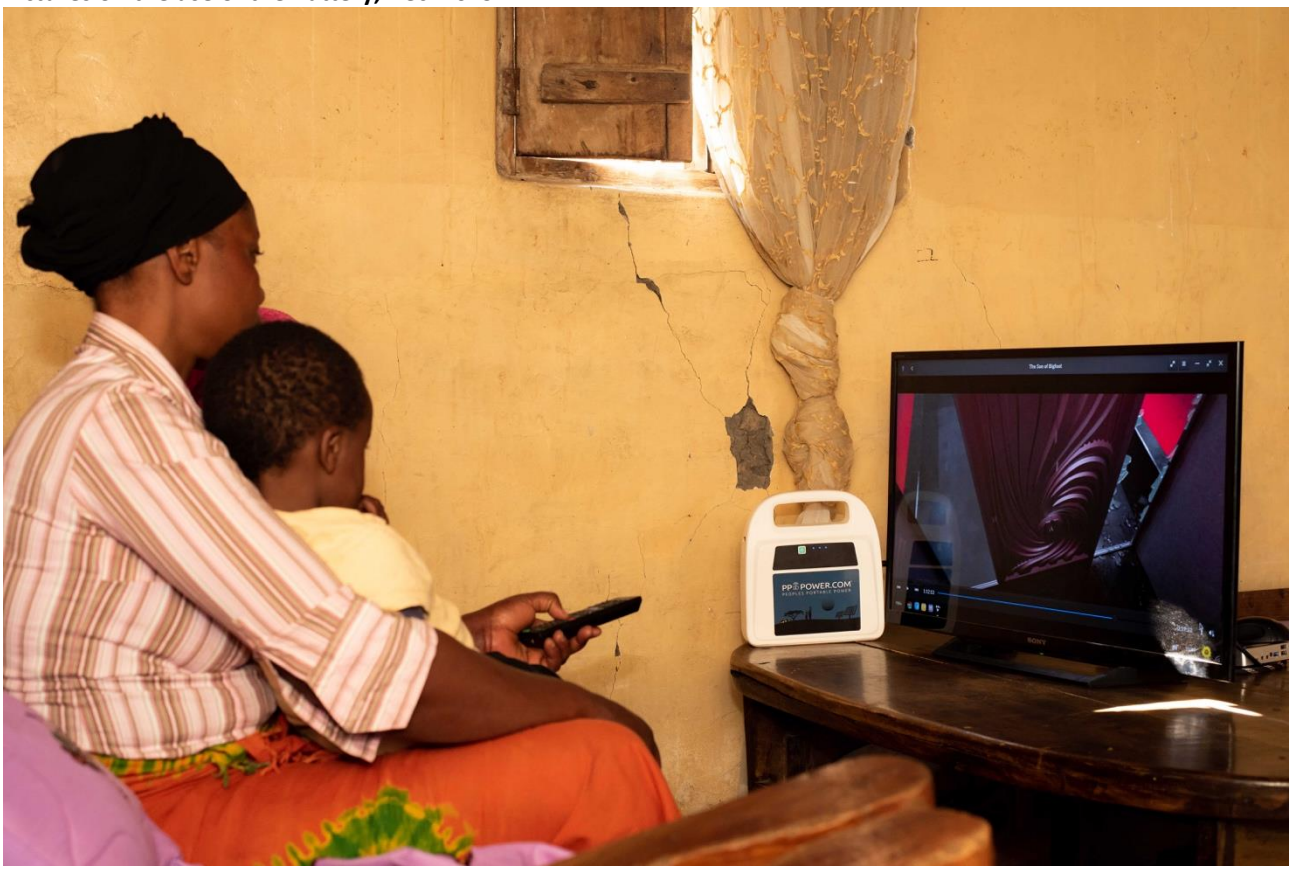
Battery software updates within the technical committee, Oct., 2019

Visiting production in China, Nov., 2019

Inspection and software upload on batteries, Nov., 2019

Packing of 1,000 batteries, Nov., 2019

Pictures on the use of the Battery, Dec. 2019



Pictures on the use of the Battery, Dec. 2019

Pictures on the use of the Battery, Jan. 2019

The arrival of 1,000 batteries in Arusha, Tanzania - PP Power TZ and DK team. Jan. 2020

Milestone 2 kick-off meeting at Kakute office. Jan 2020

Product demonstration at local market. Feb 2020

Training at Kakute office with new agents. February 2020

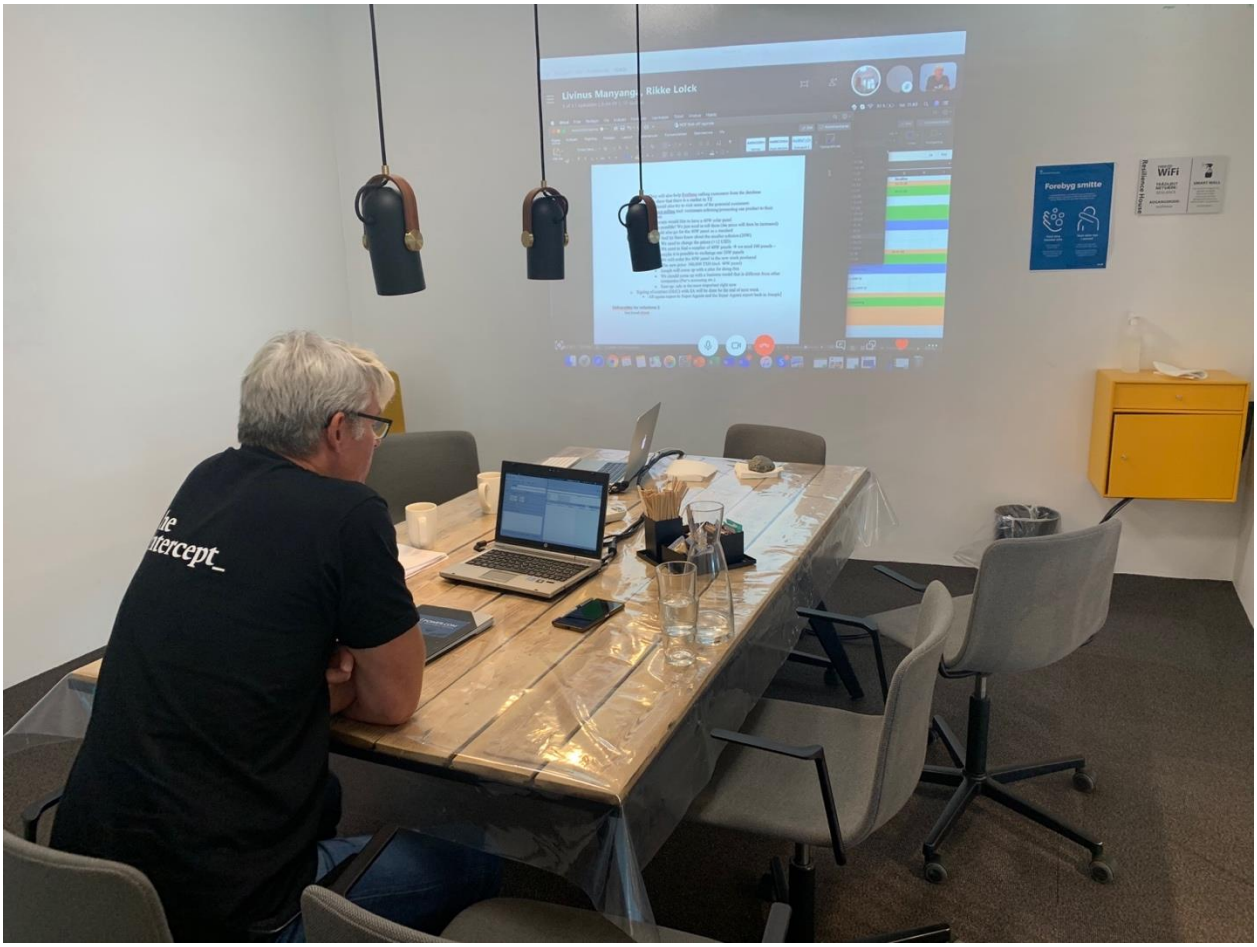
Promotion material arrived. February 2020

PP Power team visiting customers in villages near Arusha. February 2020

Entrepreneur training July, 2020

Entrepreneur training July, 2020

Focus Group discussions with Ward leaders, July 2020



June, 2020, Milestone 3 kick-off meeting (first time as an online meeting due to Covid-19).

Team PP Power and Kakute ready for marketing tour in July/August 2020.

Team PP Power getting ready for another day at the marketing tour. August 2020

The battery is always popular among grown-ups and kids. August 2020

Team PP Power showing interested people how the battery can be used. Sep 2020

Showroom in our new Dar partners shop. June 2021

Setting up new installations, Spring 2022

Annex 3 Other supplementary documentation

We have made reports/documents on the following:

1. Agent and sales manual
2. Charging and inspection manual
3. Lessons learned over the past 5 years
4. Field reports on making awareness towards villages leaders and NGOs
5. Survey among clients and technical issues, ATC Arusha
6. Analysis of usage from our IT system
7. Findings from distribution through an NGO
8. Report on business sales and micro finance models
9. User guide PP Power IT system
10. Blueprints on the Hardware and Software (confident)
11. SW upload instruction manual
12. Battery operation manual and user guide
13. FAQ for trainers and agents
14. Business Plan for Tanzania
15. Pricelists, marketing material etc.

Annex 4 ***Impact story***

The NCF project has showed us that the use of portable battery solutions can deeply impact our customers way of life.

Not only in the shift from Kerosene lamps to solar based electricity and thereby make the indoor climate much healthier.

But the battery – because of its capacity and portability – also make it possible for our customers to make small a business or to make an existing business more efficient by have access to electricity on the go and/or during evening and night times.

We have seen use of the battery in hair-cutting business, restaurants, popcorn making, small scale mobile phone repair shops, mobile phone charging, out-door shops for selling groceries and vegetables, light fishing during night-time, etc.

So, all in all a portable solution with solar driven electricity can be beneficial for rural families without or poor access to the electricity grid.