



Project Jua

Phase II



August 2019

OVO
FOUNDATION

ENERGY4IMPACT
ACCELERATING ACCESS TO ENERGY

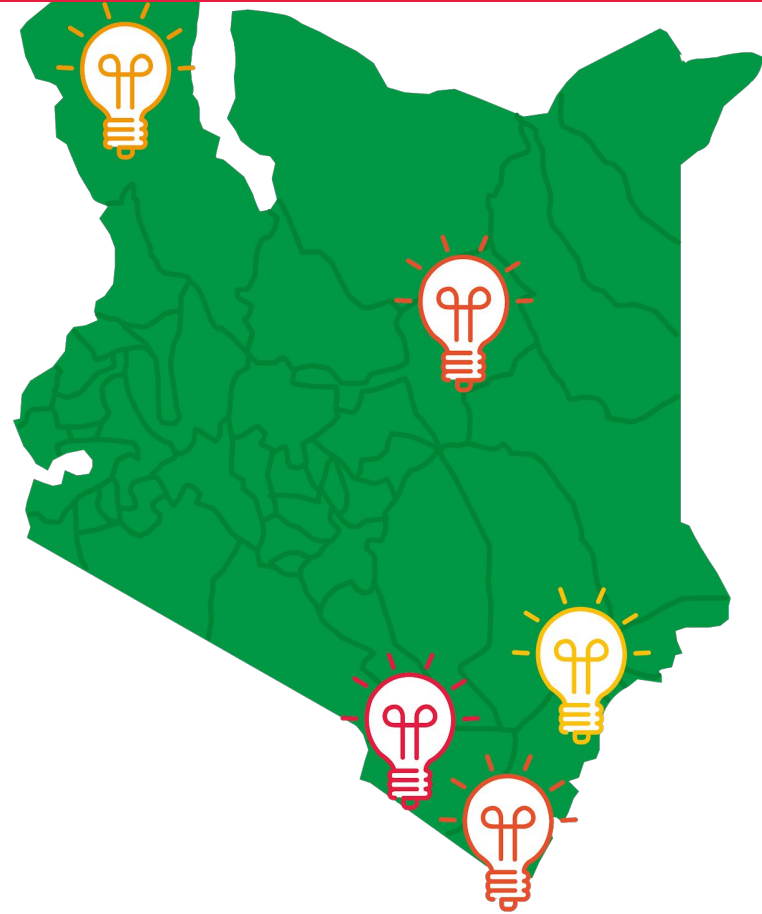
Introduction to Project Jua



- 'Jua' means sunshine in Swahili and so 'Project Jua' is the perfect name for a project that brings **solar power to rural schools and health clinics in the underserved counties of Kenya**. The project is funded by [OVO Foundation](#) and uses [Energy4Impact](#) as its delivery partner
- OVO Foundation has invested **£2m in Project Jua**. This investment has been split into two phases: during the pilot phase, we electrified 20 schools and health clinics. For Phase II, OVO Foundation has made a £1.75m investment to **electrify 250 schools and 50 health clinics**. This is estimated to benefit **more than 300,000 people over a period of three years**
- OVO Foundation's aim is to improve young people's education and health by increasing access to affordable and reliable energy in sub-Saharan Africa. We see **energy as an enabler** and believe it's the most basic and most essential resource for development; without it, not much else is possible. In this respect, we share the vision of OVO Energy – **to power human progress with clean affordable energy for everyone**
- The power will be used for things such as:
 - **Lighting classrooms** to enable children to study longer
 - **Lighting in health clinics** to ensure health professionals are able to work safely at night
 - **Powering educational equipment** such as tablets and computers to help to bridge the digital divide and harness the benefits of ICT for rural education and **powering lifesaving health equipment** such as fridges (which help to store life-saving vaccines safely) and oxygen machines and incubators which can also save lives before and after childbirth

Scope

- Whilst the government has made good progress with energy access, almost half the population in Kenya doesn't have access to energy (electrification stands at just 56%)
- We are electrifying sites in the underserved counties of Kenya and have selected five locations to work in for Phase II: **Turkana** (where electrification rates are 2.4%); **Kilifi** (16.7%); **Taita-Taveta** (15%); **Kwale** (10.6%); and **Isiolo** (18.5%). We had previously targeted Kilifi and Turkana through the pilot phase
- We are working with sites that are currently off-grid, do not have access to reliable energy sources, do not have the funds to install solar and are least likely to be connected to the grid through the Kenya Off-Grid Solar Access Project (KOSAP) which is a Ministry of Energy project financed by the World Bank. We are working with the county government to ensure no duplication of work between Project Jua and KOSAP



Objectives and KPIs



- For the project, we are committed to looking beyond the number of installations to really understand the impact of energy on health and education outcomes. To do this, we are tracking the following KPIs:
 - **Increased availability of health and education services**, e.g. number of hours per day that school classes/health clinic services are available
 - **Increased range of health and education services available**, e.g. number of sterilisation / modern cooling devices in use in health clinics, number of schools holding evening classes, number of school computers and tablets in use
 - **Improved conditions for the staff of schools and health clinics**, e.g. number of staff in health clinic/school, turnover of staff, percentage of staff feeling motivated
 - **Reduced costs for health clinics and schools due to reduced reliance on fuel-powered generators**, e.g. number of clinics/schools that have reduced diesel consumption thanks to solar, tonnes of carbon emissions avoided, money saved by not using diesel
 - **Accurate system sizing**, i.e. for system utilisation to be around 60-80% of peak consumption. This KPI will be measured using the Remote Monitoring System (RMS).
 - **Days down for all systems**, i.e. to keep the weather unrelated days down to less than 10 days/system cumulatively across a calendar year. This KPI will be measured using the RMS.
 - **Carbon saving metric**, to replace unsustainable energy sources and demonstrate carbon saving

Supporting progress against SDGs



As well as having our own objectives and KPIs, we are also contributing to the following SDGs:

- **SDG 3 – Good health and wellbeing:** Through Project Jua, we're electrifying health clinics meaning that life-saving equipment can be powered and fridges containing vaccines can be kept running
- **SDG 4 – Quality education:** By electrifying schools in the hardest-to-reach parts of Kenya, the lights can be kept on at night. Children can study longer and educational equipment can be powered for the first time. Energy access also enables access to ICT, which helps to equalise the rural-urban divide and provide real opportunities in the rural context
- **SDG7 – Affordable and clean energy:** Project Jua is all about supporting positive health and education outcomes through energy access. We're working in some of the most remote parts of Kenya to bring power to people who've never had it before.

System size and technology



- For the pilot phase, we installed Remote Monitoring Systems (RMS) to better understand the energy needs of schools and health clinics. We have used these learnings to arrive at two system configurations for Phase II: **250 sites** (schools and small health clinics) will be provided with **1060W systems** and **50 sites** (larger health clinic) will be provided with **2385W systems**
- We are using **Lithium Ion batteries** (as opposed to Lead Acid batteries) to support the sustainability of the project given their longer lifetime
- Each site will also be fitted with a **RMS**. This means we can we can start to collect energy usage data across the 300+ sites and better understand the energy needs of schools and health clinics from the bottom up. This data will then be shared openly with others in the sector
- Furthermore, OVO Foundation is also addressing the lack of basic electrical infrastructure and has provided funding for local electricians to wire 700+ rooms so that each site can start using the power straight away

Our partners for the project include:



Operations and maintenance



Operations and maintenance of the systems will be performed by the installer and local electricians and includes:

- **Preventive maintenance:** For long-term sustainability of the Project, local electricians will provide periodic and preventative maintenance for 36 months after Project implementation, both at a basic operational and advanced technical level, as well as emergency calls to visit sites that need immediate service outside of the regularly scheduled maintenance visits. Activities will include, dusting PV panels, dusting batteries, cleaning batteries, replacing defunct cables, re-booting failed systems, etc.
- **Reactive maintenance/Component replacement:** Reactive maintenance visit is a non-scheduled call-out, in case an issue unrelated to the labour work would arise (for instance, a component with an internal faulty part).

Cost of the project



We know that energy access can have a meaningful impact on people's lives, including health and education outcomes and so the Phase II goes beyond demonstrating the impact. Instead, we've focused on delivering the project at the best possible price – without losing out on high-quality and sustainable technology – and have calculated an estimated Levelised Cost of Energy (LCOE) to benchmark cost-effectiveness.

The LCOE is a term which describes the cost of the power produced by solar over a period of time, typically the warranted life of the system. It takes into consideration the size of the system, the energy yield, plus all costs, including hardware, labour, delivery, commissioning, etc. There's not a huge amount of data out there on the LCOE for off-grid solar projects like ours, but anecdotally, the below figures are impressive and represent cost-effectiveness.

Levelised Cost of Energy		
System size (kWp)	1.06	2.385
Estimated Energy Yield (kWh/year)	2050	4100
Total cost of installed system (£) <i>(Including cost of RMS and ongoing O+M)</i>	3584	6020
Cost per watt (£)	3.381	2.524
Levelised cost of energy (£p/kWh) – 10 year	23.372p	19.074p

Get in touch!



If you're interested in hearing more about the project, please get in touch!

We'd love to hear from you if you're undertaking similar energy access projects or if you'd be interested in collaborating to improve health and education outcomes in sub-Saharan Africa.

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