Powering Healthcare Solutions Catalogue

The vast majority of healthcare facilities in low income countries – in particular in Sub-Saharan Africa and South Asia – do not have access to reliable electricity. Yet, they are expected to be at the frontline of fighting the COVID-19 pandemic.

The past five years have witnessed an ever-increasing range of technical solutions to tackle energy challenges in a more effective and efficient way. Nevertheless, most energy and healthcare providers are not aware of these opportunities.

Responding to the urgency of the COVID-19 crisis and meeting SDG7 and SDG3 require timely and strong collaboration between the energy and health sectors, drawing on their respective strengths and expertise.

This catalogue serves the purpose of connecting stakeholders from the energy and health sectors with solutions providers, to help meet the energy needs of healthcare facilities in response to COVID-19 and beyond. The solutions provided herein represent a sample of a larger group of solution providers who can contribute to addressing this challenge.

Sustainable Energy for All (SEforALL) and the World Bank/ESMAP do not promote any particular solution provider or technology and are not responsible for the quality and accuracy of the information contained in this catalogue.

The material in this work is subject to copyright. Because SEforALL and the World Bank encourage the dissemination of its knowledge, this work may be reproduced, in whole or in part, for noncommercial purposes if full attribution to this work is given. Any queries on rights and licenses, including subsidiary rights, should be addressed to World Bank Publications, World Bank Group, 1818 H Street NW, Washington, DC 20433, USA; fax: +1-202-522-2625; e-mail: pubrights@worldbank.org. We would appreciate receiving a copy of the publication that uses this publication for its source sent in care of the address above, or to esmap@worldbank.org.

All images remain the sole property of their source and may not be used for any purpose without written permission from the source.
<table>
<thead>
<tr>
<th>Solution Provider</th>
<th>Solutions Type</th>
<th>Current Needs</th>
<th>Technical Assistance</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABM Global Energy</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>d.light</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Differ Community Power</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Dulas</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Fenix Intl</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Ignite Medical Services</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>OffGridBox</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Plug The Sun Ltd</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Simusolar</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>SolarAid</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Solarkiosk Solutions GMBH</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Solartechno Europe BV</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Solergie NV</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Tellco Europe Switzerland</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>We Care Solar</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Zola Electric</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>
**Solution Type**
Plug and play power system, with and without appliances
Containerized, turn-key power system, with and without appliances

**Tech Specs**
Capacity: > 1,000 W

**Target Geographies**
Sub-Saharan Africa

**Lead Time (est.)**
> 5 weeks

**Partners**
CGWIC

**Solution Description**
ABM Global Energy is a leading British company in the off-grid products and solutions sector. We offer different applications in the off-grid space both for solar PV power and storage. Currently, we have developed a solar & storage containerised solution ideal for remote and isolated areas. This "mini solar PV farm (with storage) in a container" is a perfect replacement of diesel gensets.

**Current Needs**
Partnerships

**Contact Details**
Paul Smith
Technical Director
Email: paul@abmglobalenergy.co.uk
Website: www.abmglobalenergy.co.uk
**Solution Type**
Plug and play power system, with and without appliances

**Tech Specs**
Capacity: < 100 W

**Target Geographies**
Sub-Saharan Africa
Southeast Asia
South Asia
South America

**Lead Time (est.)**
< 2 weeks

**Partners**
PharmAccess Foundation

---

**Solution Description**
The d.light solar healthcare bundle comprises X2000 SHS (lighting, device charging, radio, power refrigerator and testing equipment), M100 Smartphone (EMR app, communications) and DCR50 Refrigerator (vaccine storage, test samples) to provide care for the infected (with upgraded healthcare infrastructure) as well as prevent further infections by disseminating timely communication and information to the local public and frontline workers.

This bundle offers the following services:

- All-night lighting for 5 rooms
- Medical supplies and vaccine refrigeration
- Multi-mobile charging
- Rechargeable radio for information access
- Internet-access for communication with health authorities
- EMR sharing, maternity care and COVID contact tracing
- Task light for focused operations

---

**Current Needs**
Grant funding
Equity
Partnerships

---

**Contact Details**
Binagwaho Gakunju
Grants Manager

Email: binagwaho.gakunju@dlight.com
Website: www.dlight.com
Solution Type
Plug and play power system, with and without appliances

Tech Specs
Capacity: > 1,000W

Target Geographies
West Africa
East Africa
Southern Africa

Lead Time (est.)
5-8 Weeks

Partners
UNDP Malawi, PS Kenya, WRI, BOS

Solution Description
Differ is a value chain integrator providing turn-key energy service solutions for health facilities of any size (1-1000kWh). We integrate technology (generation, storage and appliances), supporting software and remote monitoring technology and service and maintenance (O&M) schemes to ensure sustainability for years. The technology package may also include solutions for purified water and hot water as well as medical devices – in addition to the “traditional” supply of reliable solar energy and basic appliances like lights, fridges, charging, air con etc. Hence, Differ is a one-stop-shop solution provider for electrification of health facilities. See also video from Malawi installations.

Contact Details
Kjetil Røine
Partner
Email: kjetil.roine@differgroup.com
Website: www.differgroup.com

Current Needs
Grant funding
Equity
Debt
Partnerships
Dulas Limited

Solar-powered Direct Drive (SDD) Refrigerators and combined refrigerators/freezers

Solution Type
Plug and play power system, with and without appliances

Tech Specs
Capacity: 101-1,000 W

Target Geographies
Sub-Saharan Africa
Southeast Asia
South Asia
South America

Lead Time (est.)
> 5 weeks

Partners
Individual orgs for installation services in focus countries

Solution Description
Dulas are the manufacturers of a wide range of WHO PQS approved refrigerators and freezers for vaccines and blood storage. Our SDD refrigerators work from solar panels without the need for batteries and use advanced PCM to maintain a constant vaccine storage temperature.

These ‘Plug and Play’ systems are designed for ease of use in challenging environments. They have Grade A freeze protection and will operate at a stable +2°C to +8°C.

With the optimal balance between solar array size and refrigerator autonomy, Dulas refrigerators are designed to deliver perfect vaccine storage conditions every day, every year, whatever the weather.

Contact Details
Catherine McLennan
Email: Catherine.mclennan@dulas.org.uk
Account Manager
Website: www.dulassolar.org

Current Needs
Partnerships
Fenix International

Fenix Power, Mobisol

Solution Type
Plug and play power system, with and without appliances

Tech Specs
Capacity: < 1,000 W

Target Geographies
West Africa

Lead Time (est.)
< 5 weeks

Partners
Paga, Interswitch, MTN, Startimes, LAPO, Solar Sister

Solution Description
Our products are Solar Home Systems of Batteries ranging from 25Wh to 730Wh, with respective solar panels ranging from 10W to 200W.
These products also have accessories which includes; Radio, fan, TV, Clipper and Woofer

Current Needs
Grant funding
Partnerships

Contact Details
Sarah Odumegwu-Ojukwu
Business Strategy Associate

Email: sodumegwuojukwu@fenixintl.com
Website: www.fenixintl.com
## Solution Type
Plug and play power system, with and without appliances; Component-based power system, with and without appliances

### Tech Specs
| Capacity: | < 1,000W |

### Target Geographies
- West Africa
- East Africa
- Southern Africa
- South Asia
- Other

### Lead Time (est.)
5-8 Weeks

### Partners
- SpaceCom
- Vocalis Health
- Aspen Imaging

## Solution Description
Ignite Medical Services (IMS) is reshaping healthcare in rural communities across emerging countries by combining solar power and advanced diagnostic technology, tailor-made for on-field diagnosis and treatment. The IMS designed-for-solar system (DSS) provides remote health centers with reliable electricity, connectivity, and diagnostic devices; The SDS-16 conducts a wide range of blood tests to be given on the spot and allows for fast, smart and affordable detection of the patient’s condition; The energy-efficient X-ray diagnostics kit (SDS-X1) provides high-quality imaging and interpretation on the field, addressing Covid-19, TB, and emergencies. All devices are designated for the specific needs of remote medical teams, powered by solar energy and allow for remote support and guidance.

## Current Needs
- Grant funding
- Partnerships
- Technical assistance

## Contact Details
**Gil Karie**  
Head of Innovation  
Email: gil.karie@ignite.solar  
Website: www.ignite.solar
Solution Description
The OffGridBox is a mobile and modular 2x2x2m container with 3 kWp-8kWp solar panels on the top, a water purification system inside, and a WiFi hotspot on the outside. Our unit is one solution to three problems: lack of access to energy, lack of access to clean water, and lack of access to connectivity. We provide clean water and renewable energy for households by means of battery packs, for institutional buildings like clinics and schools, and/or for productive use, like water pumping, irrigation, ice making or milling. During the COVID-19 crisis, we are stepping up our efforts to provide our services to rural clinics in developing countries.
Plug The Sun Limited

Ray 3000, Ray 4000, Ray 6000, Ray 8000

Solution Type
Component-based power system, with and without appliances

Tech Specs
Capacity: 1,001-10,000 W

Target Geographies
West Africa
Southern Africa
Southeast Asia
South America

Lead Time (est.)
> 5 weeks

Partners
Non-listed

Solution Description
Our RAY Professional Series features a robust solar power station to run house, school, clinic and small village communities. Featuring high solar conversion efficiency, thanks to an advanced MPPT algorithm, the RAY Professional provide the maximum power output from the solar panel array and has a built-in solar battery management system, to optimize battery charging. True since wave technology inverters provide reliable AC energy consistently power a host of different appliances.

Hybrid Professional Solar Systems

Current Needs
Grant funding
Equity
Partnerships

Contact Details
Martino Criveller
Supply Chain Manager

Email: martino@plugthesun.com
Website: www.plugthesun.com
### Solution Type
Component-based power system, with and without appliances

### Tech Specs
**Capacity:** 101 – 1,000 W

### Target Geographies
East Africa

### Lead Time (est.)
2-8 Weeks

### Partners
Non-listed

### Solution Description
Rural healthcare facilities in East Africa typically have no water and so cannot maintain basic sanitation. Our solution provides year-round access to water and handwashing as well as electricity and lighting. The community will have well-lighted clinics and much better sanitation. They will have a source of water that is not contaminated, and a place where they and their medical service providers can wash hands and equipment, providing a much healthier environment for all healthcare services. **Options** include a SmartTAP water dispenser providing income for ongoing O&M, and/or UNOCOOL DC Refrigerator with a 200 W solar panel for vaccines.

### Current Needs
Grant funding

### Contact Details
Marianne Walpert  
Co-Chief Executive Officer  
Email: mwalpert@simusolar.com  
Website: www.simusolar.com
**Solution Type**
Plug and play power system, with and without appliances

**Tech Specs**
Capacity: < 100 W

**Target Geographies**
Southern Africa

**Lead Time (est.)**
> 8 Weeks

**Partners**
Malawi Ministry of Health, Zambia Ministry of Health

**Solution Description**
This solution is the second phase healthcare response to COVID-19 in Malawi and Zambia in partnership with the respective Ministries of Health.

We are repurposing plug and play systems to power energy efficient, modern medical devices for rural health facilities – where the majority currently have no access to reliable, or any, electricity.

By incorporating the delivery of this program within our existing SunnyMoney distribution network, we will guarantee affordable Operation and Maintenance while testing revenue generation models to offset the already low cost.

**Current Needs**
Grant funding
Partnerships
Technical assistance

**Contact Details**
John Keane
Chief Executive Officer
Email: john.keane@solar-aid.org
Website: www.solar-aid.org
**Solution Type**
Containerized, turn-key power system, with and without appliances

**Tech Specs**
Capacity: > 10 kW  
Storage: 10.2 kWh

**Target Geographies**
Sub-Saharan Africa  
Southeast Asia  
South Asia  
South America

**Lead Time (est.)**
5-8 weeks

**Partners**
UNITAR, Solarworx, Groots, Nexol, Siemens Healthineers

**Solution Description**
Turnkey COVID-19 test lab for health personnel with 100% accuracy real-time test for infections with the COVID-19 virus. The solar powered “kit-of-parts” infrastructure solution, the E-HUBB, can be deployed within a few days. It is equipped with state-of-the-art laboratory diagnostics, molecular medicine and digital health supplied by the German leading medical technology company and solar powered with state-of-the-art storage by long life LiFePO4 batteries for night-time usage. Training of personnel on the basis of established standard procedures provided by the UNITAR. It can also test for, HIV, Malaria, Tuberculosis, Pulmonary infections, Hepatitis, Urinary infections, etc.

**Current Needs**
Grant funding

**Contact Details**
Thomas Rieger  
Chief Executive Officer  
Email: Thomas.rieger@solarkiosk.eu  
Website: www.solarkiosk.eu
Solartechno Europe B.V.

NoGrid – Gen 3

Solution Type
Plug and play power system, with and without appliances

Tech Specs
Capacity: > 100 W

Target Geographies
Sub-Saharan Africa

Lead Time (est.)
5-8 Weeks

Partners
Lencon B.V., TuDelft, Fieldlab, Smartbase, The African Centre for Renewable Energy & Sustainable Technology (ACREST)

Solution Description
An autonomous plug and play solar power supply specifically designed for off grid applications in Africa and in developing countries. It is a solar panel with a battery box containing battery and electronics installed on its back. It designed to be installed in open air (outdoor) in harsh environments (desert, tropical and maritime areas of the world). It is maintenance free with a 10 year lifespan. It is very modular, portable and robust. All components are integrated in a single water and dust tight, rust free aluminum box. Thanks to the modularity and fail safe features, the system is the ideal choice for remote health clinics, dispensaries, mobile COVID testing centers and for powering the related IT and telecom systems.

Current Needs
Grant funding
Equity
Debt

Contact Details
Eng. Marco Ghiradello, MBA
Chief Executive Officer
Email: marco@solartechno.com
Website: www.solartechno.com
Solergie NV
SolergieBox

**Solution Type**
Component-based power system, with and without appliances

**Tech Specs**
Capacity: 100 Wp-10 kWp

**Target Geographies**
Sub-Saharan Africa

**Lead Time (est.)**
< 2 weeks (West Africa)
2-5 weeks (East/Central/Southern Africa)

**Partners**
Solergie NV (Belgium) – Solergie SARLU (Togo)

**Solution Description**
The SolergieBox, a smart solar nano-grid solution, provides clean, reliable and affordable power (220V), in order to guarantee a continuous availability of reliable electric power for the healthcare facility (HCF). We also provide the supply of basic equipment (medical refrigerator, lighting bulbs, fans and outlets to connect other electrical equipment). To maintain the solar system, we bet on the unique feature of the nano-grid: up to 8 customers can be connected to the SolergieBox, so, in addition to the HCF, additional customers and/or a local entrepreneur can be connected, who provide maintenance of the HCF through their payments.

**Current Needs**
Grant funding
Equity
Partnerships

**Contact Details**
Bert Bernolet
CEO

Email: b.bernolet@solergie.org
Website: www.solergie.org
Solution Type
Plug and play power system, with and without appliances; Component-based power system, with and without appliances; Containerized turn-key power system, with and without appliances

Tech Specs
Capacity: > 100 W

Target Geographies
Sub-Saharan Africa
Southeast Asia
South Asia
South America
Other

Lead Time (est.)
> 5 weeks

Solution Description
1. TellCoSOL off grid system products comes with accessories like LED lights, radio FM, MP5 player, TV, refrigerators, fans and many more.

2. 100% SOLAR POWERED SMART MOVABLE HEALTH CARE CLINIC. First-Class Solar Movable Primary Health Care Clinic Container for communities who do not have access to Primary Health Care or in need of more effective Primary Health Care Facilities in Rural and Semi-Urban localities.

Current Needs
Grant funding
Equity
Debt
Partnerships

Contact Details
TellCo Europe Sales Team
Sales Management
Email: info@tellco-europe.com
Website: www.tellco-europe.com
## We Care Solar

### We Care Solar Suitcase

<table>
<thead>
<tr>
<th><strong>Solution Type</strong></th>
<th>Plug and play power system, with and without appliances</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tech Specs</strong></td>
<td>Capacity: 101 – 1,000 W</td>
</tr>
<tr>
<td><strong>Target Geographies</strong></td>
<td>West Africa, East Africa, Southern Africa</td>
</tr>
<tr>
<td><strong>Lead Time (est.)</strong></td>
<td>5-8 Weeks</td>
</tr>
<tr>
<td><strong>Partners</strong></td>
<td>65 partners including UN agencies, international and local NGOs, and four health ministries</td>
</tr>
</tbody>
</table>

### Solution Description

The We Care Solar Suitcase is a compact, complete, safe, institutional-grade solar electric system for maternal health facilities. This user-friendly pre-wired system contains solar panels, a lithium-ferrous-phosphate battery, a customized charge controller, break-resistant 70,000 hours medical LED lights, 12VDC and 5VDC outlets, and all installation hardware. LED headlamps, phone charging, a fetal Doppler, infrared thermometer, and rechargeable batteries are included. 5,200 Solar Suitcases have been deployed in facilities where essential medical lighting and 12VDC power are needed, both as permanent and temporary (mobile) installations. Our programs, printed guides, and training videos build local capacity in solar installation, maintenance, and servicing.

### Current Needs

- Grant funding
- Partnerships
- Logistics assistance

### Contact Details

Laura Stachel, MD MPH  
Executive Director  
Email: laura@wecaresolar.org  
Website: www.wecaresolar.org
**Solution Type**
Plug and play power system, with and without appliances; Containerized, turn-key power system, with and without appliances

**Tech Specs**
Capacity: > 1,000 W

**Target Geographies**
Sub-Saharan Africa

**Lead Time (est.)**
5-8 Weeks

**Partners**
Econet, Distributed Power Africa (DPA)

**Solution Description**
To power healthcare facilities with hybrid energy solutions optimized for medical equipment, build with highest (10 year) reliability standards. Ability to integrate with the grid, generator, other (AC/DC) power sources, and PV solar array. Sized to operate autonomously (off grid). Plug-and-play containerized solutions with 50kWh lithium battery capacity and 20kWp solar array.

**Current Needs**
Grant funding
Equity (TBD)
Debt
Partnerships

**Contact Details**
Doye Ogionwo
Chief Commercial Officer (CCO)
Email: doye.ogionwo@zolaelectric.com
Website: www.zolaelectric.com