POWERING HEALTHCARE: SUSTAINABLE ENERGY FOR HUMANITARIAN HEALTH RESPONSE

13 MAY 2020
14:30 -16:00 CET

WEBINAR FEATURING:
MSF SPAIN & SEFORALL

MEDECINS SANS FRONTIERES

SUSTAINABLE ENERGY FOR ALL

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Moderators

RANISHA BASNET, energypedia

LISA FELDMANN, energypedia

Webinar Series: Sustainable Energy in Humanitarian Settings

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- JAN 2020: Powering Humanitarian Facilities: Dialogue on Implementation Models
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- NOV 2019: Sustainable Energy for Powering Household and Community Lighting Needs in Humanitarian Settings
- SEP 2019: Sustainable Energy for Essential Humanitarian Services: Outline of Energy Solutions and a Case Study on Solar Pumping
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- Agenda-

Presenter

NAN BUZARD, International Committee of the Red Cross

As ICRC's Head of Innovation, Nan Buzard works with 18,000 staff across 80 countries on some of the most interesting initiatives in humanitarian action. She served in Bosnia with the International Rescue Committee in 1996, led the Sphere Project, and worked for the United Nations High Commissioner for Refugees and the American Red Cross. She was also the Executive Director of International Council of Voluntary Agencies. Nan received the Global Leadership in Emergency Public Health award from the World Association for Disaster and Emergency Medicine in 2009. She was one of the Obama administration's Champions of Change and served five years as the Steering Committee Chair of the Active Learning Network for Accountability and Performance (ALNAP). In 2019 Nan joined the Grand Challenges Canada Scientific Advisory Board. Her Master's in Public Administration is from Harvard University. She is a big fan of cold-water swimming.

Presenter

LUC SEVERI, Sustainable Energy for All

Luc Severi is a Senior Energy Access Specialist at Sustainable Energy for All, focusing primarily on the energy access gap in the health sector and the humanitarian sector. Luc holds a Master's in Commercial Engineering from KULeuven and an MSc Development Management from the London School of Economics. Prior to starting his current position, Luc worked in Mozambique, Senegal, and Liberia, for several international NGOs and social enterprises, including SolarNow and Save the Children International, as well as for the UN Foundation. Throughout his career, Luc has been an active participant in the green & circular economy, working primarily with renewable energy solutions for off-grid and rural households, schools, and health centers.

Powering Healthcare

Setting the Scene

May 2020

Luc SEVERI
Sr. Energy Access Specialist
@lucseveri

Credit: UNDP Zimbabwe /Slingshot

Sustainable Development Goal 7

Goal 7: Ensure access to affordable, reliable, sustainable and modern energy for all

Target 7.1: By 2030, ensure universal access to affordable, reliable and modern energy services

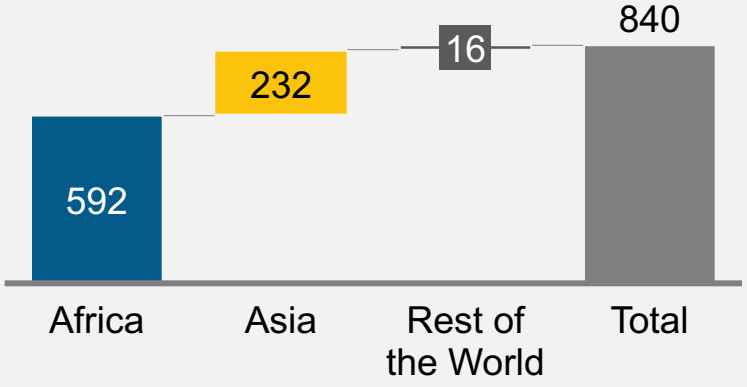
Target 7.2: By 2030, increase substantially the share of renewable energy in the global energy mix

Target 7.3: By 2030, double the global rate of improvement in energy efficiency

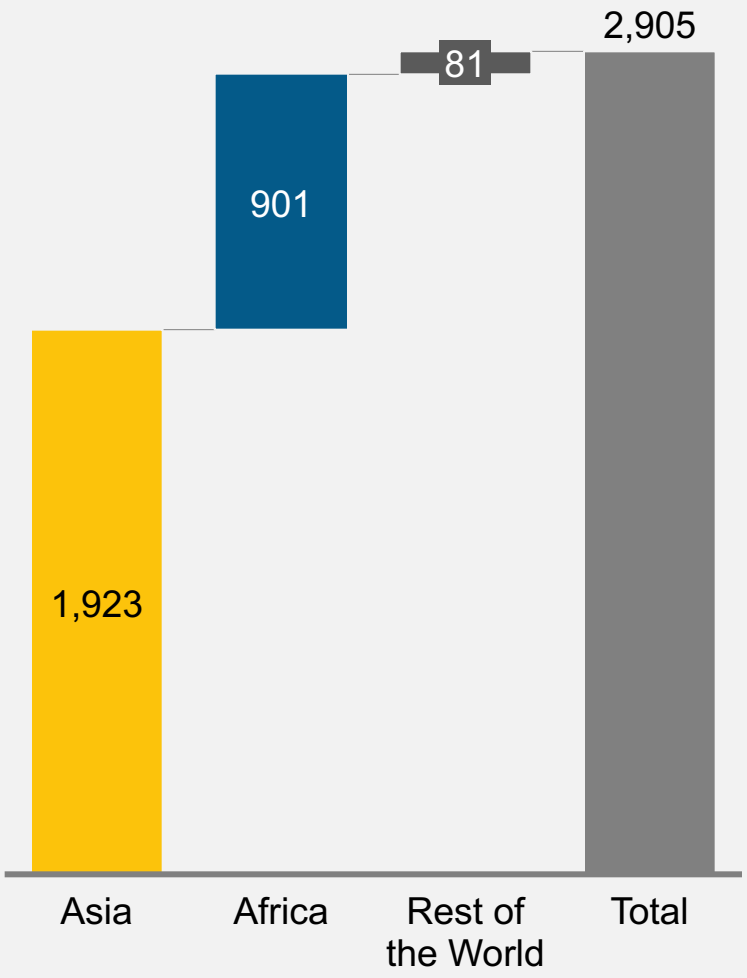
SOURCE: SEforALL Website; sdg-tracker.org

There are ~840 million people without electricity access; ~3 billion people without access to clean cooking; and ~1 billion at high risk due to lack of access to cooling

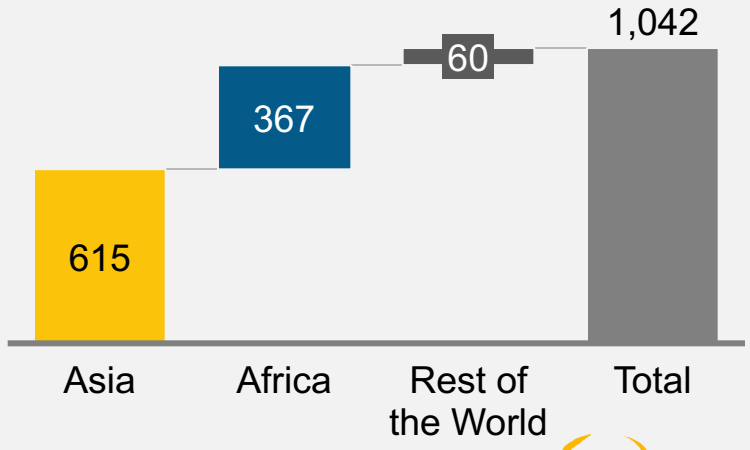
Number of unelectrified people, millions, 2017



Number of people without access to clean fuels and technologies for cooking, millions, 2017



Number of people at high risk due to lack of access to cooling, millions, 2019



SOURCE: ESMAP, Chilling Prospects: Tracking Sustainable Cooling for All, 2019 (SEforALL)

Powering Healthcare provides an opportunity to advance all three SDG7 targets, along with other SDGs

Goal 7: Ensure access to affordable, reliable, sustainable and modern energy for all

Target 7.1: By 2030, ensure universal access to affordable, reliable and modern energy services

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Target 7.3: By 2030, double the global rate of improvement in energy efficiency

- Electrifying health facilities contributes to universal energy access
- Powering Healthcare serves as a good template for electrifying other institutions (e.g. schools)
- Increased deployment of renewable energy solutions, both for off-grid health facilities and for generator-reliant (or weak-grid reliant) facilities
- Spur innovation in the field of energy-efficient medical appliances

Other SDGs

1 NO POVERTY — Reduces vulnerability of populations to climate-related events through ensuring business continuity of health facilities and ensuring sustained access to essential health care in the face of climate-related events

5 GENDER EQUALITY — Contributes to universal health coverage, including sexual and reproductive health, through improved health facility functionality

8 DECENT WORK AND ECONOMIC GROWTH — Promotes decent work, particularly for health workers, by enabling the use of basic services at work, such as light and ventilation

13 CLIMATE ACTION — Can reduce health sector GHG emissions, particularly where clean energy solutions are deployed

3 GOOD HEALTH AND WELL-BEING — Reliable power allows health facilities to offer additional health services, as well as improve the quality of healthcare

6 CLEAN WATER AND SANITATION — Contributes to the accessibility of WASH services, particularly those that are dependent upon electricity

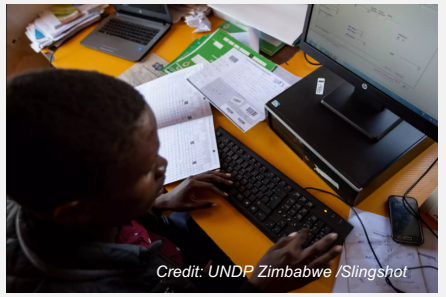
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE — Makes infrastructure (e.g. health facilities) energy resilient in the face of grid failure and potential natural disasters

SUSTAINABLE ENERGY FOR ALL

Access to electricity underpins nearly every aspect of a well-functioning health facility, making it vital to delivering quality health care and emergency services…


Credit: UNDP Zambia/Slingshot


Credit: WASH in Health Care Facilities


Credit: UNDP Zimbabwe /Slingshot


Credit: UNDP Zimbabwe /Slingshot


Credit: UN Foundation


Credit: UN Foundation


Credit: Jake Lyell


Credit: MSF-East Africa


Credit: UN Foundation


Credit: Forbes India


Credit: UNDP Zambia/Slingshot


Credit: UN Foundation

… yet, too often health care looks like this

Data on health facility electrification is sparse, but what data does exist points to serious gaps in access and reliability

60%

health facilities in low and middle-income countries lack reliable power

Source: International Journal of Hygiene and Environmental Health (2018)

75%

health facilities in Sub-Saharan Africa lack reliable power

Source: Global Health Science Practice (2013)

50%

primary health centers in India lack power or reliable power

Source: Council on Energy, Environment and Water (2017)

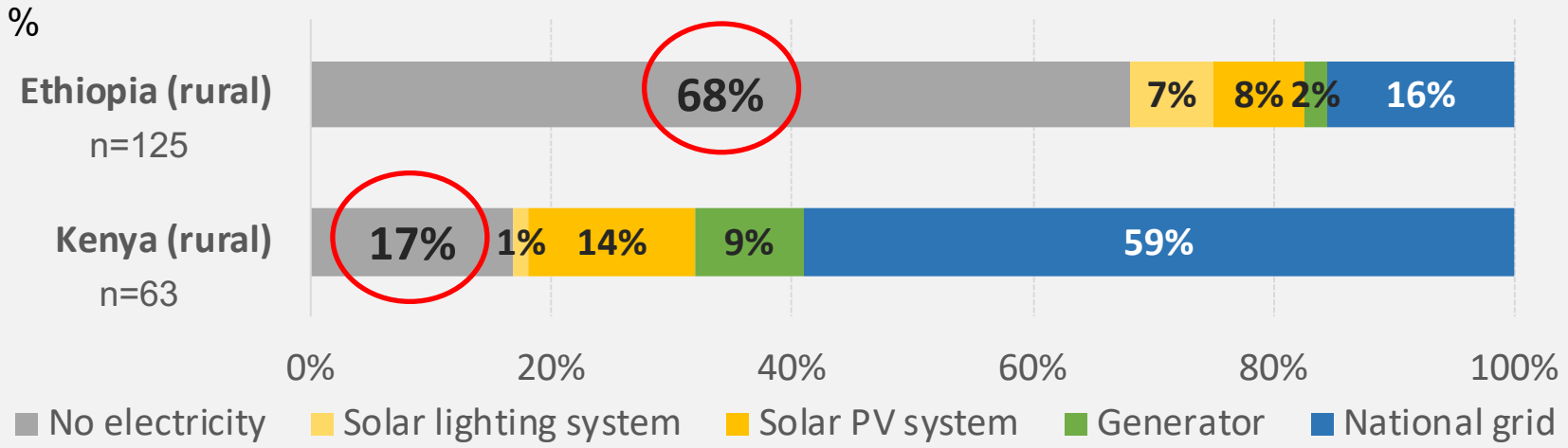
70%

equipment breakdowns are from voltage surges

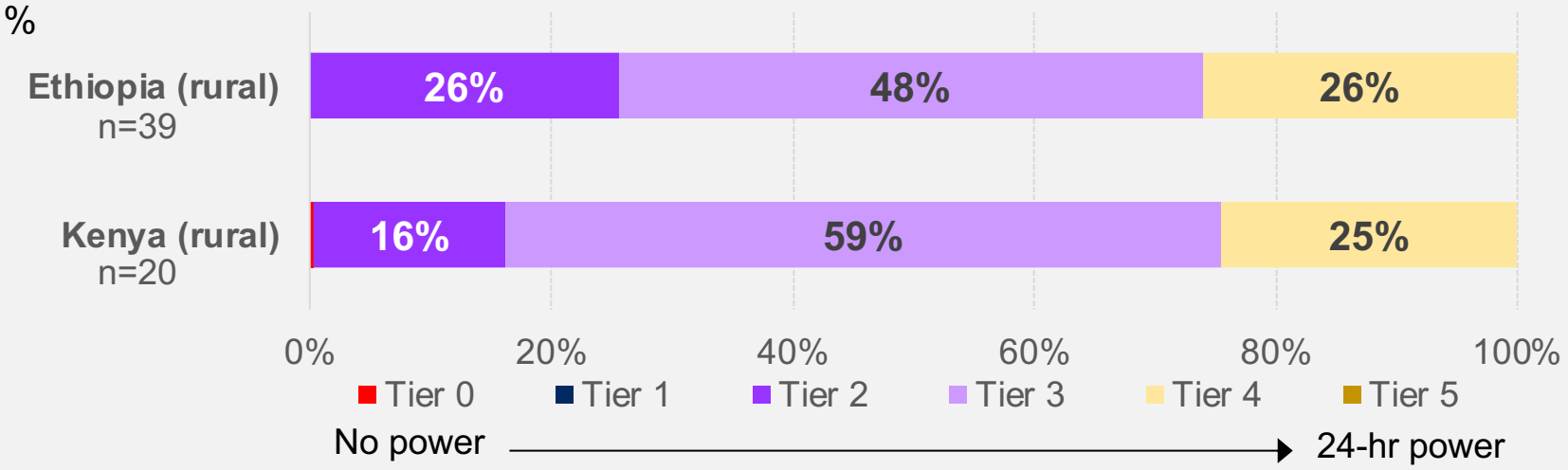
Source: Annual Review of Biomedical Engineering (2007)

A closer look shows disparities across countries and the fact that the grid power isn't the 'silver bullet'

Source of electricity for rural health facilities



MTF Tier distribution among grid-connected rural health facilities



Source: Energy Sector Management Assistance Program

A range of distributed renewable energy solutions exist to power health facilities

Level of Access

Higher

Lower

Tier 5

Tier 4

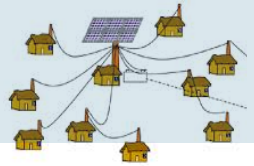
Tier 3

Tier 2

Tier 1

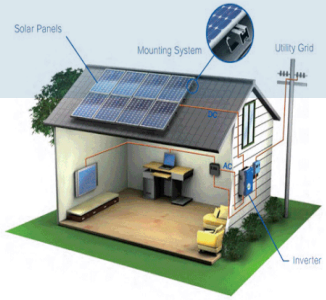
Facility-wide ‘Micro-grids’

Mini-grids



Solar Kiosks

Stand-alone Solutions



Portable Solutions

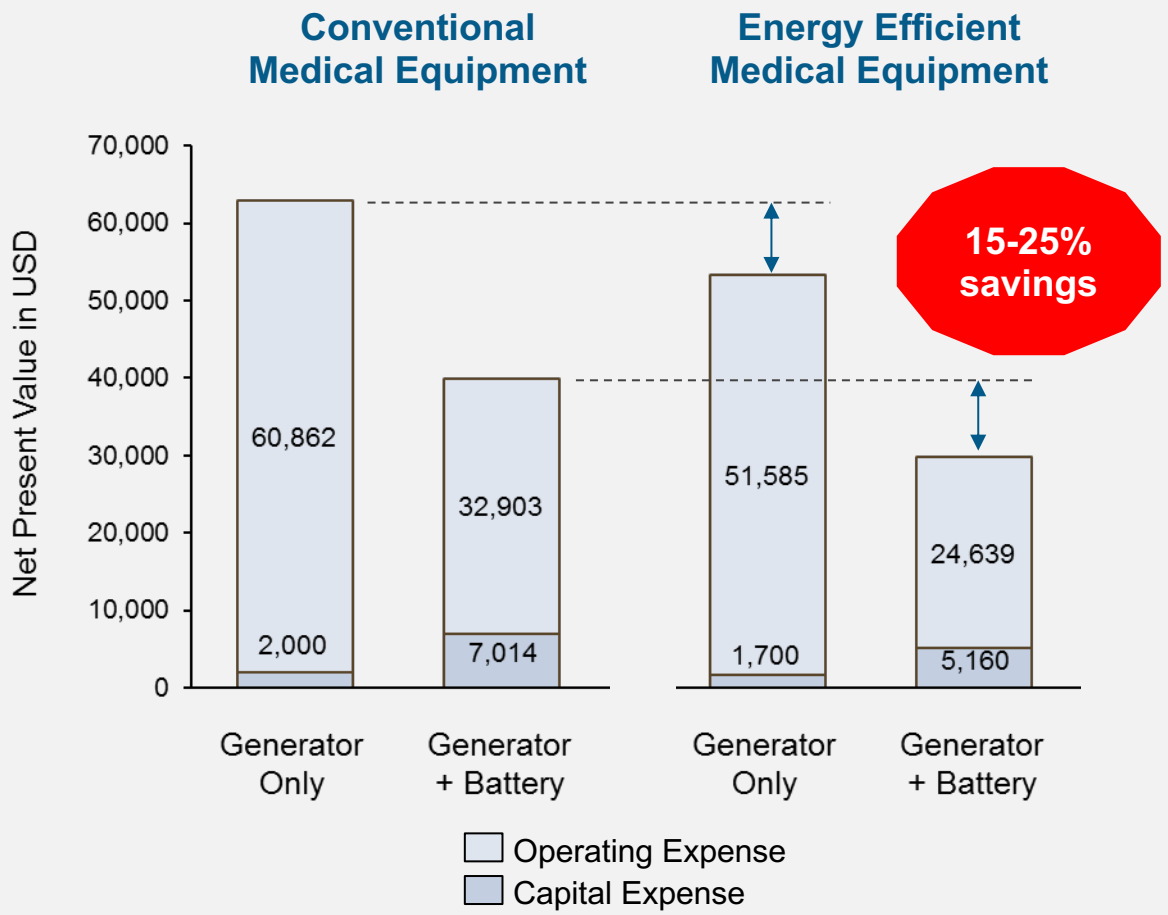
SUSTAINABLE ENERGY FOR ALL

Energy efficient medical equipment can drive down costs significantly

Simulation of rural Kenyan facility @ 8.6kWh/day

- Lighting
- Refrigeration
- Radio
- Computer
- Lab centrifuge
- Microscope
- Blood chemical analyzer
- Hematology analyzer
- CD4 machine

Comparative Costs of Stand-alone Power Equipped with…



Source: Access to Modern Energy Services for Health Facilities in Resource-Constrained Settings
World Health Organization & World Bank, 2015

COVID-19: Key barriers to rapid deployment of energy solutions to health facilities

DATA

- Where are the health facilities located?
- Which facilities are priority COVID-19 facilities?

ENERGY DEMAND

- Which electricity-dependent (medical) appliances are needed and recommended?
- Which appliances are currently available?

SYSTEM DESIGN

- How much power is needed, at what point of the day?
- Which energy technologies are appropriate?

FINANCING

- How much CapEx and OpEx is required to address the power gap in the health sector?
- How quickly can funds be disbursed?

SECTOR CAPACITY

- What is the current capacity of the energy access sector to respond? (e.g. interrupted supply chains and low inventory levels)

SUSTAINABILITY

- What is the most appropriate delivery/business model to deploy energy solutions rapidly, at scale, and in a sustainable way?

Powering Healthcare: COVID-19 response

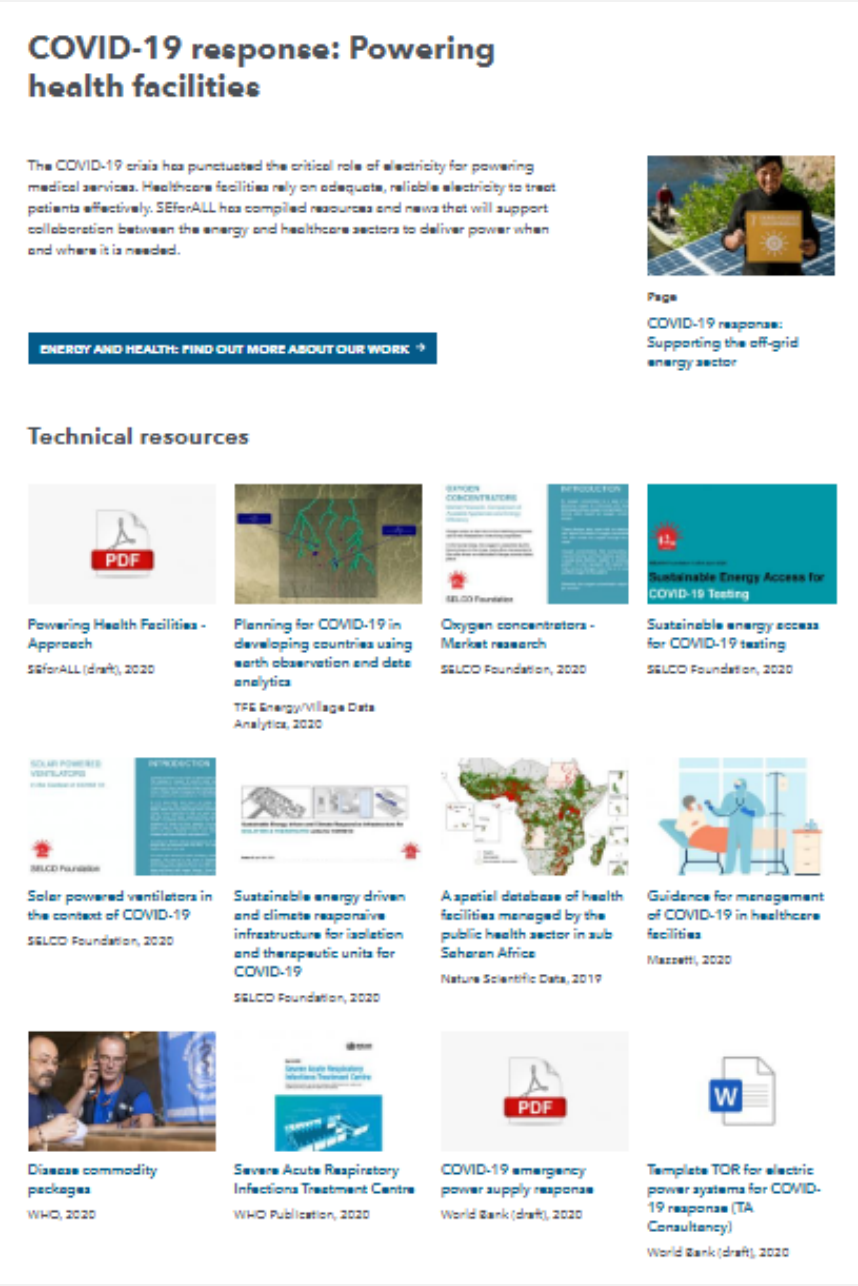
1. COORDINATION
2. COUNTRY ADVISORY
3. DEVELOPING TOOLS
4. INFO SHARING

Sector coordination
- Energy sector mapping of current resources, capacity, and barriers
- High-level coordination of key energy & health stakeholders

Data
- Mapping ongoing & planned interventions

Guidance documents:
- System sizing
- Energy needs assessment approach

SEforALL webpage:
- Technical Resources
- News Articles



Powering Healthcare

Luc SEVERI
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Credit: UNDP Zimbabwe /Slingshot

Presenter

INAKI GOICOLEA, MSF Spain

Iñaki Goicolea is an Electrical Engineer specialized in the humanitarian aid world. Iñaki has worked with MSF for several years in the field all around the globe (CAR, Congo, Iraq, South Sudan, Paraguay, India, Niger, Sierra Leone …) as technical advisor and then as Logistics Coordinator. In the last 2 years he has been working at MSF's headquarter office in Barcelona overseeing several energy projects; such as off-grid photovoltaic systems in geographically remote areas.

PHOTOVOLTAIC SYSTEMS IN KUSISA & KIGULUBE (SUD KIVU, DRC)

Iñaki Goicolea

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Content

- Introduction
- Design
- Implementation
- O&M
- Cost
- Impact

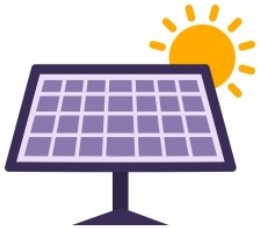
Introduction

- Remote areas
- Access by helicopter, 2 days by motorbike, 1 week by truck
- 80 beds hospitals
- Main 2 reasons: fuel constraints & local capacity

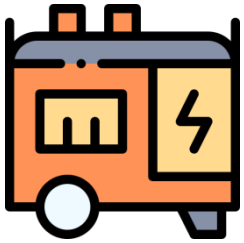
Design

- Sizing done by MSF's technical office

32 kWp



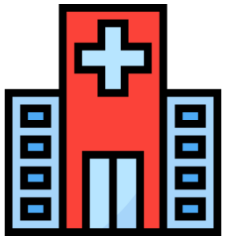
9 kVA



100 kWh

15 kVA

2 - 4 kW



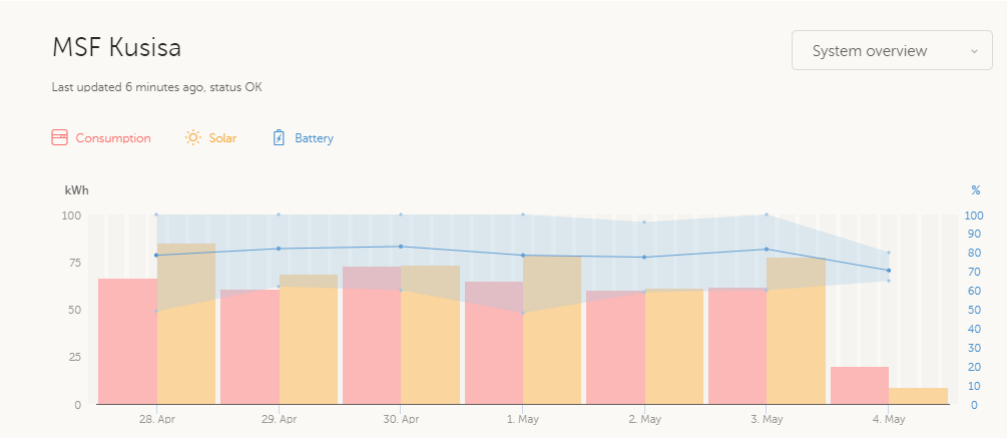
Implementation

- Local company
- 6 weeks / 2 technicians
- Main constraint: logistics

Photovoltaic Systems in Kusisa & Kigulube (Sud Kivu, DRC)

Operation & Maintenance

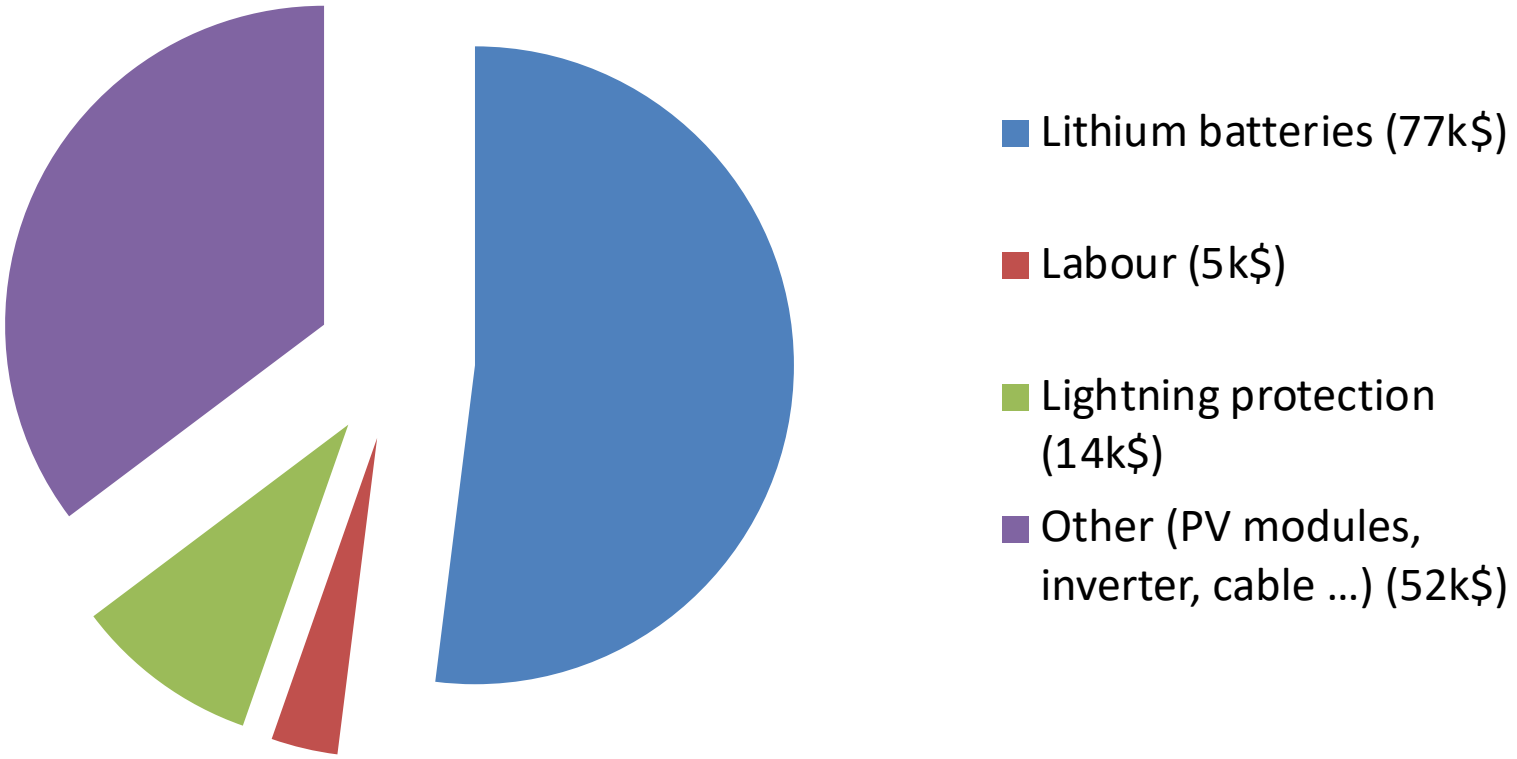
- Hospital technician trained
- Contract with local company
- Monthly visits
- 10 year warranty
- Remote control over internet



Photovoltaic Systems in Kusisa & Kigulube (Sud Kivu, DRC)

Cost

148 k$


Lithium batteries (77k$)
Labour (5k$)
Lightning protection (14k$)
Other (PV modules, inverter, cable …) (52k$)

Impact

- 2nd level 80 bed hospital
- OT, delivery room, laboratory, 24h oxygen supply
- Low effect of road blocks, security incidents, …

Photovoltaic Systems in Kusisa & Kigulube (Sud Kivu, DRC)

Presenter

TALAL KANAAN, Independent Renewables Specialist

Talal is an independent renewable energy specialist. He advises various UN agencies and development organizations on the transition to renewable energy, with a particular focus on humanitarian operations and health systems. Talal has a Master in Engineering from the University of Toronto focusing on energy systems, and a Bachelor of Engineering from the University of Nottingham.


- Q&A -

Thank you

- Feedback: info@energypedia.info
- Webinar documentation/Additional Resources: https://energypedia.info/wiki/Webinar_Series:_Sustainable_Energy_in_Humanitarian_Settings#May_2020

- Stay tuned for our upcoming webinars!