



# THE ENERGY NEEDS OF HEALTH FACILITIES: A CLOSER LOOK

MINISTRY OF HEALTH UGANDA EXPERIENCE OF IMPLEMENTING SOLAR ELECTRIFICATION IN RURAL HEALTH CARE FACILITIES

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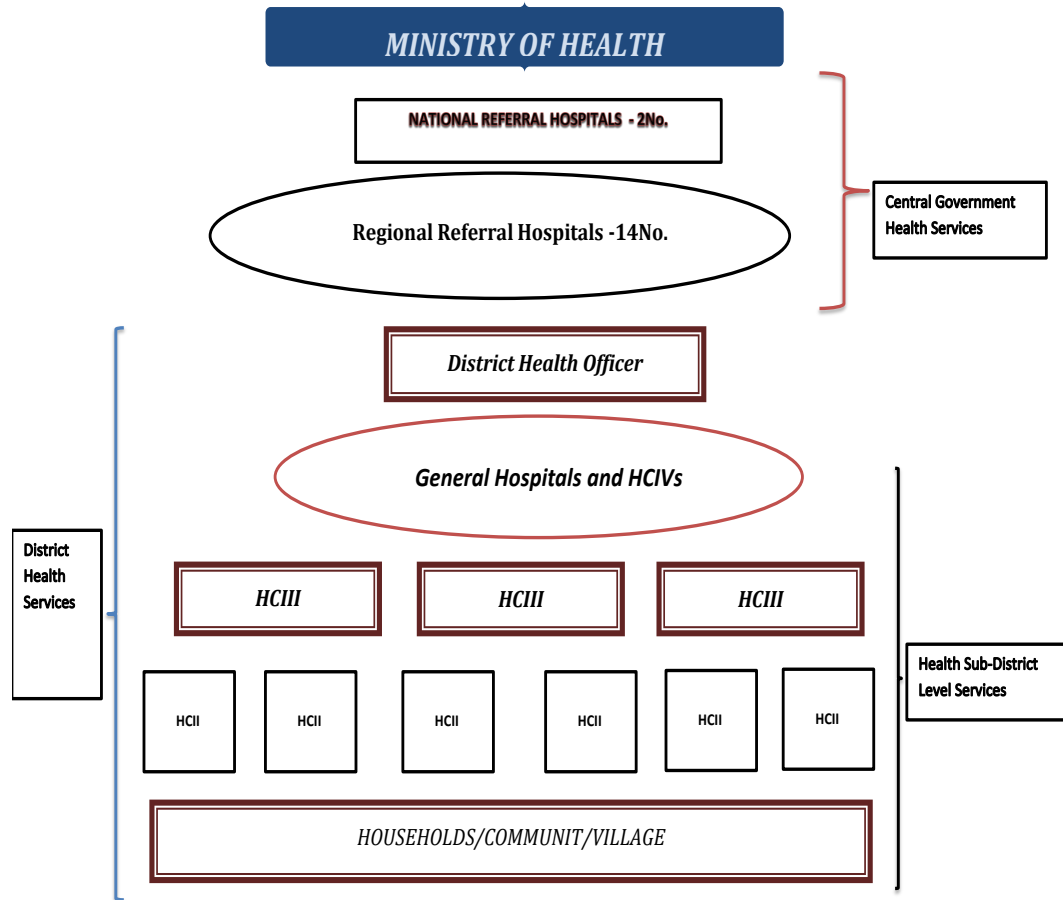
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# Presentation Outline

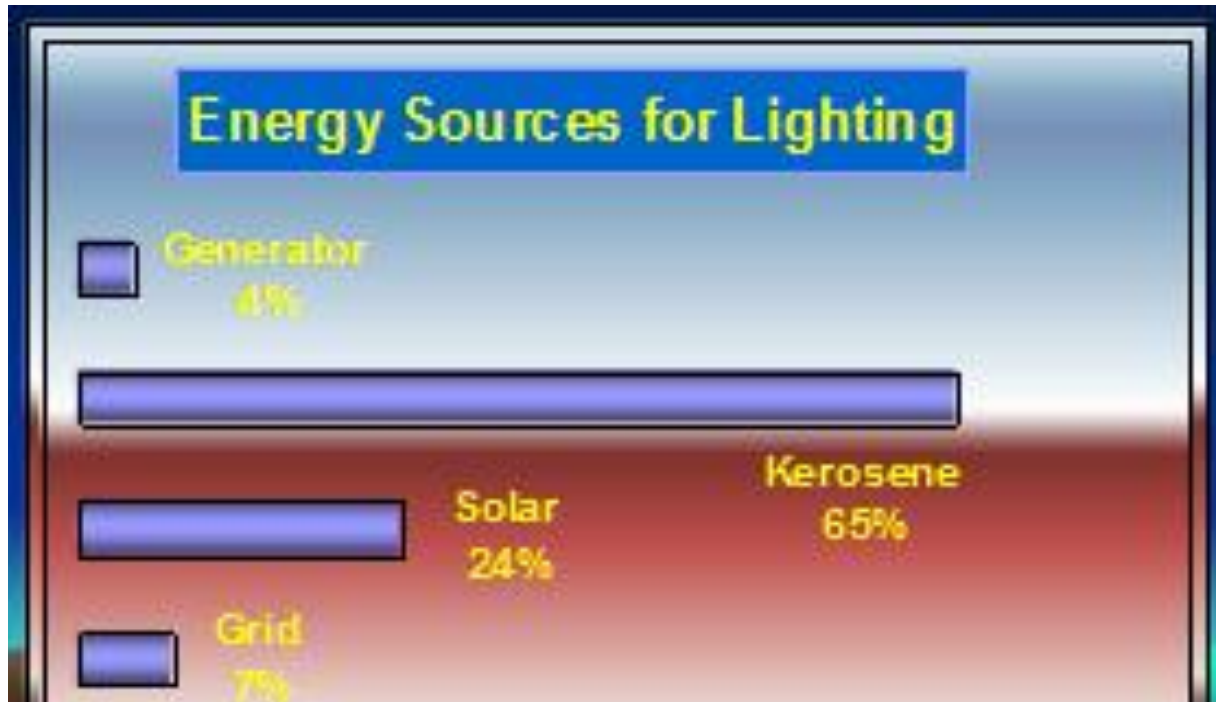
1. Introduction – Uganda's Health System
2. Energy Situation in 2004
3. Energy Needs in Health Facilities
4. Solar Electrification of Rural Health Facilities – WB ERT Project & DFID/UN Foundation Solar Electrification Project
5. Immediate Outcomes
6. Challenges/Lessons Learned
7. Concluding Remarks

# 1. UGANDA HEALTH SYSTEM



- Management and Planning for Health Services delivery is largely devolved to the District Local Governments under the District Health Officer (DHO).
- Energy needs across the different levels of Health facilities vary.

## 2. Energy Situation in 2004 - ERT Project Baseline Survey



HCII – 8%  
HCIII – 18%  
HCIV – 16%

Source: Ministry of Health, ERT Project Baseline Report, by Norplan Uganda Ltd. June 2004

# 3. ENERGY NEEDS IN HEALTH FACILITIES



## 4. Tackling the Energy Challenge in HCII, HCIII & HCIV for the ERT & UNF Project

### o Key Findings:

Rural electrification rate is very low and energy requirements varied within the same Health facility level and across Districts due to differences in **size of physical infrastructure, No. of staff houses** and **Equipping levels**.

### o Implementation Strategy:

- Use Solar PV systems and cater for the Basic Energy needs to support the Uganda Minimum Health Care Package (UMHCP)
- Integrate Solar PV with already existing energy sources.
- Use Centralised and Standalone Solar PV systems (ERT) & Provide a Holistic electrification solution with Remote Monitoring (UNF).
- Have flexible Energy system sizes
- Use Private Companies to Supply, install and Maintain the solar systems – **5 years Maintenance contracts were signed along side the supply contract (ERT) and 2 years for UNF.**

## 5. Profiling the Energy Consumption in HCII, HCIII & HCIV – ERT & UNF Project

Health Facility	Medical Buildings		Staff Houses		Total ERT	Actual
	Basic kWh/Day	Comprehensive kWh/Day	Basic kWh/Day	Comprehensive kWh/Day	Basic kWh/Day	kWh/Day (2018) – DFID/UNF
HCII	1.28	1.69	1.64	3.93	2.92	3.9 - 6.2
HCIII	3.29	4.72	4.54	11.74	7.83	5.1 - 7.6
HCIV	6.7	8.67	4.0	17.10	10.70	-

Basic energy package catered for **lighting, vaccine fridge & operation of essential low energy consumption equipment** – Microscope, Exam light, Radio, Phone charger & **Theatre equipment & a Computer for HCIV.**

# ERT Project Centralised Solar System in a HCIV – 1.3kWp

Solar Power House with Solar Array on the roof



Solar Equipment inside the Solar House – 24V/1500Ah Battery Bank



665 HCs installed with solar power (IDA/GEF/WB) and 155HCs (NDF) in ERT Project I & II (2008 – 2014)



# ERT Project Standalone Solar system

Layout of a Standalone Solar Fridge System - 200Wp



Microscope powered by Solar PV System



# DFID/UN Foundation Micro-grid Solar system in a HCIII

Pole mounted solar Array at one of the electrified HCs



Battery bank and Inside the Solar House



Solar array sizes: 2/3/4/6kWp with Battery Banks of 800Ah/1500Ah/48V

# Labour suite with solar power & Spot Lamp from DFID/UNF solar project



## 6. Immediate Outcomes of the Solar Electrification Projects

- 1) Access to the Basic energy package for **Lighting** increased: *HCII (from 8 to 41%), HCIII (from 18 to 72%) & HCIV (from 16 to 100%) with Solar PV contribution standing at; HCII (24%), HCIII (25%) & HCIV (18%).*
- 2) The HCs now operate at night due to better lighting and improved working environment.
- 3) Number of children immunised increased in most of beneficiary HCs that had no fridge. Vaccine wastages reduced for HCs that were using cold boxes and icepacks for outreach immunisation services.
- 4) The morale of the staff in the beneficiary HCs increased and the patients feel secure while in the health facilities at night.

## 6. Immediate Outcomes – Contd....

- 5) Unused electrical equipment that were kept in stores (e.g. microscopes, exam. light, TV/Video deck) are now in use.
- 6) For the HCIVs that operated generators for powering lights, sterilisation and operation of theatre equipment, the generator operating time reduced from 32 to 8 hours per week (i.e. 75% reduction in fuel costs)
- 7) Health worker are saving at least UShs. 45,000= per month on phone charging, radio cells and kerosene for lighting.

# Challenges, Lessons Learned & Recommendation

- Provision of electricity stimulates acquisition of electrical equipment (e.g. computers, TV, music systems, e.t.c.) causing increase in energy demand.
- Sign Service Contracts to guarantee regular and uniform quality of maintenance services; and hence prolonged life of the solar systems.
- Solar PV technology has matured and centralised solar PV systems have proven to be more effective than standalone systems despite the challenge of guaranteeing power supply reliability for health care and not for use in the staff houses.
- Adequate maintenance budgets should be provided to enable proper maintenance of the solar systems constituting at least 42% of the energy mix for lighting in the HCs.

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**END**

**Thank You for Your Attention**