

GREENING THE HEALTH SYSTEM FOR MATERNAL AND NEWBORN HEALTH: OUTCOMES FROM BUNGOMA, KENYA

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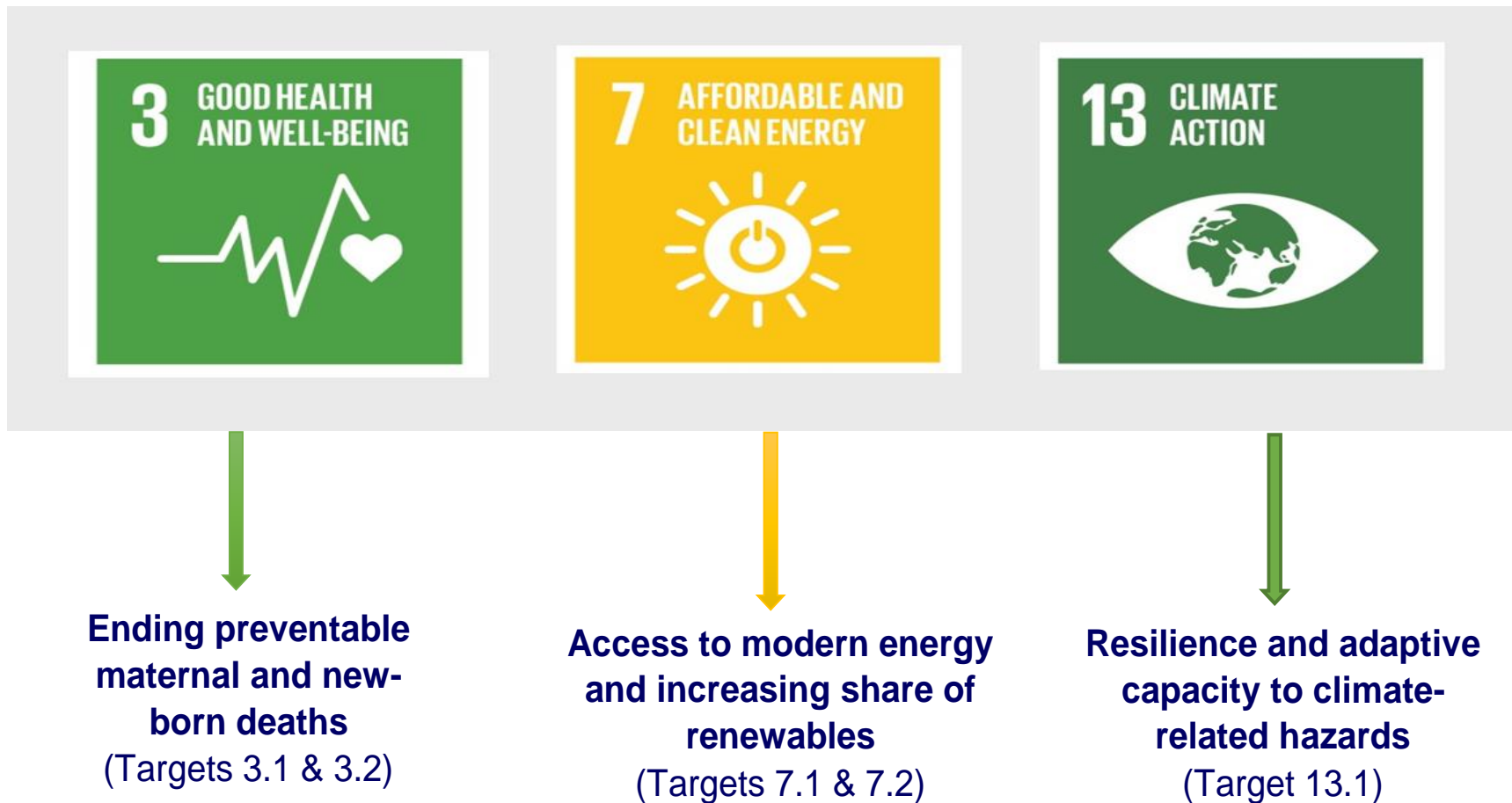
Background

- Climate change has the potential to **undermine decades of progress in global health.**
- The health sector contributes to **5%** of Global carbon emissions.
- The direct damage of climate change costs to health are estimated to be between **USD 2- 4 billion per year by 2030.**
- Between 2030 and 2050, climate change is expected to cause approximately **250,000 additional deaths per year** from malnutrition, malaria, diarrhoea and heat stress.
- **COP26 Conference:** Increased global temperatures, changing disease trends, weakening health systems.



Women and children bear the greatest risk of climate change.

Health and energy nexus and the Sustainable Development Goals



Overview of the MANI project



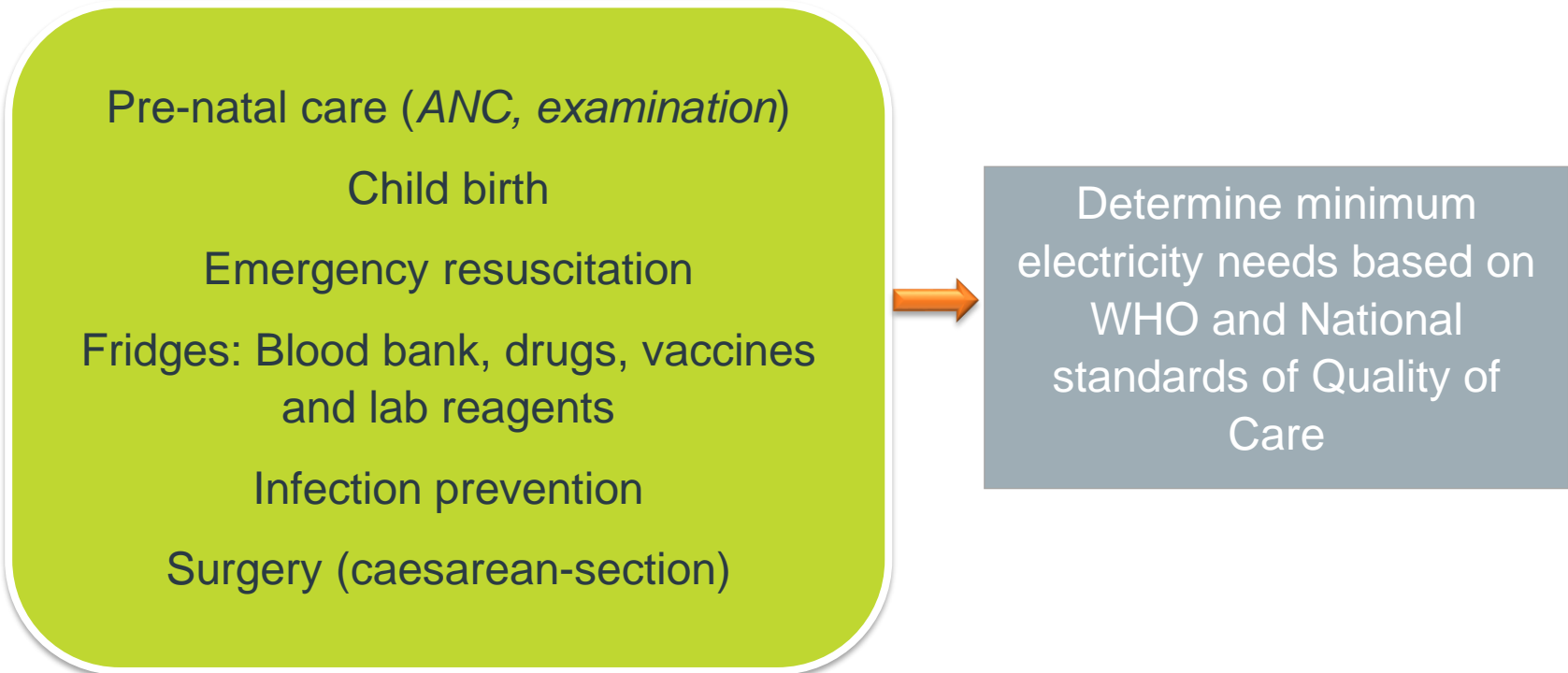
The FCDO funded Maternal and Newborn Improvement (MANI) Project was implemented in Bungoma County between 2015 - 2018.



The project addressed two of the three delays contributing to maternal and perinatal mortality, Delay in seeking and receiving care through *demand creation @community and improving quality of care at health facility level* .

ICF funded Facility Upgrade component, facilitated the solar installations in 33 Health facilities with 13 solar water heating systems.

Energy requirements for maternal and newborn health (MNH) services



Adapted from WHO- electrification of rural health facilities

Solar PV designs and health facility selection



- Energy audit conducted in 60 high volume facilities (*providing delivery services*) in March 2016 in Bungoma County.

Key findings of Energy Audit:

- 75% of all facilities were connected to the grid
 - Only 3% had power back-up provided by generators
 - Energy outages occurred up to 3x per week, lasting up to 6 hours
 - 97% of all facilities did not provide warm water for maternity clients' showers
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- **Based on these findings, a solar energy system was designed to provide lighting and power to critical maternal and newborn health emergency equipment at 33 health facilities.**
 - **PV systems range from 1kWP to 7.5 Kwp.**

Solar PV systems

Green energy saves mothers' lives

Many health facilities struggle with power outages, some do not have electricity. Investing in solar power can increase resilience and reduce utility bills of facilities.

Inadequate power supply

More than a third of rural health facilities in Bungoma and a quarter of sub-county hospitals in Kenya are not connected to the grid.



Among facilities with access to electric power, an average of eleven or more outages in three months were reported in the latest Energy Audit Survey.

Power essential functions

Electricity is vital for high quality maternal care as blood banks, laboratories, vaccine fridges and medical emergency equipment need power to function.



Increased green energy capacity

33

health facilities in Bungoma now have solar systems (total capacity of 57.5 Kwp) and 13 facilities also have solar heated water.

Remote management system

PV System Overview | Chwele Sub County Hospital



Study methodology

- Cross-sectional study in 13 sampled facilities with Energy Remote Management Systems
- Cost savings estimation using the Energy Remote Management System
- UNEP carbon emissions calculator
- Workload analysis for maternal and newborn health services in KHIS2
- Key informant interviews – facility managers
- Client interviews

RESULTS

Outcomes of solar installations in health facilities

Improved work environment and client experience

Lighting

Health worker motivation

Client experience



Improved service delivery

Increased immunization coverage

Reduced referral of complications



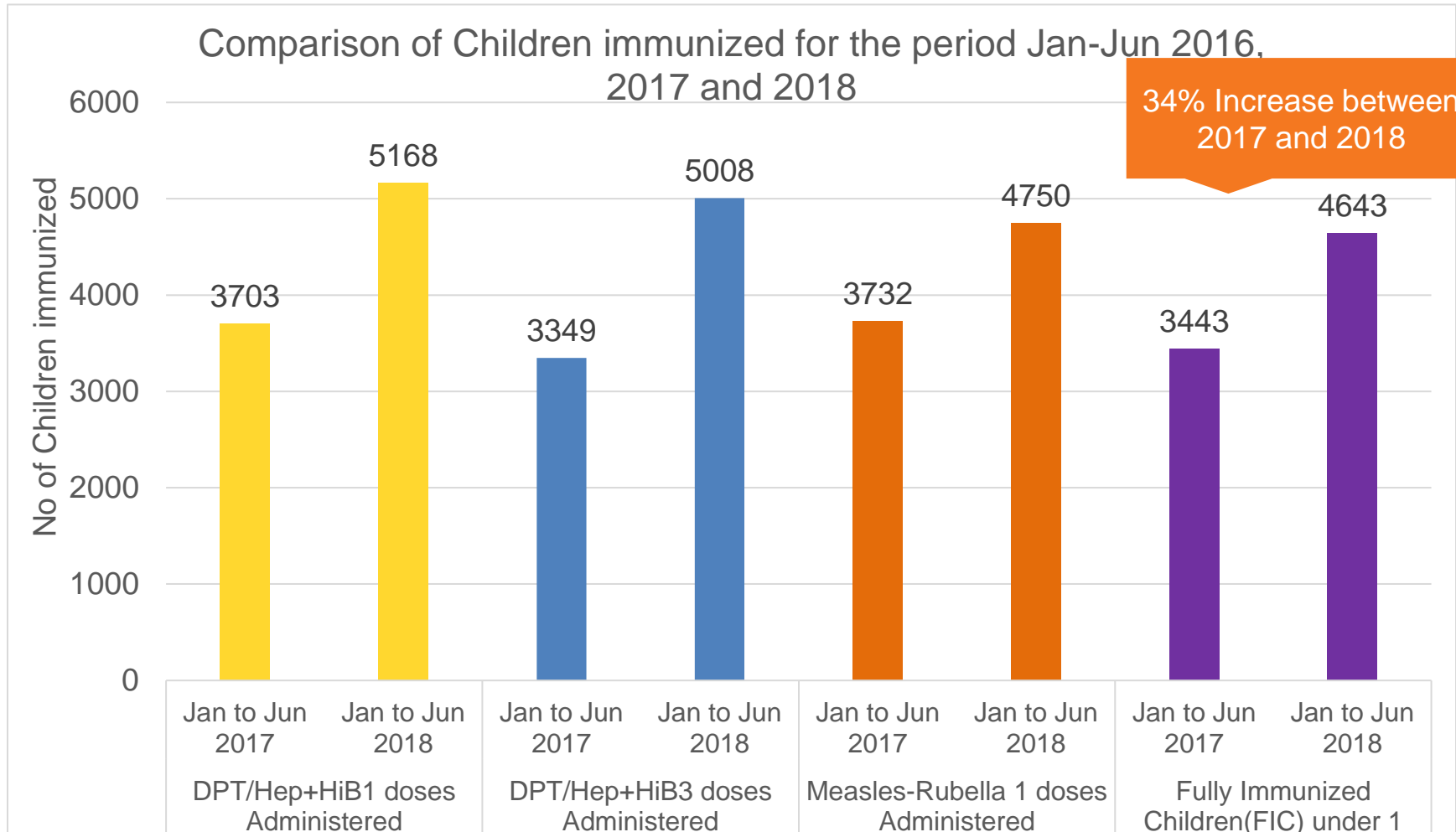
Improved health outcomes

Increased skilled birth attendance

Increased 1st & 4th ANC coverage

Reduction in perinatal and neonatal deaths

R1: Proportion of fully immunized children



R2: Enhanced blood transfusion services

Number of health facilities transfusing increased from 3 to 9

“ *...initially we had a blood bank but because of the unpredictable power supply we had, we could not start blood transfusion services because the blood without the required temperature will go to waste. So after getting the solar services installation and extending to the laboratory department we were comfortable starting running those services for blood transfusion”*



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Nurse, Chwele Sub-County Hospital

R3: Continuous laboratory services

“*When there was grid power outage, mothers had to wait a half day or almost the whole day sometimes for laboratory tests; sometimes we had to refer to a facility that is using a microscope which is not using electricity or even tell the mother to come the next day.*”



Facility In-Charge, Lukhome
Dispensary

R4: Enhanced neonatal care services

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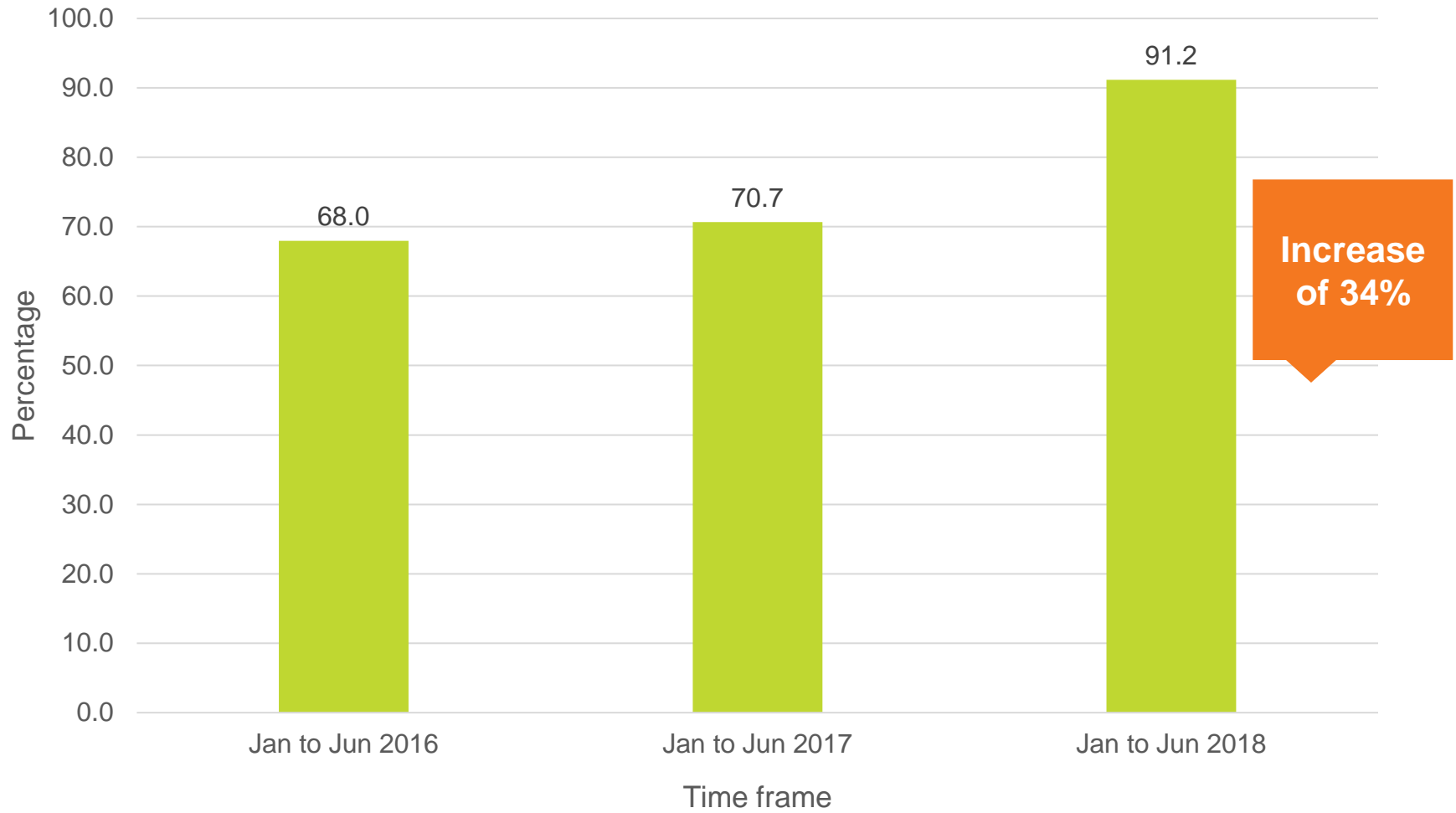
“We were losing some babies who needed resuscitation and working at night was not comfortable because of black-outs. I remember one scenario: we had resuscitated a baby and we had put that baby on oxygen, it was during the day, but suddenly during that day power went off and it never came back, so the baby died because of outage.”

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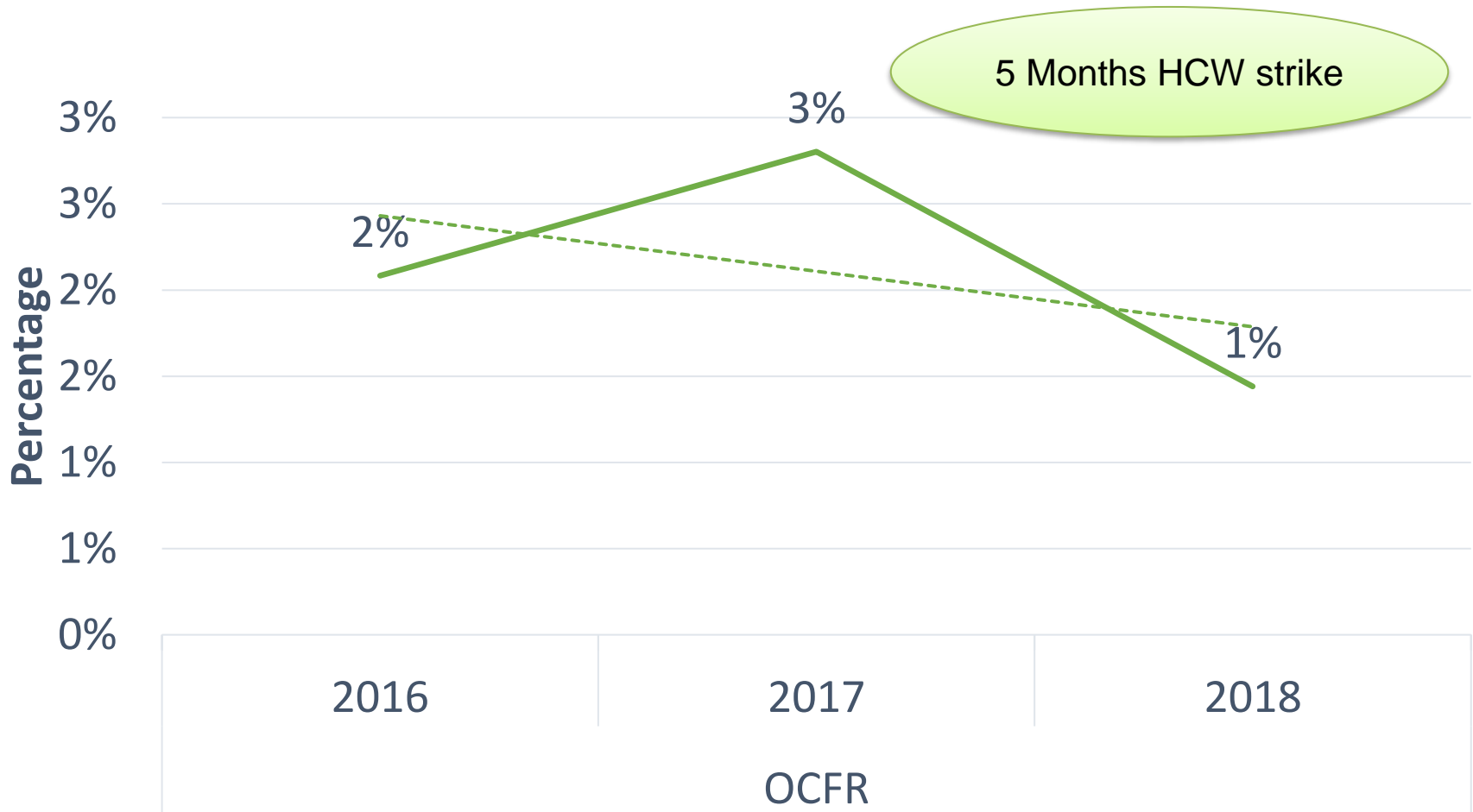
Maternity nurse, Mechimeru Health Centre



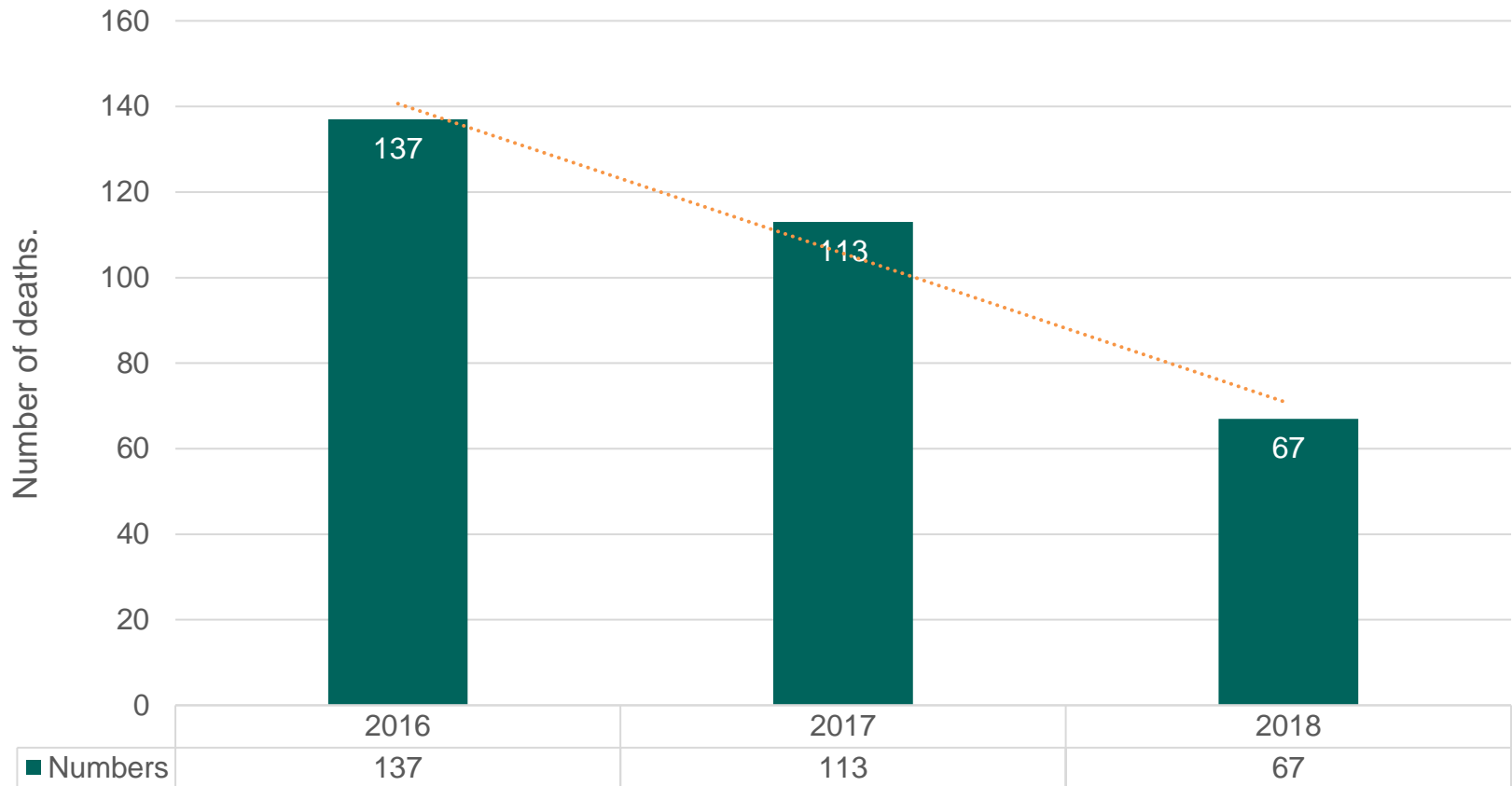
R5: Improved health outcomes – skilled birth attendance



R6: Improved health outcomes reduction in obstetric case fatality rate



R7: Improved health outcomes – perinatal mortality



R 8: Quantity of green energy power generated and cost savings

Estimated financial savings through green energy use:

- Between January and June 2018, the 13 facilities emitted a total of 17,208 Kgs of carbon and **generated 24,583 Kwp.**
- Health facilities saved a total of **Ksh 540,804 (\$5,408 USD)** in 6 months, based on purchasing the equivalent amount of grid power from KPLC

Lessons and key recommendations

- Embracing the health and energy nexus resulted in rapid changes at the facilities where solar systems were installed.
- Low maintenance green energy systems are relevant for improving equitable health care access by augmenting grid power in remote and hard to reach areas.
- There is potential impact of solar energy in reducing maternal and newborn mortality, particularly in remote and hard to reach areas. This suggests that improving health outcomes helping to reduce climate change can happen at the same time.

Thank you!

For more information:

Read our blog:

<https://options.co.uk/news/green-energy-saves-mothers-lives>

Watch our video:

<https://youtu.be/H00Z4U8Hjgg>

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