

Challenging traditional energy solutions: an innovative approach in Kenema Paediatric Hospital, Sierra Leone

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Introduction

Supply of energy is essential to the provision of humanitarian aid, from operating medical equipment, to supporting IT infrastructure and to storing vaccines and drugs. MSF is engaged in increasingly complex medical activities, affected by socio-political and environmental dynamics. Within this context, it is critical to ensure a reliable energy supply. As part of a broader project to develop a new energy vision for MSF, requirements, limitations and risks for MSF projects were analysed and different energy sources (renewable and non-renewable) were evaluated. Recommendations were then made, with a specific focus on a pilot project at Kenema Paediatric Hospital in Sierra Leone.

Methods

The analysis included quantitative and qualitative components. Logistical, medical, supply, and finance data were analysed for a sub-section of MSF projects (representing 26% of MSF's field operations) to understand how energy supply is currently managed and to ascertain key indicators, including types of fuel supply, volumes of fuel, plus associated costs and CO₂ volumes. Qualitative data was obtained through 18 semi-structured interviews with MSF staff, 15 questionnaires covering 112 projects and four workshops with key staff. The findings from these methods were synthesised and presented to a team of internal experts for analysis, leading to a report on requirements and indicators, which then informed a cost / benefit analysis of energy supply options for the Kenema hospital.

Ethics

This description/evaluation of an innovation project did not involve human participants or their data; the MSF Ethics Framework for Innovation (or equivalent) was applied to help identify and mitigate potential harms.

Results

Quantitative data analysis showed that, in 2016, the assessed projects used approximately 5000m³ of fuel, amounting to 13500 tons of CO₂. The requirements developed for Kenema Hospital, including ensuring people's safety, protection of equipment and continuity of service, enabled a benchmarking of solutions, which resulted in a hybrid solar/diesel option being further considered. The cost / benefit analysis of this option against the current system showed the hybrid option to be cost-efficient (6-year return on investment), innovative (involving renewable energies) and sustainable (75% reduction in CO₂ emissions).

Conclusion

This analysis has helped to increase understanding of technical requirements and limitations related to energy use within MSF projects. The hybrid solar/diesel solution was deemed to meet requirements and provide a significant improvement on the current energy system. The hybrid system will now be implemented in Kenema Paediatric Hospital and both implementation and operation will be monitored, documented and evaluated for long-term effects.

Conflicts of interest

None declared.