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Realising the Savings for Hybrid Solar Power Systems

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What are the Big Bold Numbers…

- What are the real costs and What is the expected Savings?
  - The cost of running a site: Our experiences in Africa show us approx. **$40,000** per year per site
  - A Good Hybrid System can save **80% savings** means running cost of: **$8,000** per year; per site for a typical 1.5kW multi-tenant site.

Equates to: **$32 Million** in savings for a network of 1000 sites

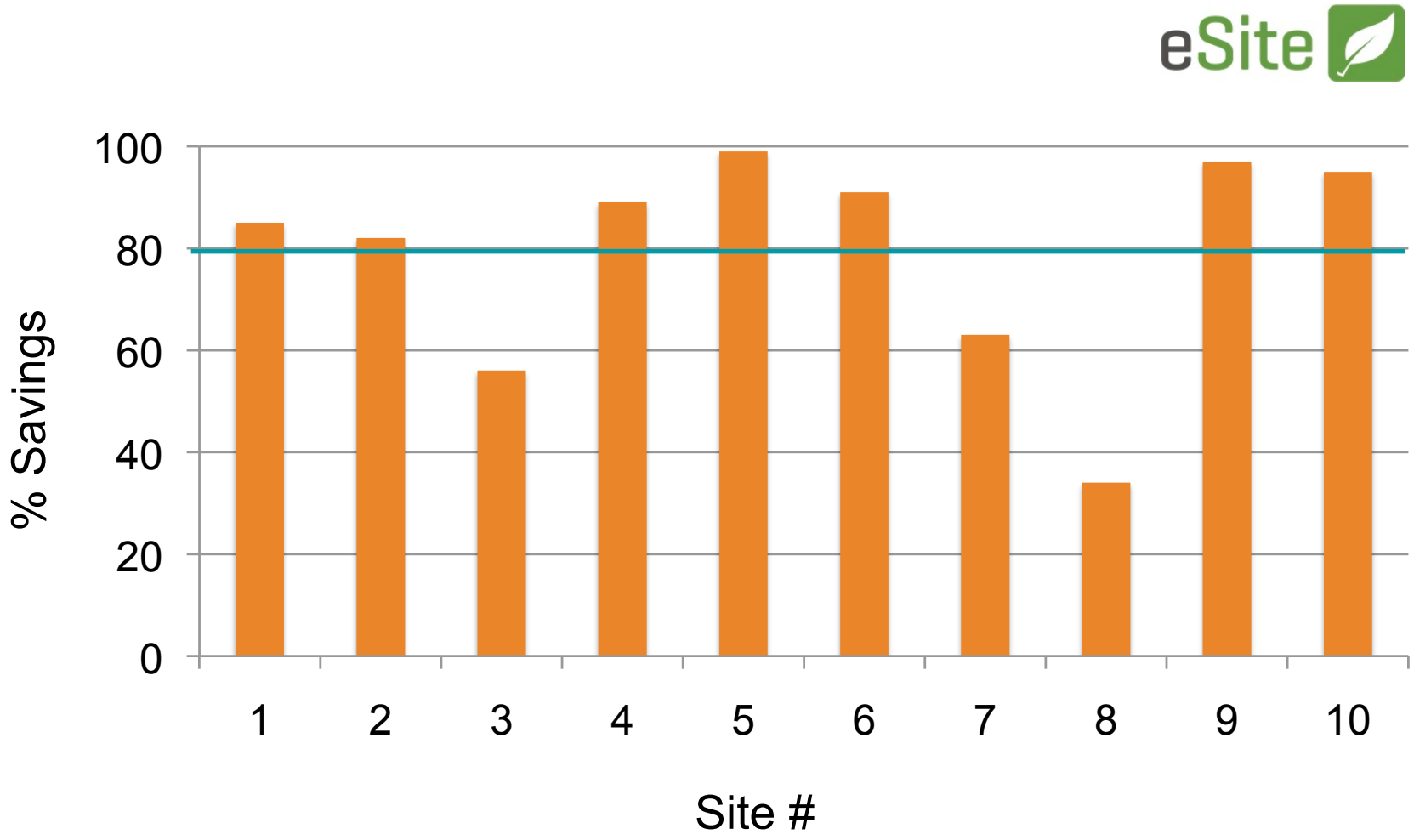


eSite

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Live performance and finding sites requiring actions

Example of eSite live performance data from Nigeria. Low performing sites are identified and actions to bring them up to target performance are taken.



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Key Learnings from the field

- Training is important at all stages of the project and for different levels of personnel
- Remote monitoring of sites is crucial to understand reasons for problems
- Existing gensets can often not deliver power according to the rated kVA.
- Site access to unauthorized affect the performance when tampering with the equipment.
- Re-use of existing batteries means that the expected savings, in most cases, cannot be achieved

The power system provider, the operator or tower company, and the managed service company need to work together to obtain optimal and sustained performance

Green power is a sustainable model when it makes economic sense!

- Performance, performance, performance...
- Monitor, manage and optimise your network over time
- Analyse, take remote and preventive actions

eSite: optimised site power

- eSite is a fully integrated and optimised site power solution delivering up to 90% diesel savings at telecom sites
- eSite provides the best and most sustained performance for site power solutions
  - Modular and flexible
  - Pre-assembled and fully factory tested
  - Fast to deploy and easy to maintain
  - Calibrated to provide optimal efficiency
  - Diriflex – single system controlling all energy sources, enabling optimal decisions regarding energy efficiency
  - eManager for network-level optimisation
  - Designed to last at least 15 years





Flexenclosure Services/Support & Business Model

- Services and Support :
  - Turnkey capability for installation and commissioning
  - Training
  - Local support services and remote expert support
  - Remote monitoring and management system and customer report services
- **Performance of the network is improved by including: Network audits and power optimisation support**
- Sustainable Business Models we see:
  - Capex & O&M – directly with tower operators/mobile/ broadband/VSAT operators
  - Opex Model
    - Financing 100% Opex
    - Financing by Swedish Bank EKN
    - Financing by IFC (World Bank)
  - Capex with Commitment Model – Vendor takes a risk by committing savings performance within the contract

eManager



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Key development and achievements during 2012/2013

Energy efficiency and green telecom development

- **eSite k10**: energy efficient hybrid power system for shared sites
  - Up to 10 kW load for off-grid and bad grid sites
  - Power distribution and control for 4 tenants
  - Modular solution: Battery bank, rectifiers and controlled DC distribution are easy to expand
- **eManager**: eSite integrated site power monitoring and management system
- **Further improvisation** in battery charging mechanism: Further diesel savings
  - 'Partial state of charge' with dynamic operational point for fastest charging
  - Scheduled fully charge cycle to prevent battery aging effects
- **Field calibrated tool** for performance prediction and business case analysis

Deployments in 7 new countries: Tanzania, Ghana, Swaziland, South Sudan, Botswana and Pakistan

And….Flexenclosure's first tower company order in Nigeria.

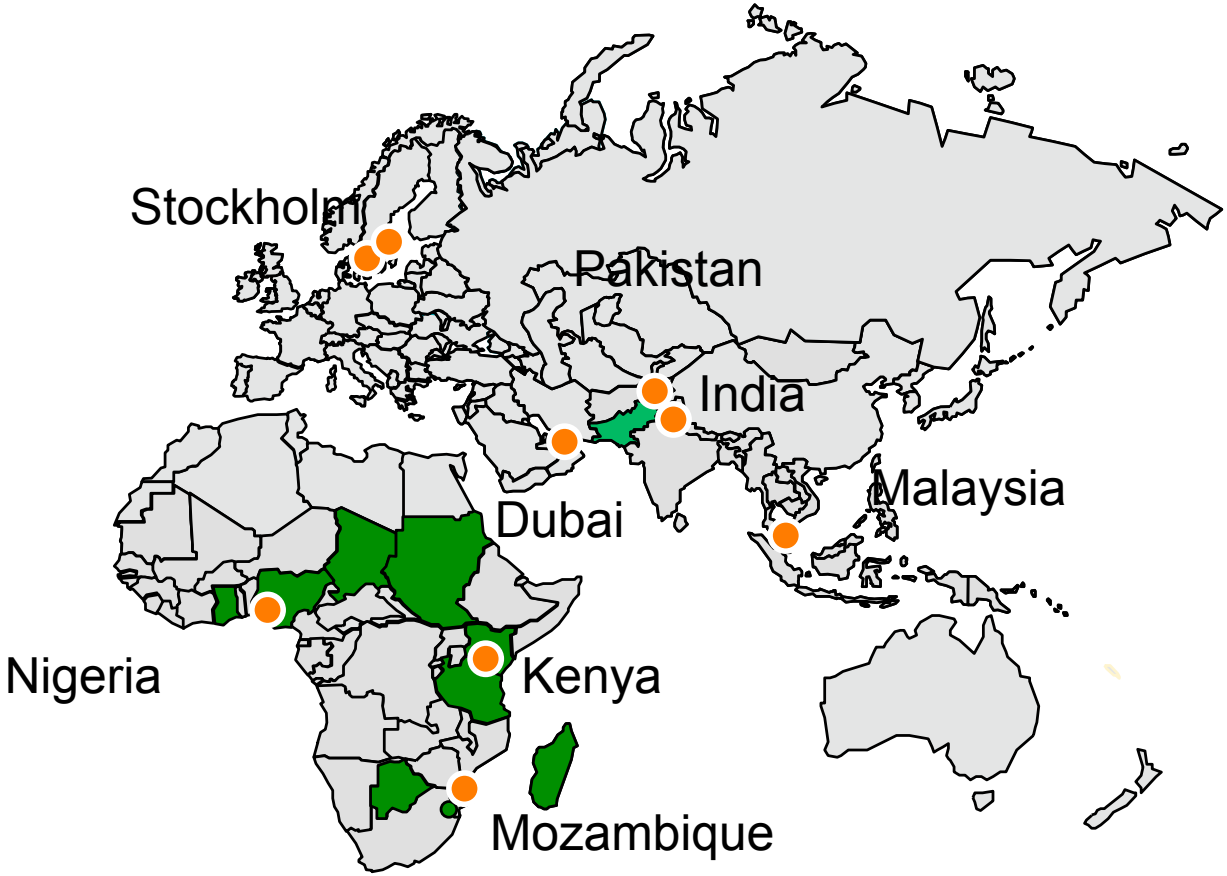
Actual measured savings of eSite deployments

Operator	eSite type	Average load	Genset run-hours with eSite	Genset run-hour reduction	Deployed
Airtel Ghana	Solar	2.5 kW	5.8 h/day	76%	2012
Airtel Kenya	Solar & Wind	1.4 kW	1.8 h/day	92%	2009
Airtel Nigeria	Solar	1.0 kW	2.4 h/day	91%	2011
Airtel Tanzania	Solar	0.9 kW	2.0 h/day	92%	2012
Bharti Infratel India	Solar	1.5 kW	3.3 h/day	86%	2012
Etisalat Nigeria	Solar & Wind	1.6 kW	1.5 h/day	94%	2011
MTN Nigeria	Solar	1.4 kW	4.5 h/day	81%	2011
MTN South Sudan	Solar	1.4 kW	2.2 h/day	91%	2013
MTN Swaziland	Grid	1.6 kW	0.9 h/day	96%	2012
Orange Madagascar	Solar & Wind	1.4 kW	1.2 h/day	95%	2011
Telenor Pakistan	Solar	0.9 kW	2.3 h/day	90%	2009
Telenor Pakistan	Grid	1.2 kW	0.6h/day	98%	2013
Vodacom Tanzania	Solar	1.6 kW	2.6 h/day	89%	2012
Zain Sudan	Solar & Wind	1.3 kW	0.5 h/day	95%	2011

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Flexenclosure presence and activities in green telecom

Flexenclosure office locations and countries with eSite deployments









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eSite – providing peace of mind to green telecom

- **eSite** enables lowest possible site opex
- **eSite** enables capital efficient growth in multi-tenant environments
- **eSite and eManager** provide the technical flexibility to enable the best economic solution in every site situation – off-grid and bad-grid
- **eSite** means peace of mind in extreme environments



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