IFC International Finance Corporation World Bank Group

GSMA Green Power for Mobile

In partnership with Netherlands

green NETWORKS

GPM Africa Market Analysis: Key Findings

Green Power for Mobile Africa Regional Working Group, Kampala

28-29 May 2013

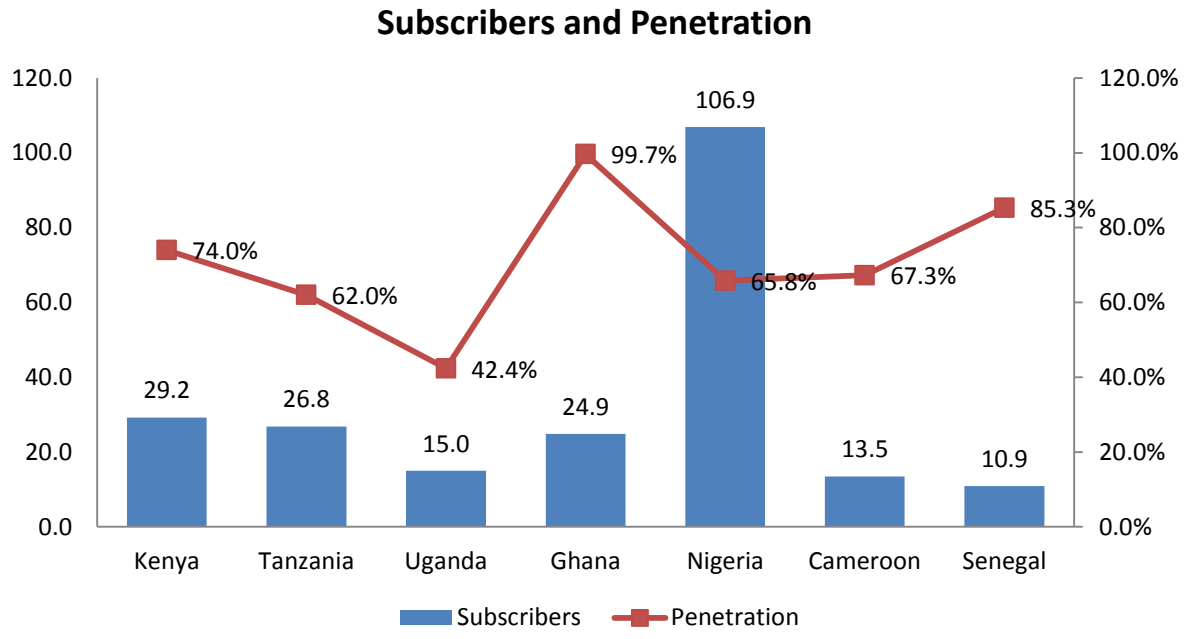
Background

- **East Africa**
  - Kenya
  - Tanzania
  - Uganda
- **West Africa**
  - Ghana
  - Nigeria
- **Francophone Africa**
  - Cameroon
  - Senegal



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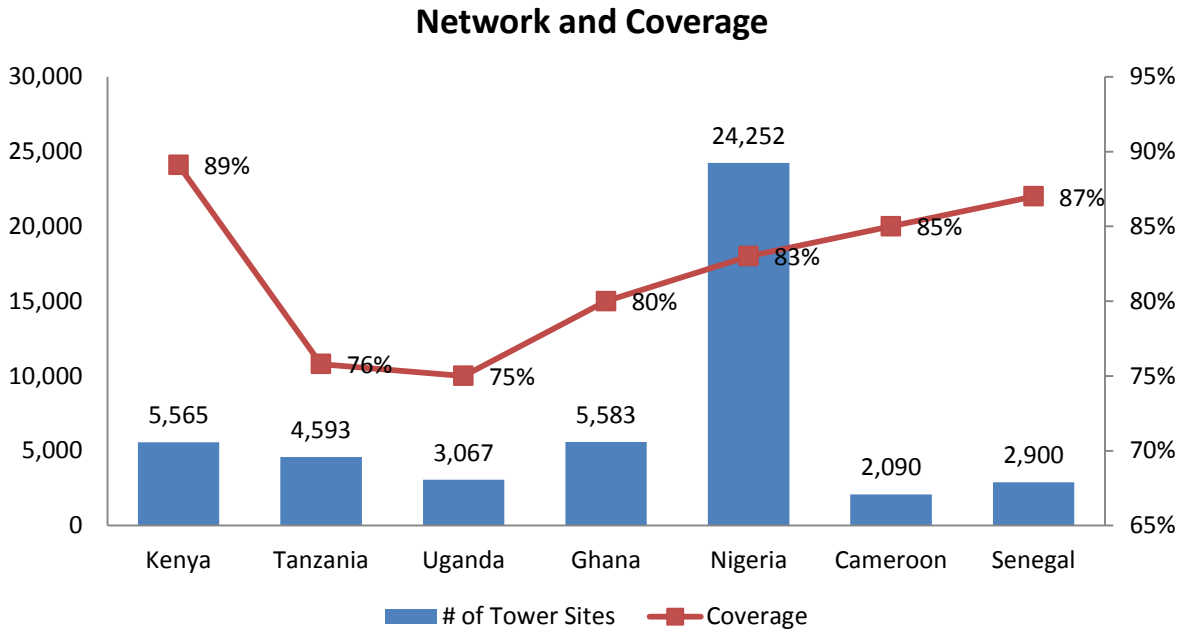
Telecoms Context: Subscribers



- Annual subscriber growth ranges from as low as 5% in Tanzania to 35% in Cameroon over 2011-2012
- Ghana have close to 100% mobile penetration
- Nigeria is the biggest mobile market with over 100million subscribers
- Low penetration levels present good opportunity for subscriber growth

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Telecoms Context: Network

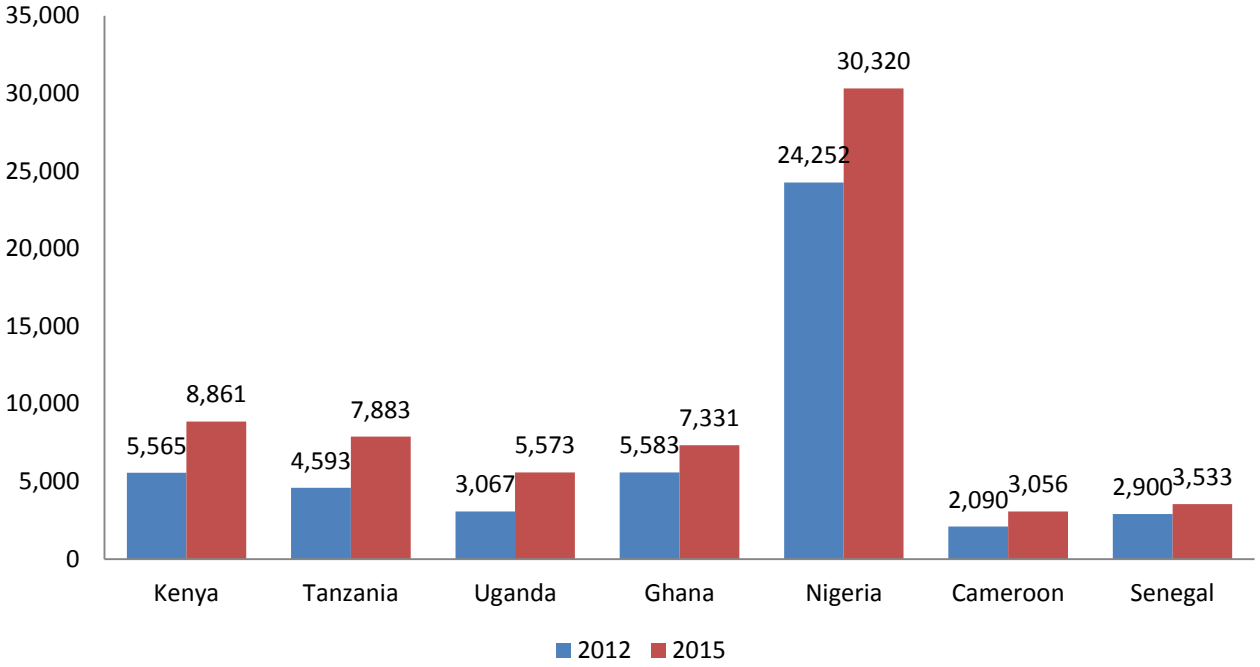


- More than 95% of the uncovered population is rural
- MNOs face infrastructure challenges to expand coverage to the uncovered remote/rural population
- The reach of grid power infrastructure considered as the biggest hurdle to network expansion

Limited network coverage present opportunity for network expansion and growth

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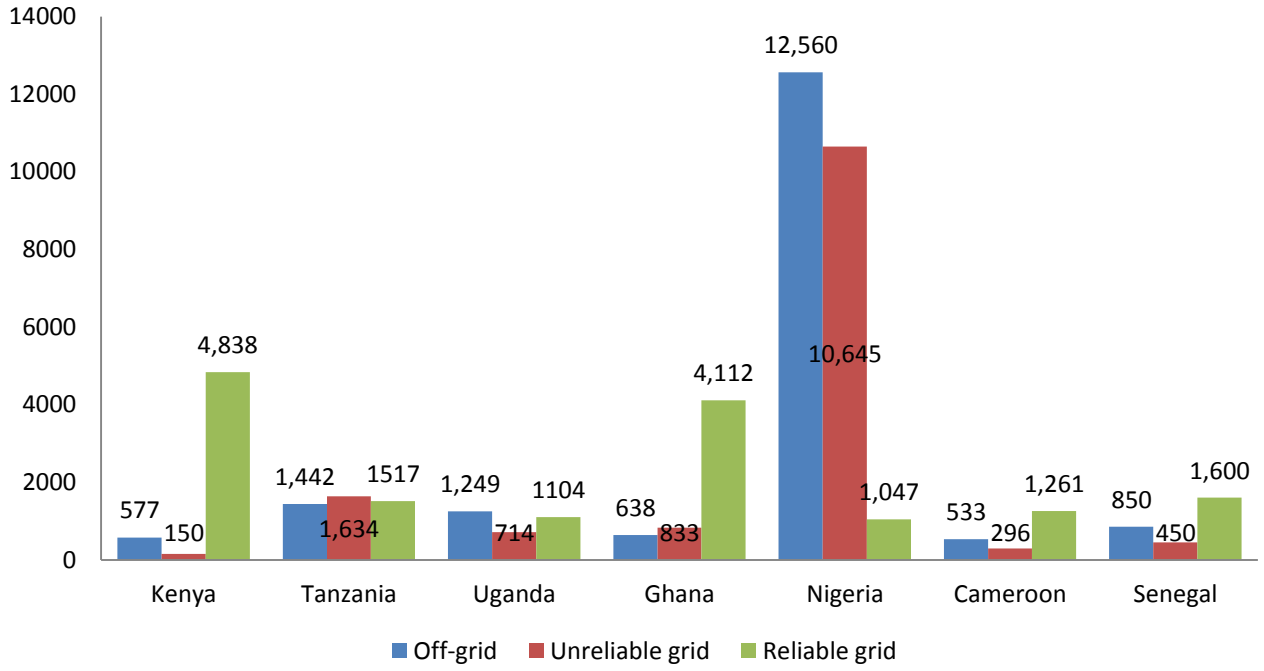
Growth Forecast



- GPM estimates that the number of telecom sites will increase from 48,050 in 2012 to 66,567 by 2015 at a CAGR of 11% across the seven countries
- The estimate is based on current coverage levels, network capacity requirements, and demographic and geographic characteristics across countries
- New industry trends including tower sharing model will affect the rate of expansion of the network across countries

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Power and Telecoms



- The availability and reliability of grid power is a concern across the region leading to huge number of telecom sites located in off-grid and unreliable-grid areas
- Tanzania, Uganda and Nigeria have majority of their network falling in off-grid and unreliable grid locations
- Out of the total 48,000 sites across the seven countries, nearly 18000 (~37%) are off-grid and 15000 (~30%) are unreliable grid sites

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Powering Telecoms: Current Approach

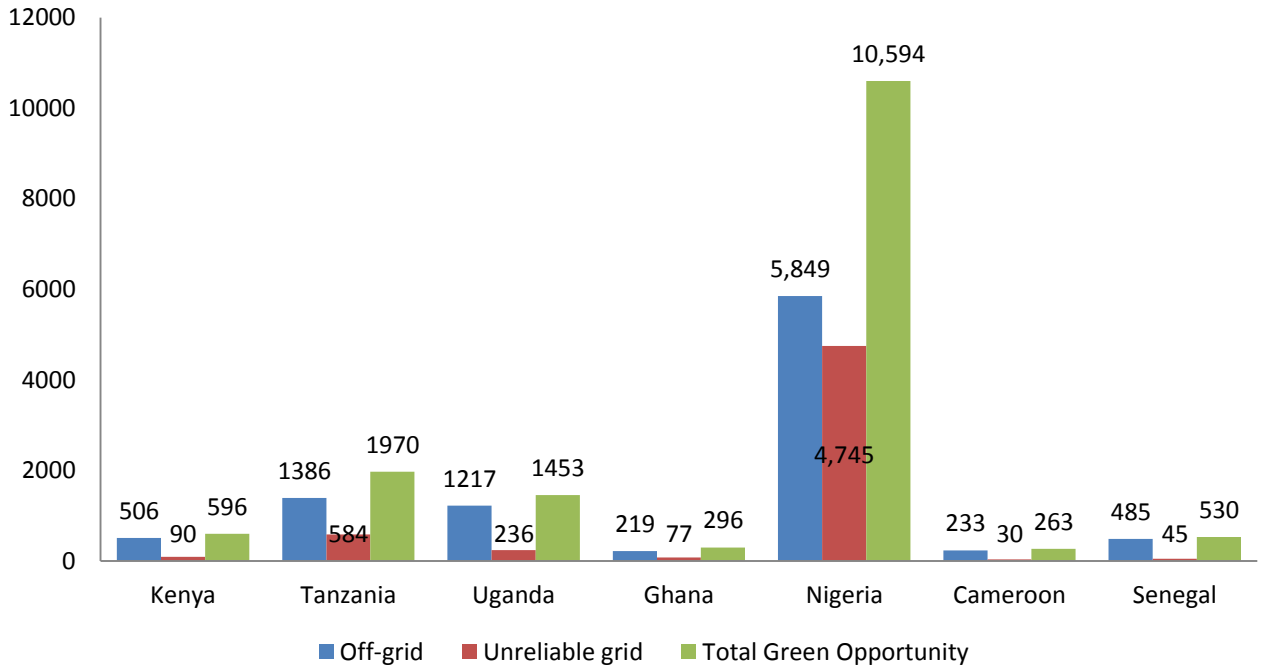
Powering Scenario: Off-grid

	Kenya	Tanzania	Uganda	Ghana	Nigeria	Cameroon	Senegal
24x7 DG	161	442	498	133	7,066	233	485
DG+Battery hybrid	345	944	719	496	5,221	118	150
Green Power	71	56	32	9	273	182	215
Total Off-grid	**577**	**1442**	**1249**	**638**	**12,560**	**533**	**850**
% of Green power	*12%*	*4%*	*3%*	*1%*	*2%*	*34%*	*25%*
% of 24x7 DG	*28%*	*31%*	*40%*	*21%*	*56%*	*44%*	*57%*

- More than 50% of the total off-grid sites are powered by 24x7 diesel generators
- Only 5% of the total off-grid sites are deployed with green power alternatives, while remaining 45% sites are deployed with DG-battery hybrid power systems to reduce diesel OPEX

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The Green Opportunity



- GPM estimates that a total of over 15,700 sites present opportunity for green power adoption; of which ~63% are off-grid and remaining are unreliable-grid sites
- Nigeria presents a huge opportunity in terms of number of potential sites. More than 67% of the potential sites across the seven countries are in Nigeria

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The Green Opportunity: Benefits

	Potential sites	Investment required (million US $)	Potential OPEX Savings (million US $)	Reduction in diesel consumption (%)
East Africa	4019	173	59	73%
West Africa	10890	517	192	76%
Francophone Africa	793	33	11	67%
Overall	**15702**	**723**	**262**	**72%**

- Overall investment required to convert the potential sites to green power is US $723 million
- The green power adoption at the potential sites will benefit operators with an OPEX saving of US $262 million by reducing the consumption of diesel by ~72% from current levels

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The Green Opportunity: Barriers

Technology

- Availability and cost of technology
- Limited skills on technology selection and right solution dimensioning
- Technical support post deployment

Operational

- Reliability of technology and vendors
- Theft, vandalism of equipment
- Lack of committed support from partners at ground level

Financial

- Funding choices in addition to internal budgets
- Limited knowledge and support from commercial banks to finance green deployments
- Proven business models for off-loading the funding requirement

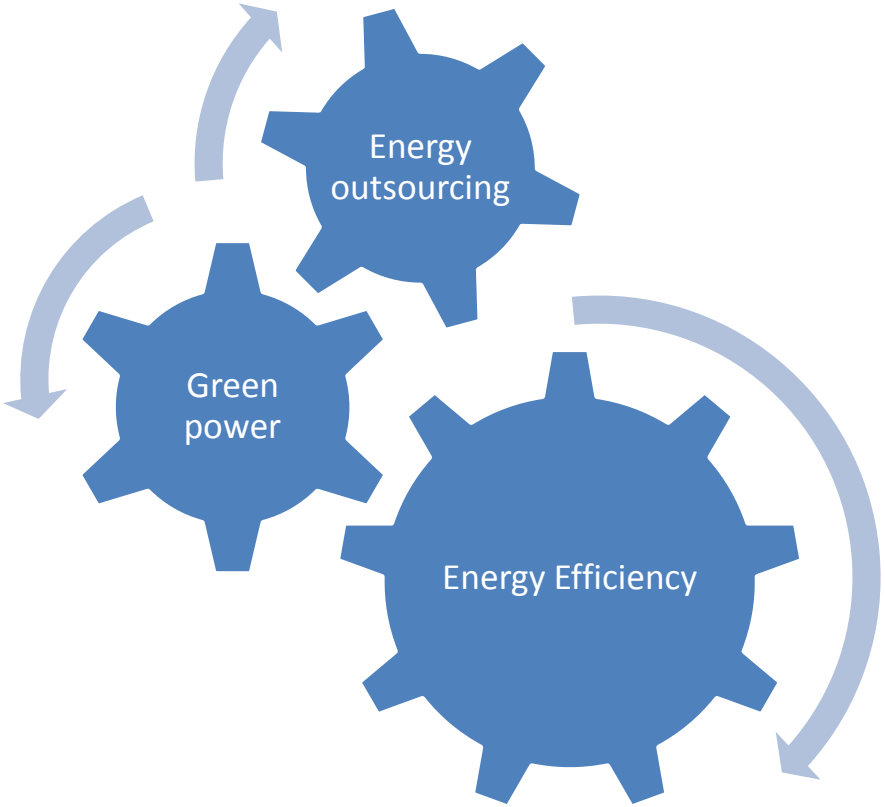
Eco-system

- Availability reliable operational partners and technology vendors
- Local knowledge and technical support
- Regulatory support and policy guidelines to drive the green adoption

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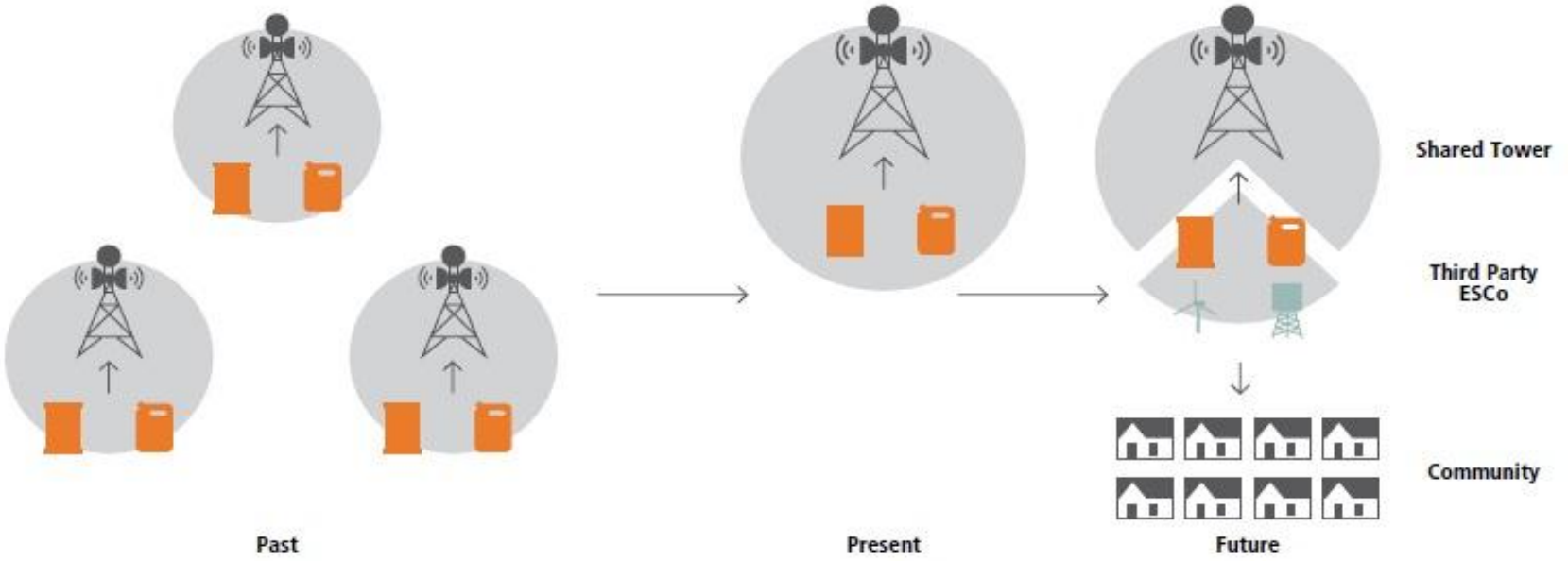
The Green Opportunity: Strategy

- Long term view on energy efficiency and green power investments
- Network energy efficiency to optimize network and future energy requirement
- Standardization power requirements based on site characteristics
- Analyse potential green choices and vendor landscape to support deployments
- Develop business case for financial feasibility and investment planning
- Understand available deployment models
- Clear procurement strategy to meet the energy needs of the network



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Energy outsourcing: opportunity



	Potential sites - 2012	Investment required – 2012 (million US $)	Revenue Potential – 2012 (million US $)	Additional Potential sites by 2015	Additional Investment required by 2015 (million US $)	Revenue Potential by 2015 (million US $)
East Africa	5766	276	92	3882	189	155
West Africa	10042	725	268	3304	238	341
Francophone Africa	905	45	14	620	31	22
Overall	**16713**	**1046**	**374**	**7806**	**458**	**518**

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References

1. Powering Telecoms: GPM Market Analysis – East Africa
2. Powering Telecoms: GPM Market Analysis – West Africa
3. Powering Telecoms: GPM Market Analysis – Francophone Africa

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Thank You!

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