IFC International Finance Corporation World Bank Group

GSMA Green Power for Mobile

In partnership with Netherlands

Green Telecoms: Current progress, Opportunities & prospects

Green Power for Mobile Working Group - Africa

Dar es Salaam, 12-13 Aug 2014

Objective

- ✓ Providing market insights and highlight opportunities
  - To analyse the state of the telecom market and how networks are currently being powered
  - To provide an understanding of the potential of alternative energy solutions, in particular green power.
  - Take context of various elements, including the industry structure, the regulatory environment and the current state of power within the telecom infrastructure
  - Size of the market and state of power for telecoms
  - Green power resources and potential
  - Future trends, business models and opportunities for green power adoption



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Background and the context

Size of Industry by Number of Towers: Global and Africa

Powering Context and Alternatives to diesel power

Current progress in Green Power adoption

Perceived Barriers and Opportunities

Industry trends and prospective business models

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Mobile growth and electricity infrastructure



- Over 800 million mobile connections, growing at >10.5% annually
- Nearly 450 million unique subscribers, SSA accounts for ¾ of the subscribers
- Market penetration of mobile connections ~ 75.5%;
- **Mobile network coverage at an average of nearly 70% of the population (ranging from ~ 10% to 98% across countries in Africa)**

- Electrification rate in Africa 43% (**urban 65% and rural 28%**); ~ 600 million people without access to electricity

Mobile networks in Africa have grown beyond the electricity grid in most countries across Africa

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Mobile Network Operator's Energy Challenges

INFRASTRUCTURE CHALLENGES

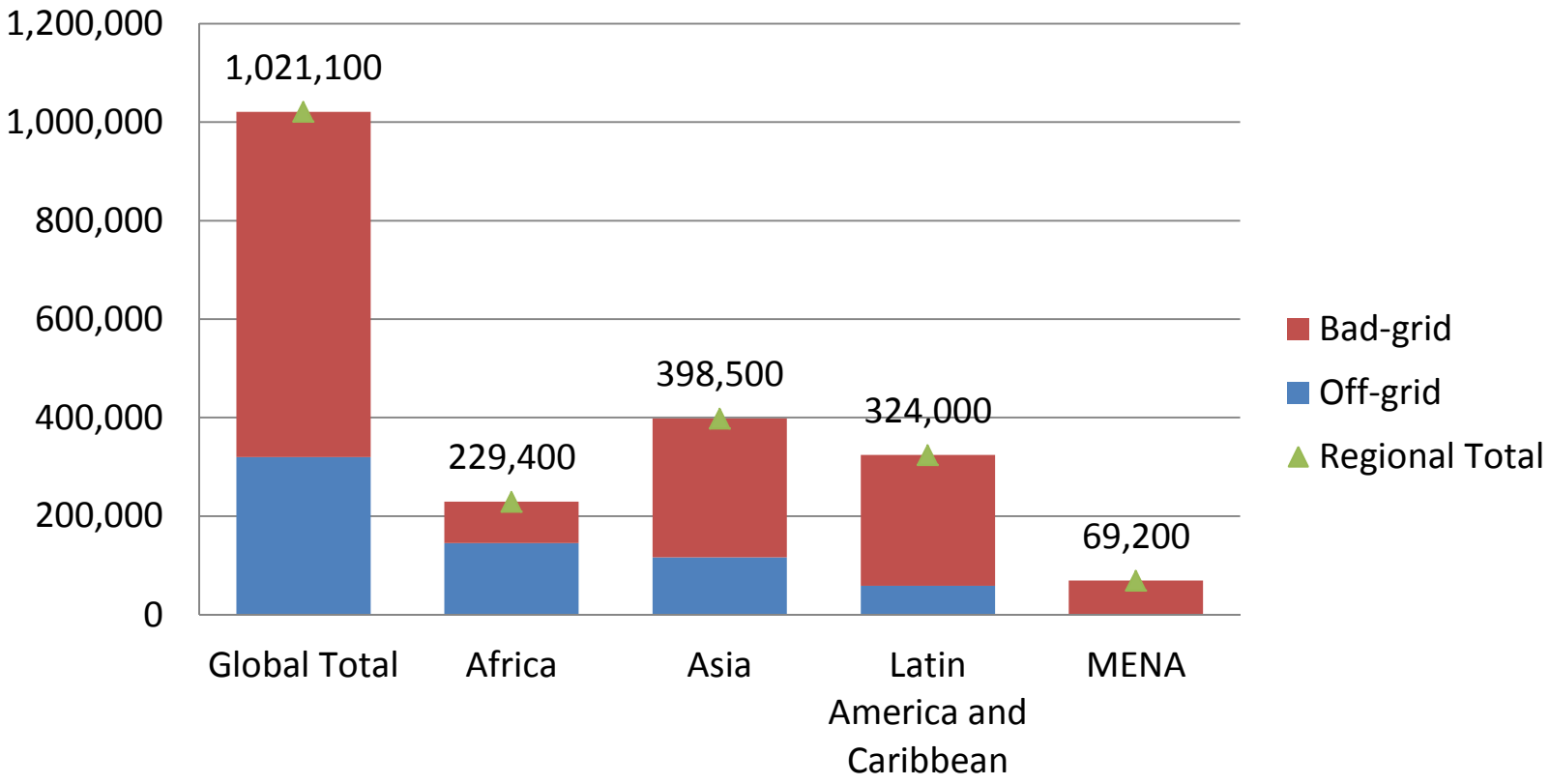
- MNO/Tower Companies face challenges to power their existing network
  - Operate in off-grid areas
  - Unreliable power supply for on-grid sites
  - Heavy reliance on diesel power
- MNOs face infrastructure challenges to expand mobile coverage
  - The limited reach of grid power infrastructure considered as the biggest hurdle
  - The majority of the uncovered population are living in rural and remote off-grid areas

OPERATIONAL CHALLENGES

- Diesel theft is a big challenge affecting OPEX
- Equipment theft/vandalism hinders OPEX saving investments
- Site security is a major issue as there have been several cases of damage to tower assets

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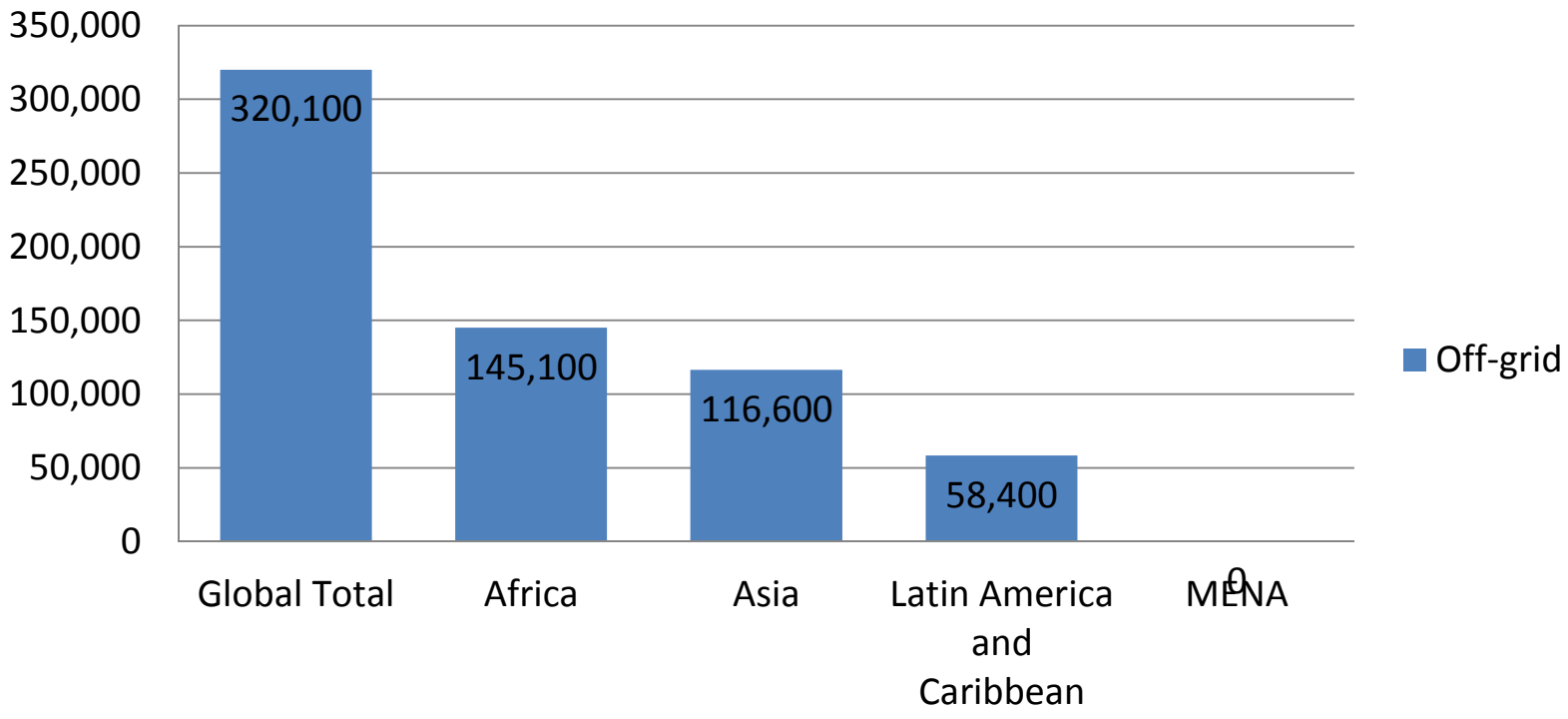
Market Size: Off-Grid and Unreliable Grid towers in Africa/Global



- Total universe for hybrid and green deployments – over 1 million sites(off-grid and bad-grid sites)
  - Off-grid sites have proven business case for green power
  - Bad-grid sites are most likely to adopt battery hybrid solutions

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Africa has the highest number of Off-grid sites



- Total universe for green deployments – over 320,000 sites(off-grid sites)
  - Off-grid sites have proven business case for green power
  - Africa has highest number of off-grid sites followed by Asia

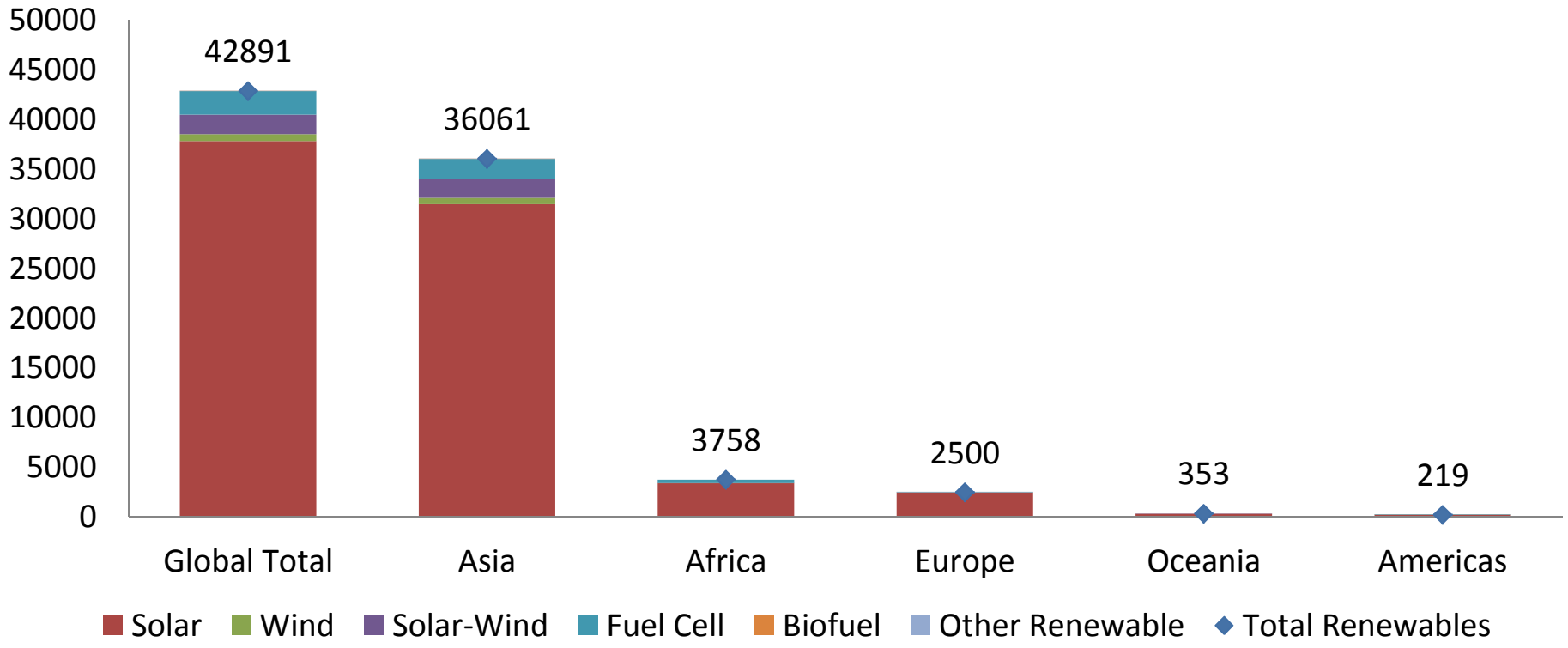
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Powering Options – OPEX saving potential

Grid Extension	If available and reliable, grid is the most cost effective powering option
Diesel Battery hybrid	Low investment, reasonable OPEX savings (30% to 50% OPEX savings)
Green Power	High investment, higher OPEX savings (up to 90% OPEX savings)
Energy Efficiency	Very low investment with reasonable OPEX savings (up to 25% OPEX savings)

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Green power adoption – current progress



Green progress

- Total global green deployments just over 13% of total off-grid sites
- Asia has approx. 31% of total off-grid sites having deployed with green power
- **Africa has less than 3% of total off-grid sites deployed with green power**

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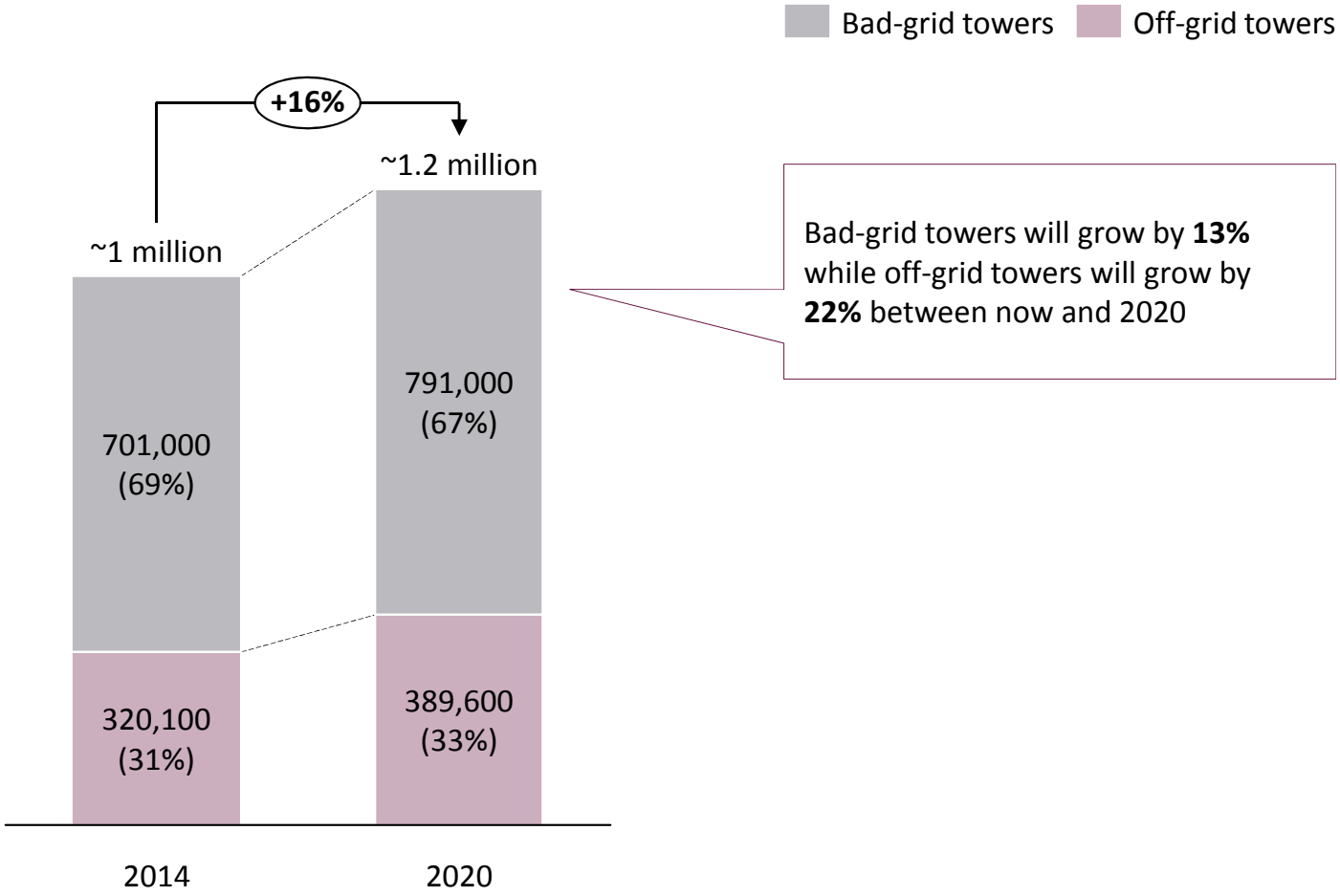
Green power adoption – barriers and challenges

Financial	Operational	Technology	Eco-system
• 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	• Reliability of technology and vendors • Theft, vandalism of equipment • Lack of committed support from partners at ground level	• Availability and cost of technology • Limited skills on technology selection and right solution dimensioning • Technical support post deployment	• 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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Growth in Off-grid and Bad-grid network size - Global

Total number of off-grid and bad grid towers
# of towers

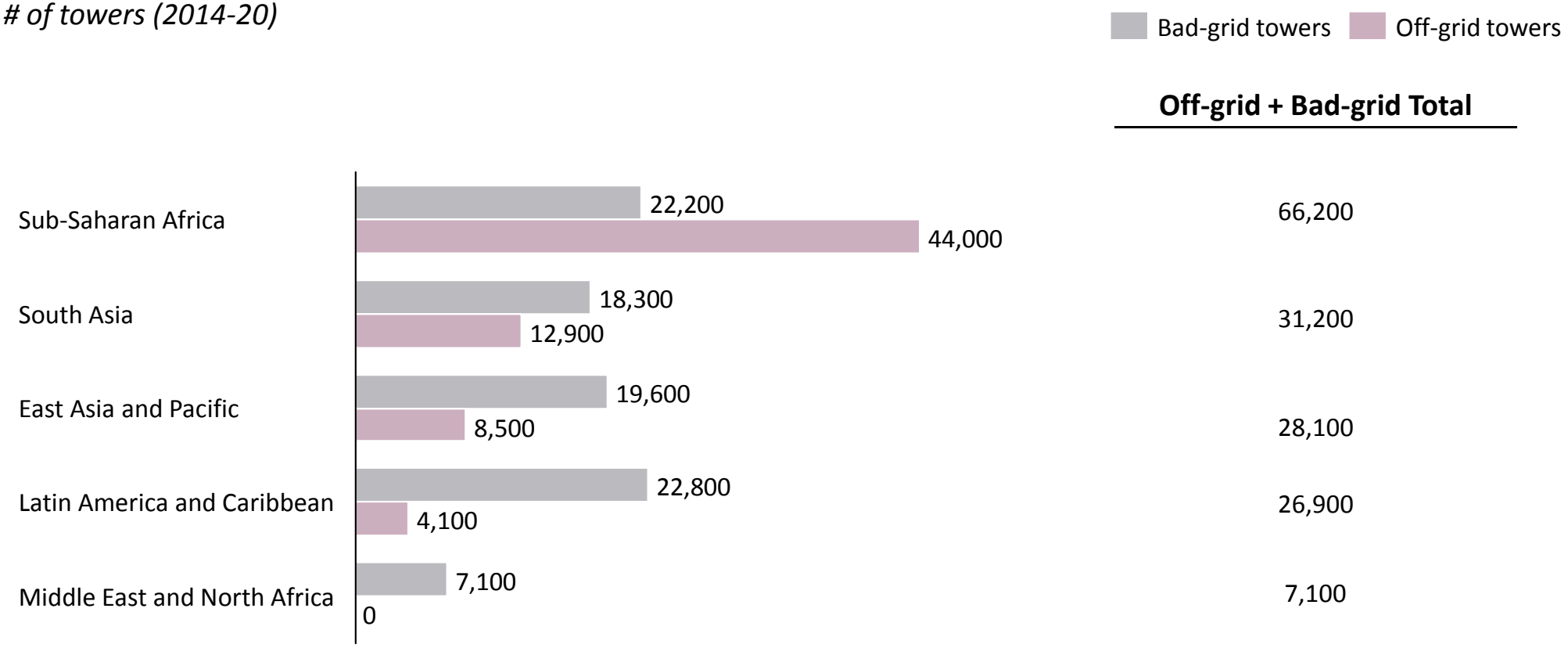


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Growth in Off-grid and Bad-grid network size - Global

Additional off-grid and bad grid towers by region

# of towers (2014-20)

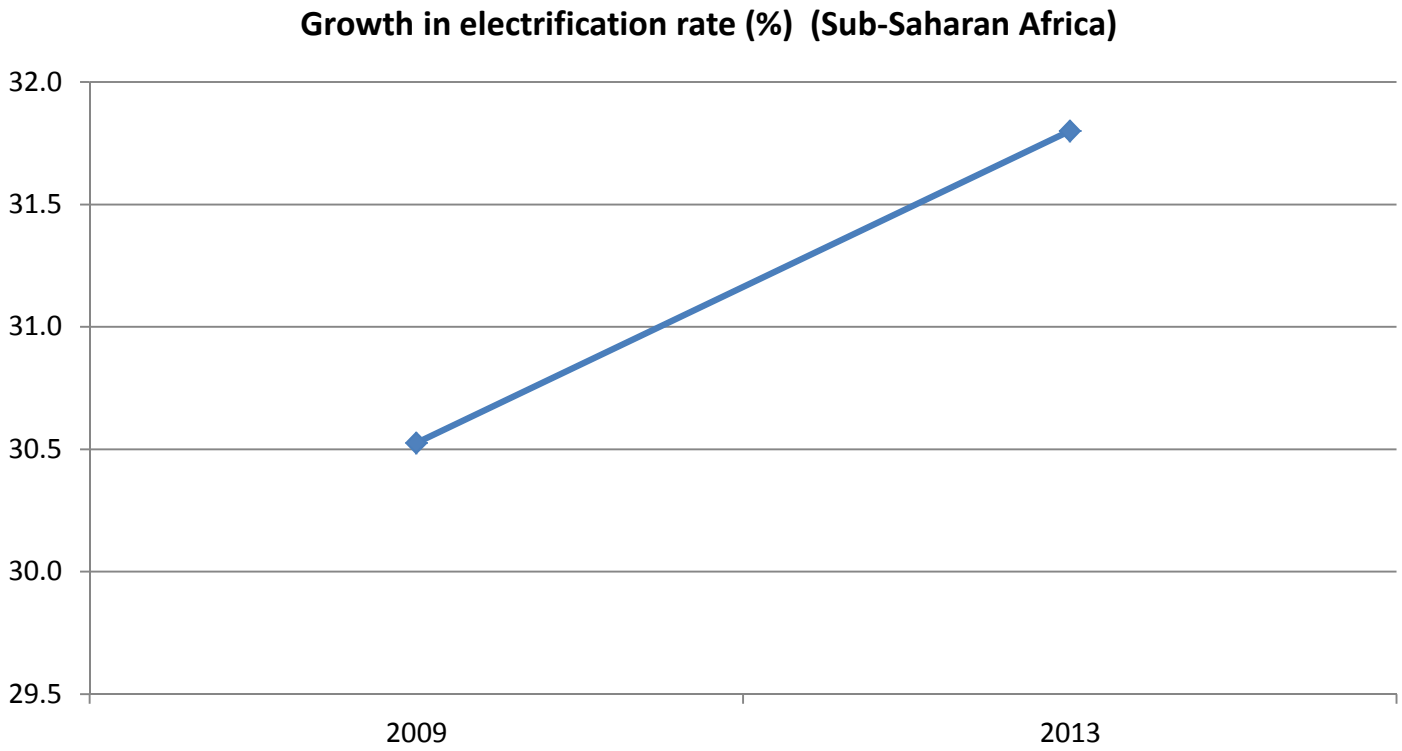


Main drivers will be extension of coverage into rural areas in Africa and Asia that have poor grid electrification.

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Growth in grid is much slower than mobile networks

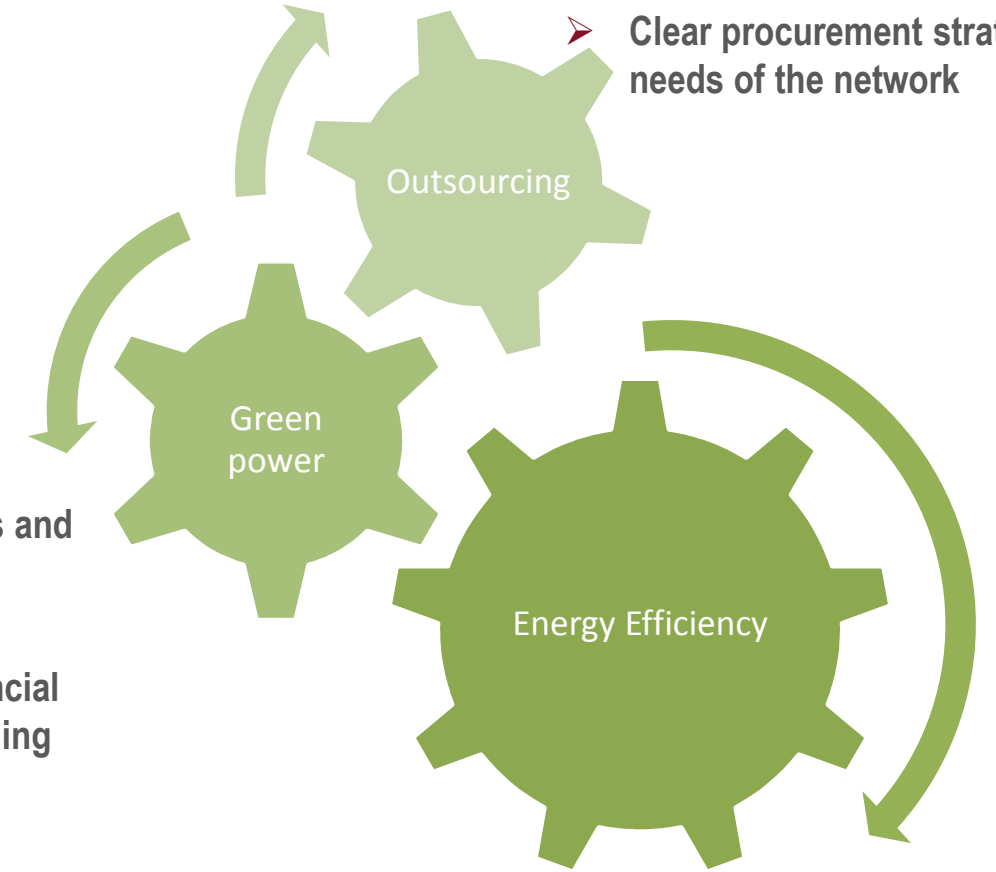
- Grid expansion by utilities is slow taking longer to reach the off-grid areas
- Grid extension costs are high and often require operators to invest in equipment
- Grid is mostly unreliable with daily power outages as high 18 hours



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Need for a long term strategic view

- Understand available deployment models
- Clear procurement strategy to meet the energy needs of the network

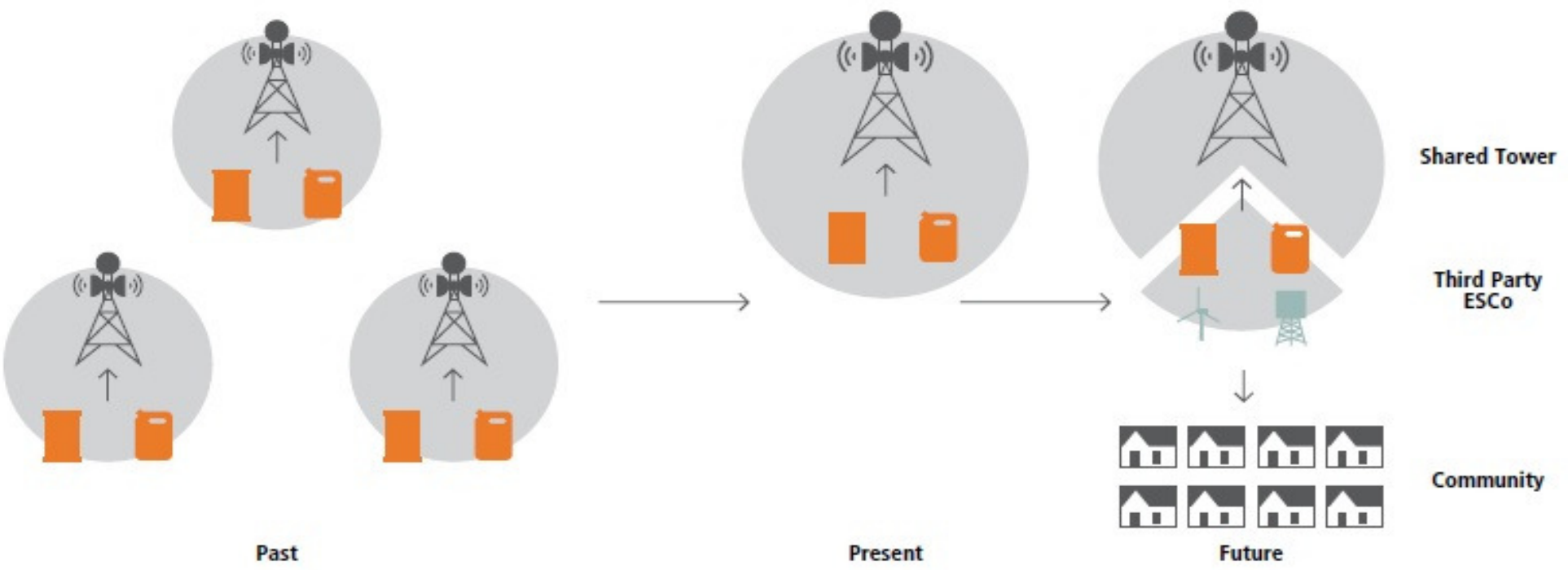


- Analyse potential green choices and vendor landscape to support deployments
- Develop business case for financial feasibility and investment planning

- Long term view on energy efficiency and green power investments
- Network energy efficiency to optimize network and future energy requirement

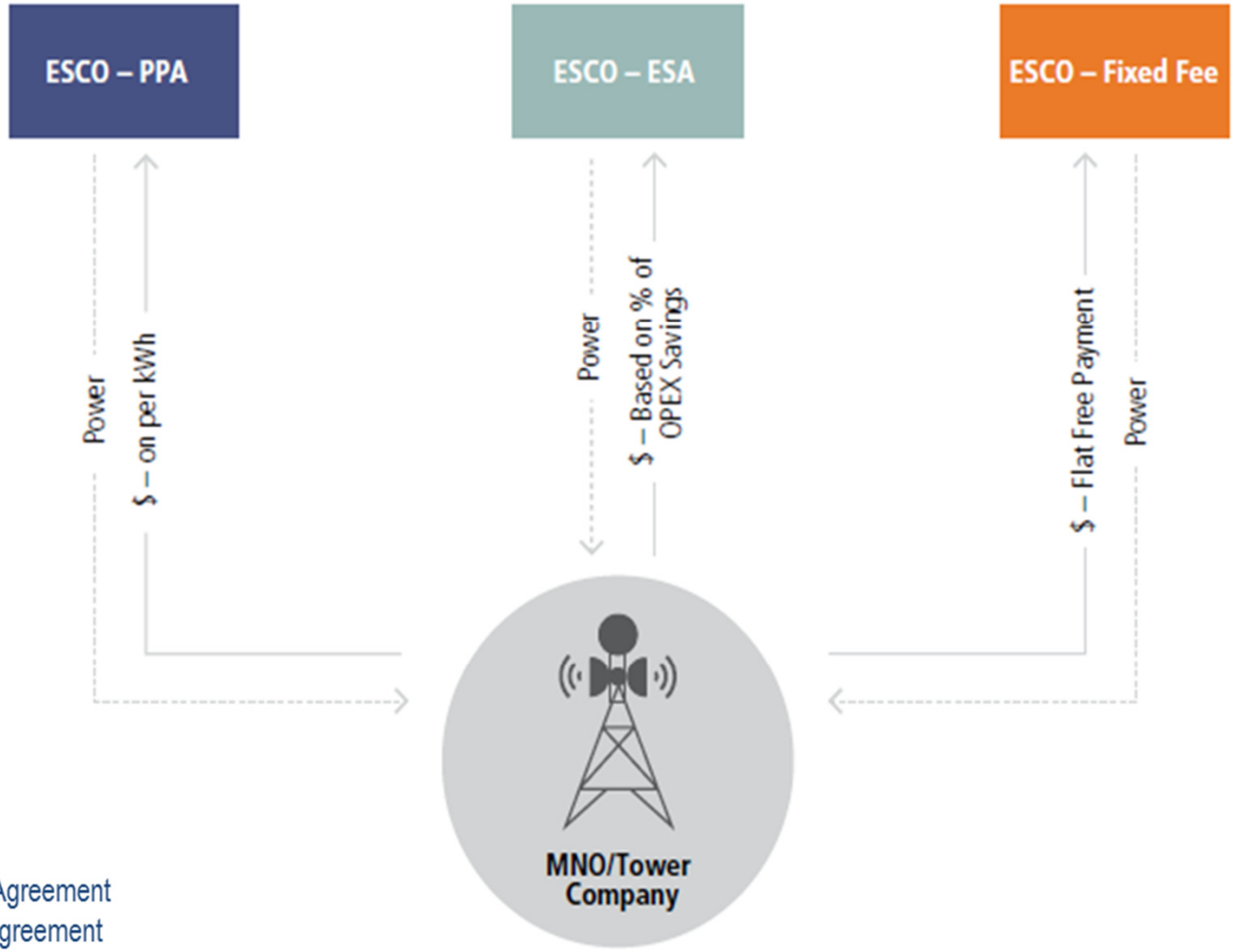
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Changing industry structure – lead by outsourcing



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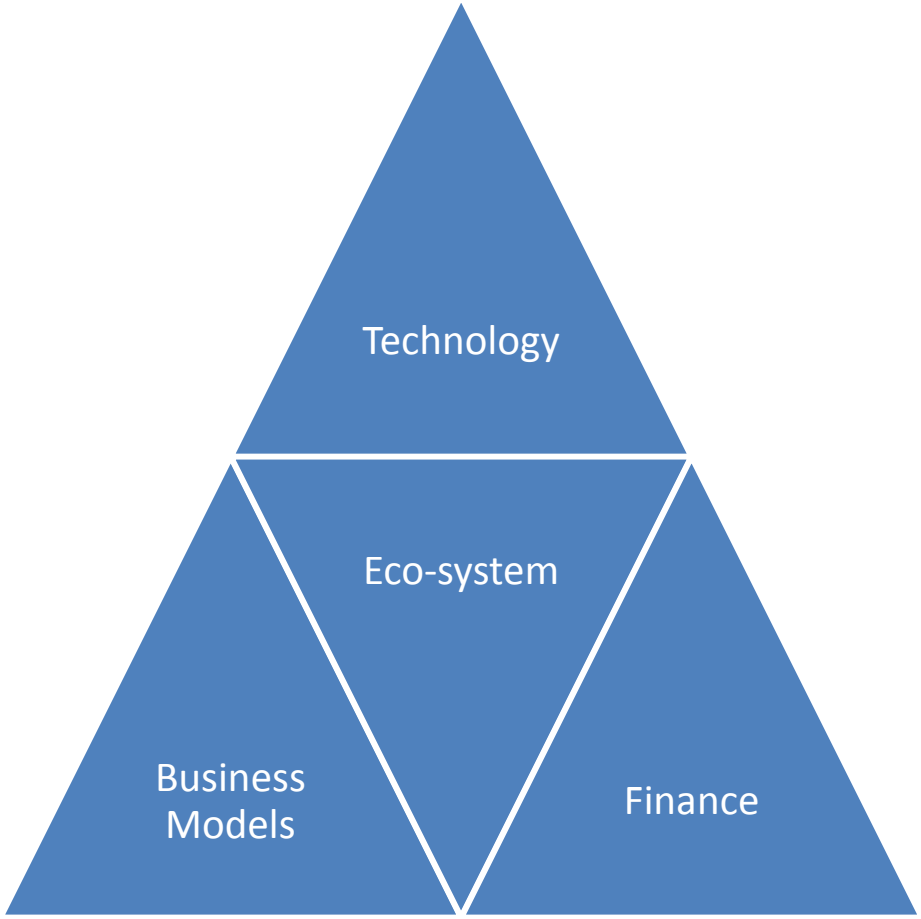
Evaluate and adopt right business models



PPA – Power Purchase Agreement
ESA – Energy Savings Agreement
Fixed Fee – Monthly Fixed payment

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Right support structure



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References

1. GSMA-IFC Green Power for Mobile programme
2. GPM Resources
3. GPM Global Research and Analysis

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Thank You!

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