IFC International Finance Corporation World Bank Group

GSMA Green Power for Mobile

In partnership with Netherlands

robi

2nd Green Power for Mobile Bangladesh specific Working group

11th May 2013

Agenda

Opening session, GSMA market analysis highlight and Operator experience sharing

0930 – 1110
- **GSMA Market Analysis Highlight, by Ali Imron of GSMA**
- **Welcome note from CEO, by Michael Kuehner of Robi**
- **Dialling for sustainable future, by Asif Rahman of Robi**
- **Moderated discussion**

Technology development

1035 – 1315
- **Energy Storage, by Moga Purushottam of Deeya Energy**
- **Energy Efficiency, by Shah Md. Sazzad Hossain of Eltek**
- **Fuel Cell Update, by Ferdous Mottakin of GSMA**
- **Government role in green technology, by Rakibul Hassan of BTRC**

Business innovation, Operator experience sharing and Investor speech

1400 – 1500
- **Business innovation, by Taro Araya of BMGP**
- **Showing OPEX efficiency achieved through green technology, by Ashim Chowdhury of Airtel**
- **Energy access and green investment, by Chandrasekar Govindarajalu of IFC**

Break Out session

1520 – 1700
- **Moderated break-out session**

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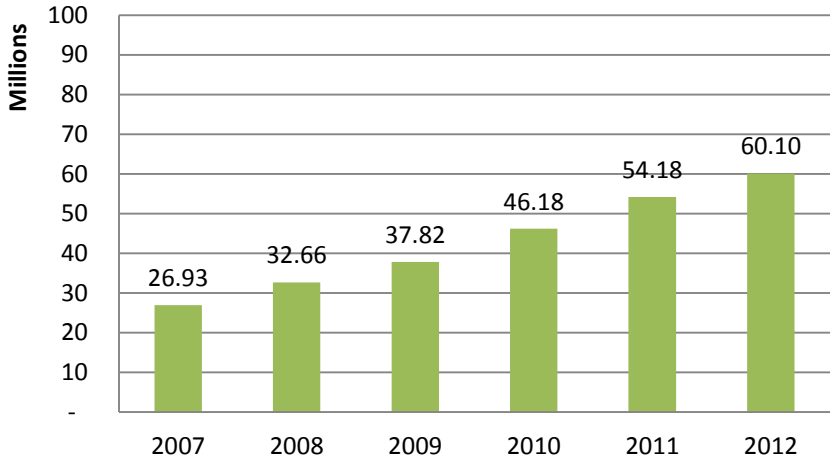
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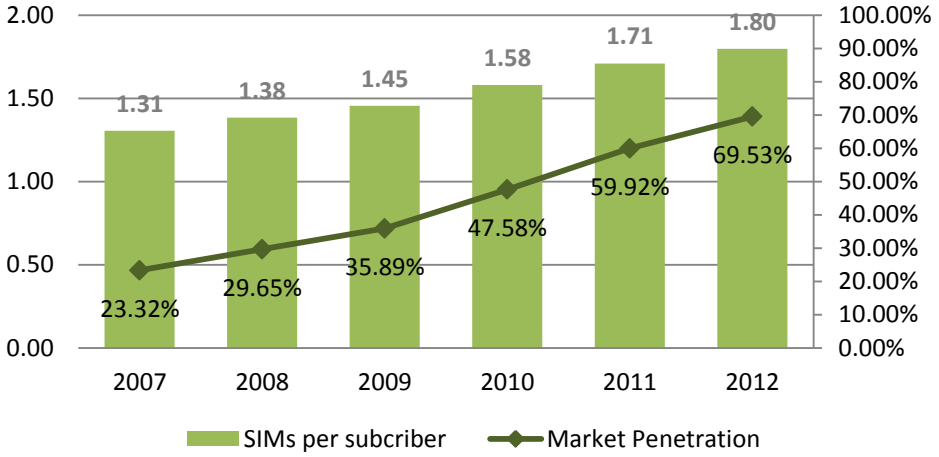
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BANGLADESH TELECOM MARKET

Unique Subscriber Growth



Market Penetration



- Bangladesh is emerging market for telecom industry with more than **60 million unique subscribers** in the network and will reach **63 million unique subscriber by 2nd quarter of 2013.**
- Market penetration has reached almost **70% by 2012** (Year on Year) with ratio a **SIMs per subscriber is 1.80**.
- 90% of market share is dominated by 3 top operators (Grameenphone, Banglalink and Robi).

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POWER SITUATION IN BANGLADESH



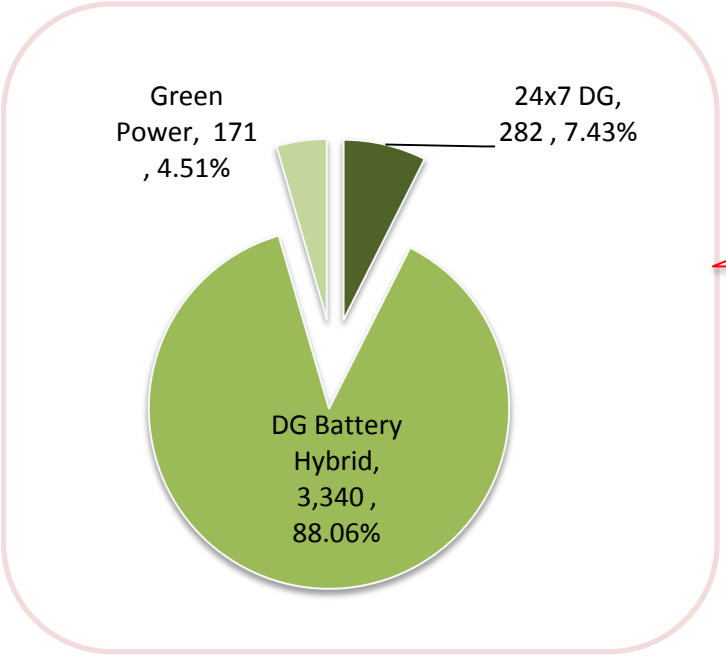
Presently in Bangladesh, 50% of the total population doesn't have access to electricity.

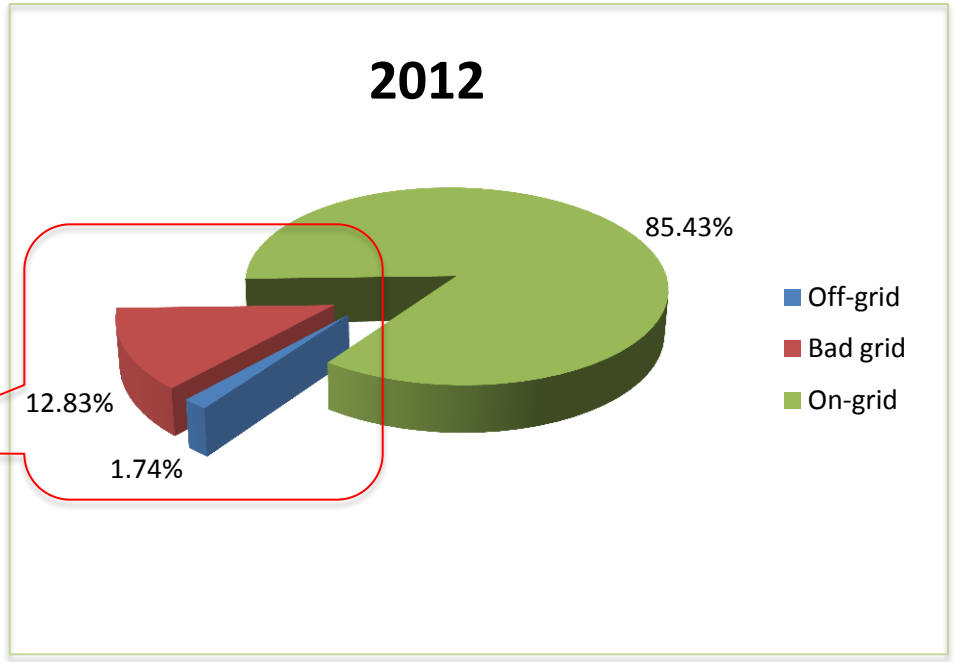
And the average deficit of electricity for the past 5 years is around 30%

(source: Ministry of Power, Energy and Mineral Resources and Bangladesh Development Board)

POWER SITUATION IN TELECOM

"Currently Bangladesh has a total of 25,858 tower sites with more than 14% of them lacking access to the grid" - GPM Market Research





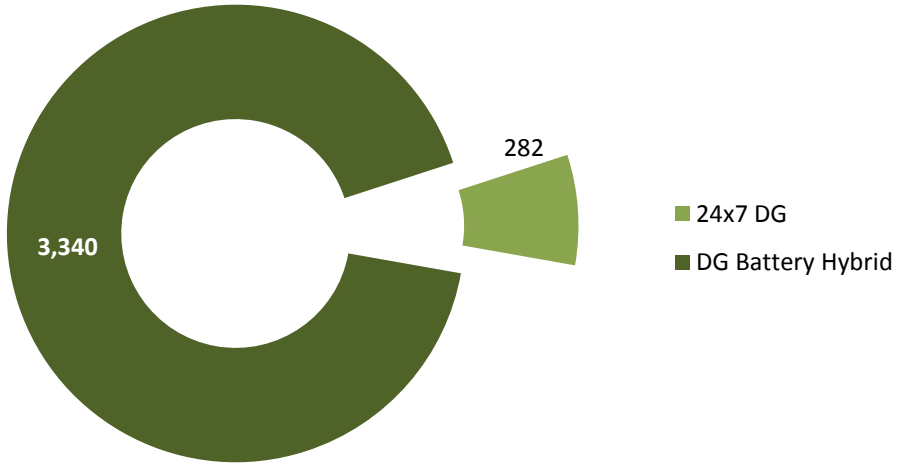
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Current Approach

- To power 282 DG sites for 24x7, MNOs need to spend OPEX for more than **US$ 5.7 million a year.**

- And to power 3,340 DG battery hybrid sites, MNOs will spend about **US$ 45.7 million a year** from fossil fuel.

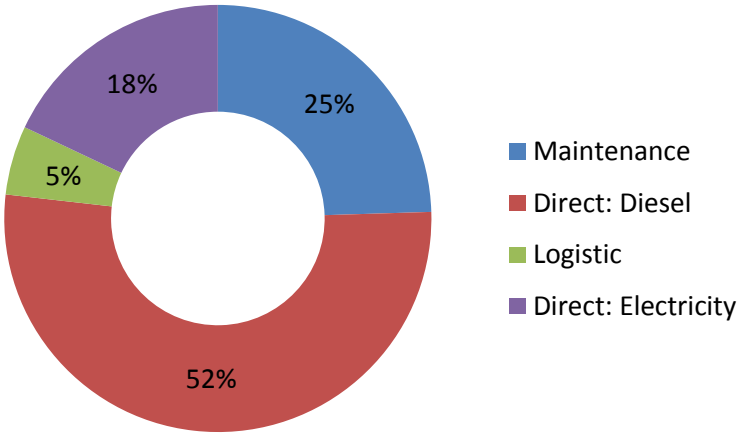
- Those cost doesn't reflect the maintenance and overhead cost.



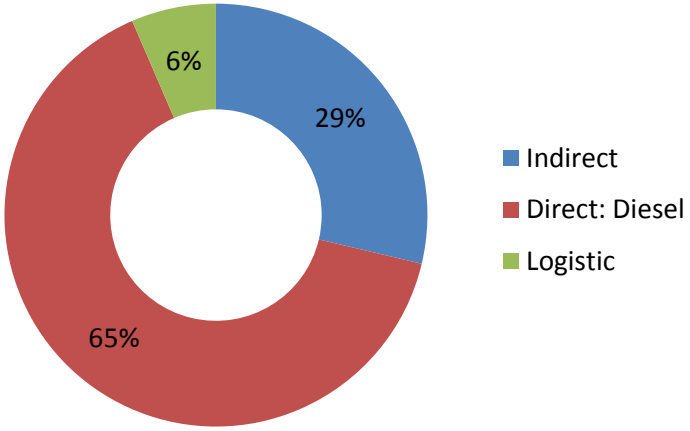
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POWERING TELECOM (COST STRUCTURE)

On-grid with DG



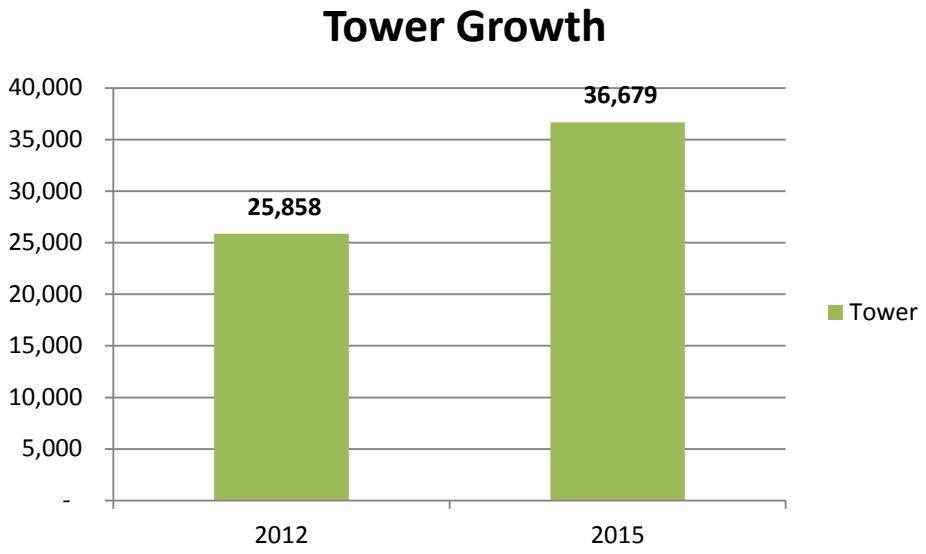
Off-grid

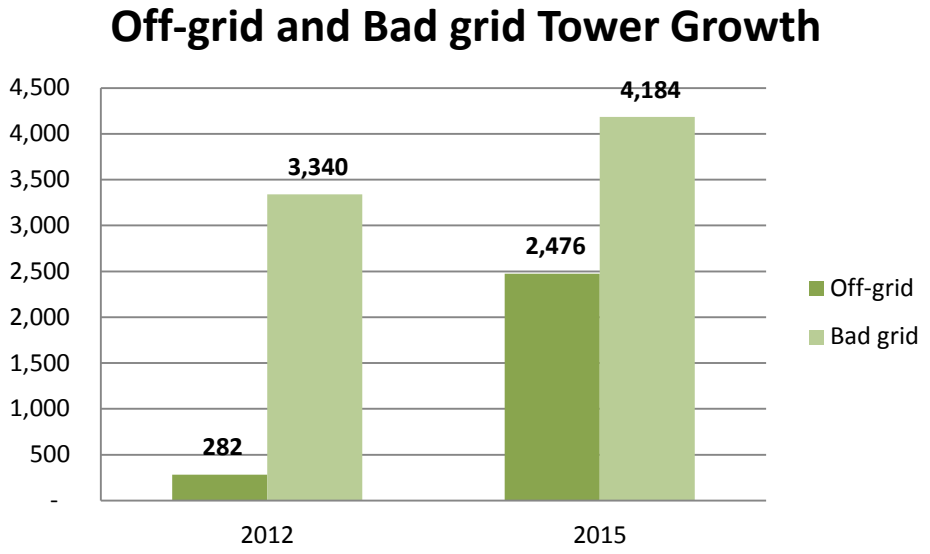


- Diesel cost dominates cost factor for powering on these 2 scenarios.
- Direct cost covers cost of electricity, diesel and fuel.
- Indirect cost covers cost of maintenance and overhead.
- The cost structure might change by year-on-year based on diesel market price.

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TOWER GROWTH





- GSMA calculates based on coverage and capacity expansion with consideration of 2% blocking on the network.
- GSMA estimates tower growth will reach **41.85% by 2015**, with assumption MNOs will extend the coverage to uncovered rural area.
- Bad grid site will increase **25.27% by 2015**.
- And **by 2015 off-grid site will reach 2,476 sites** or 8 times higher than 2012, considering more operators go to cover rural area for the next 3 years.

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SAVING OPPORTUNITY

Short Term

- BTS equipment modernization.
- Replacing indoor BTS equipment with outdoor BTS equipment.
- Replacing AirCon with Free Cooling Unit (FCU).
- Converting 24x7 DG site with DG Battery Hybrid solution.

Long Term

- Converting all problematic sites to green sites.
- It will require big capital to implement green sites.
- Creating suitable business case to reach maximum OPEX reduction is required.

By converting 282 off-grid sites from 24x7 DG configuration to DG Battery hybrid solution, MNO will save around 67% OPEX from diesel consumption

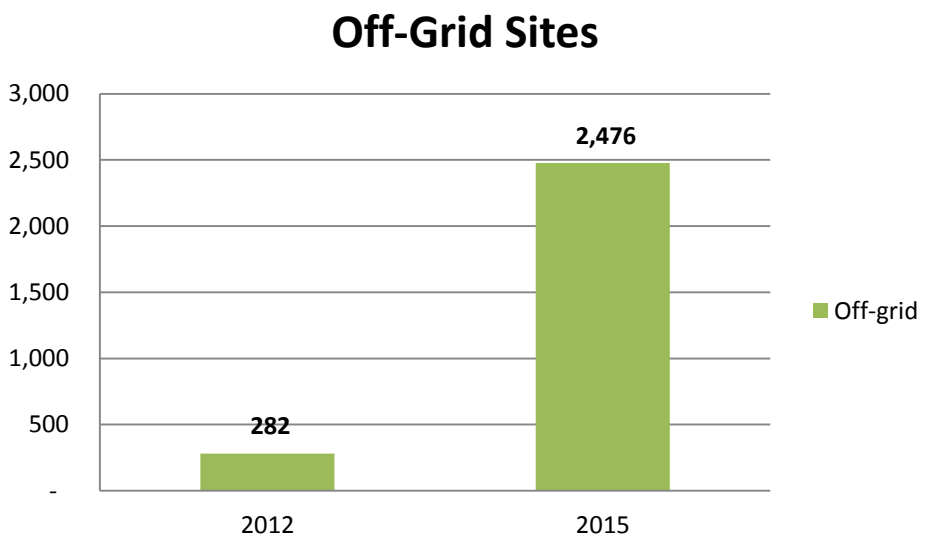
In Long Term strategy, **CAPEX or OPEX Model?**

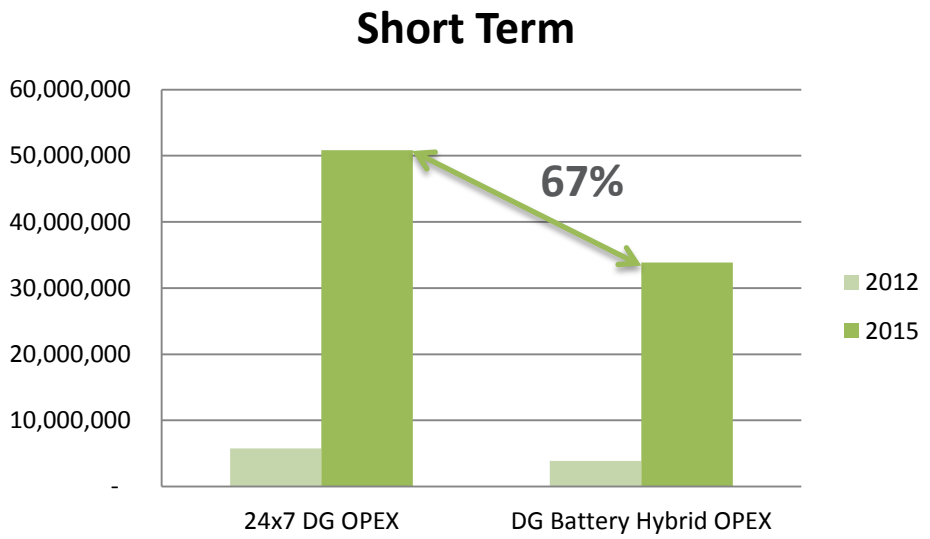
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SAVING OPPORTUNITY (SHORT TERM)

Short Term

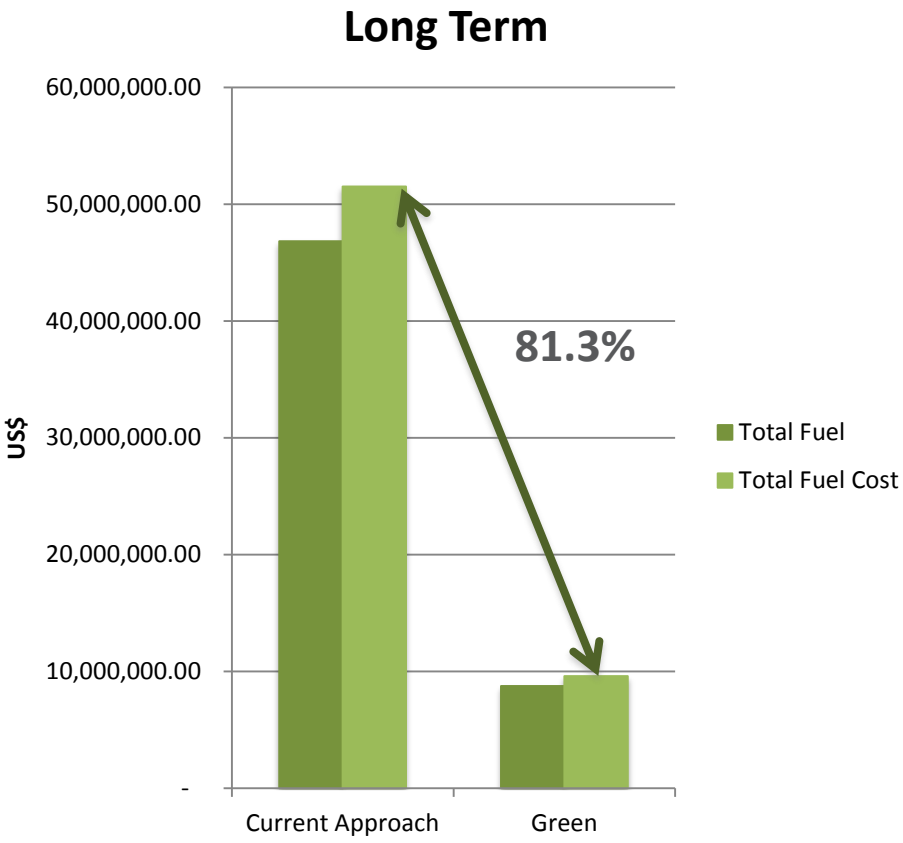
- MNOs can save **1.7 million litres of Diesel consumption per year** by converting 24x7 DG sites to DG battery hybrid
- Potential OPEX saving can reach around **US$ 1.9 million a year**
- **67%** saving can be achieved by converting 24x7 DG to DG battery hybrid solution.





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SAVING OPPORTUNITY (LONG TERM)

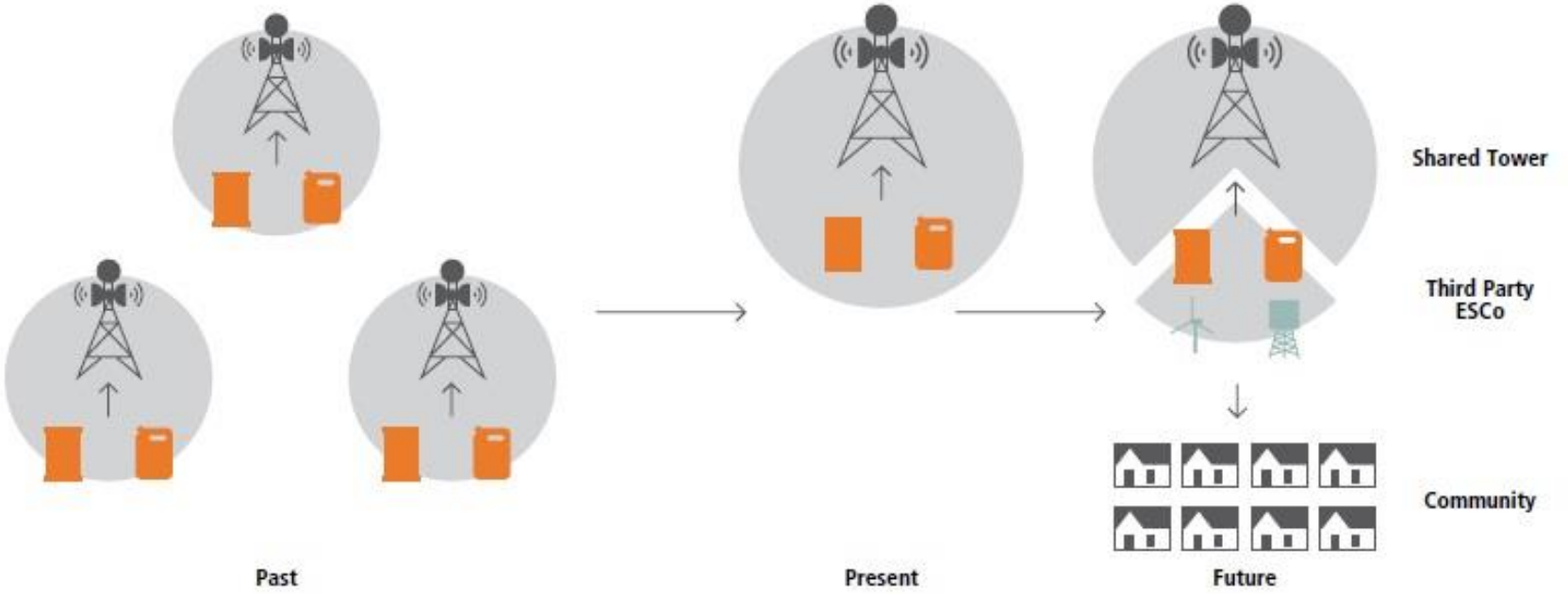


Long Term

- For 3,622 problematic sites, MNOs will be able to **save 81.3% of their OPEX** by implementing green technology solution.
- **By investing US$ 27,000 of solar solution, MNOs can save US$ 41.8 million a year for OPEX**.
- The total of investment for 3,622 sites reach US$ 100 million.
- By 2015, the investment will reach US$ 185 million for 6,660 sites.

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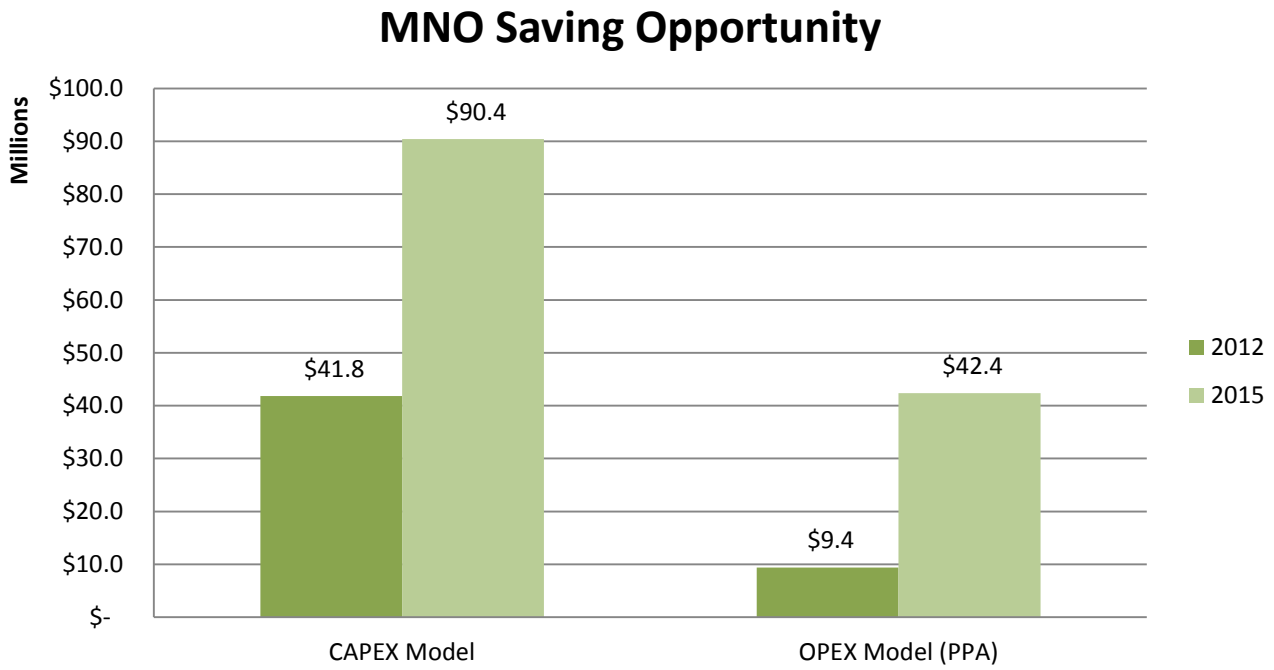
OPEX MODEL



- GSMA estimates a potential saving for 3,622 sites based on PPA model will reach **US$ 9.4 million by 2012** and climb to **US$ 30.7 million by 2015.**
- On ESCO , the market size is about **US$ 42 million by 2012 and will reach US$ 77 million by 2015**.
- ROI for ESCO for PPA model is **less than 3 years**.

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SAVING OPPORTUNITY (LONG TERM)



BARRIERS AND OPPORTUNITIES IN BANGLADESH

Barriers

Here is the barriers on green technology deployment in Bangladesh:

- Lack of trial of other green solution than solar
- Less number of competitive ESCO players
- Lack of technical competencies on deploying OPEX model solution.
- Financial support for MNO or Vendor with competitive interest on renewable energy loan.

Opportunities

- Huge saving can be achieve by MNOs for implementing renewable energy.
- Good opportunity for financial institution on green technology loan.
- Bangladesh needs US$ 100 millions investment for green technology and will reach US$ 185 millions by 2015.
- Plenty of rooms to build vendor for green solutions.

Please read more on our detail report:

http://www.gsma.com/mobilefordevelopment/bangladesh-market-analysis

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Vendor Landscape



Applied Solar Technologies(AST)

BALLARD®

BANGLA TRAC
miaki Green Power

emergence BIOENERGY

Electro®

ELTEK always on

engreen
nurture nature's power

ERICSSON

Heliocentris

HUAWEI

InGen
An ADN Company

nextgen

NorthStar®
www.northstarbattery.com

RAHIMAFROOZ SOLAR

SOUTHWEST WINDPOWER™
Energy where it matters.

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Please check our website:
http://www.gsma.com/mobilefordevelopment/green-power-for-mobile

Thank You!

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