ESCO Business Model and Key Highlights for Telecom

KMR Infrastructure Inc. – GSMA presentation

www.kmrinfrastructure.com

Topics for Discussion

1. Overview of KMRI and our telecom Initiative in India
2. Why focus on distributed renewables for telecom? What is Our value proposition to the industry
3. What could be a good starting point for Bangladesh?

KMR Infrastructure Inc. – High Reliability, Cost- Effective, Green Energy Provider for Corporate Networks

KMRI Business Model

KMRI designs, builds, finances and operates high reliability, green energy solutions to displace high diesel usage in corporate networks

- KMRI Energy Purchase Contracts offer
  - Comprehensive, "out-of-the box", solutions that fit operational needs
  - "5-9s" availability with service guarantees
  - Cost effective, risk free green adoption without capital investments

KMRI (1st stage) Target Markets

1. Diesel Mini-grids
2. Telecom SE Asia and Africa
3. Islands & Resorts
4. Aux. Community Services

KMRI helps corporate customers overcome challenges of replacing diesel with green – a) reliability, b) high capital costs, c) technology expertise and d) operations management

KMRI team has the right renewable energy and financing expertise to deliver its value proposition

Jigar Shah, Chairman, is the founder of SunEdison, the largest PV management firm in the world, which reached billion dollars in revenues within first 6 years. Jigar is an eminent renewable energy industry leader, on board of Carbon War Room, Green Peace USA etc.

Krishnan Raghunathan, CEO has strategy, operations and financing experience at leading institutions across the world including Unilever, McKinsey, Macquarie Infrastructure Fund and World Bank

Dr. Anil Cabraal, KMRI Sri Lanka Director, has served as leading renewable energy expert at World Bank and has launched several successful programs across the world including the widely acclaimed Lighting Africa program. He served on the board of Global Village Energy Partnership and PV Global Approval Program (PVGAP).

Bob Chronowski, Biomass advisor, has extensive experience in all aspects of biomass and bio fuel systems across 60 countries. For over 20 years Bob has been done project and supply chain management, transaction advisory, financing in biomass industry. Bob also heads an Africa development fund launched by Notre Dame university

BK Krishna Kumar, Chief Technology Officer, is a veteran technologist having experience designing aircraft engine for honeywell in 1980s, to defense projects for India , to building a turbine manufacturing company from scratch in which IFC had invested in.

KMRI team has been involved with ~500MW each of solar and biomass projects and have mobilized hundreds of millions for renewable projects

KMRI is building a strong portfolio of projects across the World

India Telecom

- First set of projects in 250 sites for Bharti Infratel and Airtel in Rajasthan
- Operating JV with Cummins India to finalize all IDEA towers in a single state via “multi- technology green district” model

Mini-grids Africa

- JV partnership with a largest IPP in Tanzania to do 20 MW of mini-grids in the country
- Exploring mini-grids and mining captive green solutions in Ghana, Malawi, Nigeria and Seychelles

Africa Telecom

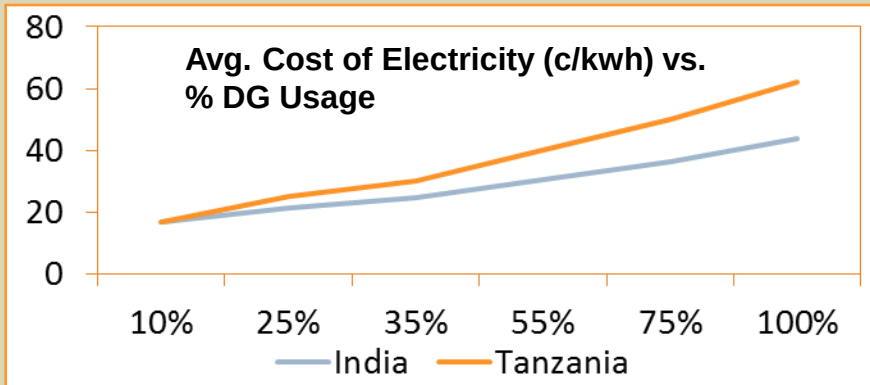
- JV discussions with leading telecom operator in Nigeria to serve 1000 telecom towers in the country
- Exploratory discussions to enter telecom markets in Tanzania, Ghana and Kenya

Sri Lanka

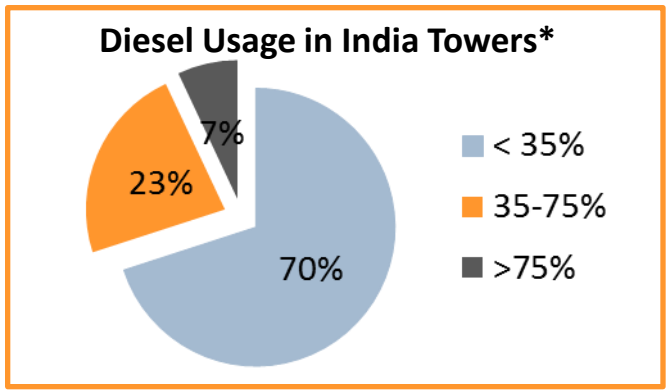
- JV partnership with a local firm with strong experience in biomass supply management
- Assembling 10-20MW of projects serving hotels, Nestle, Unilever and other clients with high energy costs

KMRI is building an institutional investment platform to attract $100s Mn every year, to scalable distributed energy solutions for diesel displacement in Telecom, Mini-grids, islands and industrial customer segments

Why focus on distributed renewables for telecom? - a highly scalable market requiring >1GW in distributed RE



Average electricity costs > 35c / kwh in target towers market in India and Africa



~ 90,000 towers in India have > 25 US c / kwh average electricity cost

- Telecom markets alone worth 1-1.5 GW of distributed RE opportunity
  - ~30% of 300,000 towers in India
  - >50% of 100,000 towers in Africa
  - 30% of 28,000 towers in Bangladesh requiring diesel replacement
  - <1% of towers currently using RE
- Telecom is an ideal platform for rural renewable mini-grids
  - Dense network (with tower every 2-10 km) facilitating easy logistics
  - Only power infrastructure in many villages
  - In India, KMRI is trying community power with Acumen and DOEN foundation for charging (cell phones and power outlets), clean drinking water and information IT access kiosks through community franchises

* Source: Based on actual data from telecom firms in India and Tanzania,

KMR Infrastructure

A Green ESCO Business model for telecom: KMRI's Strategic Choices

Technology agnostic IPP	• Pushing single solution does not work. • Nor is it a simple Capex vs Opex trade off. Equipment Vendor Vs. Telecom Vendor Vs. Energy IPP – identify and integrate different energy technologies and lifetime ownership focus
Focus on support infrastructure	• This is not only about cheaper or better product. Need to move beyond equipment, think about supporting value chain • Need dense networks, cant cherry pick highest cost locations or start with worst or highest cost states
Larger Distributed energy Focus	• An IPP with multi-industry, multi-country distributed green energy focus is needed – global skills to navigate and adopt multiple technologies, products and make them fit customer needs

KMRI helps distributed corporate networks in SE Asia and Africa displace diesel with high reliability, green, cost effective PPAs

Green ESCO Model – Recipe for Success

What an ESCO can offer

- An ESCO like KMRI is committed to help telecom customers
  - Meet your green regulatory objectives
  - Achieve price stability from diesel price uncertainties
  - Have a cost – effective green transition
  - Bending cost-curve over long term and meet your customer obligations
- We can support rural franchises, by leveraging our distributed energy infrastructure, provide **community power** at marginal cost.

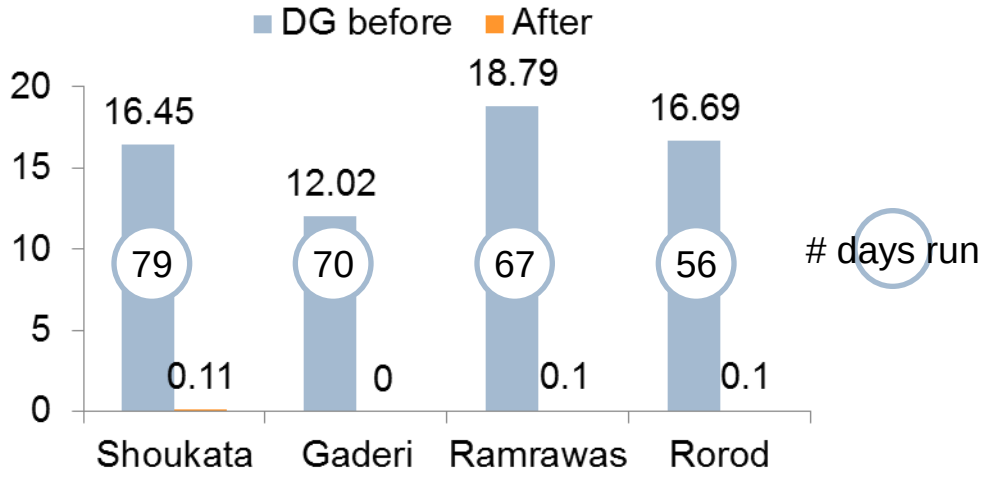
What we need in return

- Don't treat us as vendors but as partners.
- Dealing with diesel withdrawal is going to be painful, if you put all the risks on ESCO both of us will fail
- Don't expect everything in day one or first set of sites, this takes an journey together.
- Think long term and win-win

If regulators had required <1 Rs calls to all villages in India on year 1 before giving telecom licenses, the industry would not exist today ☺

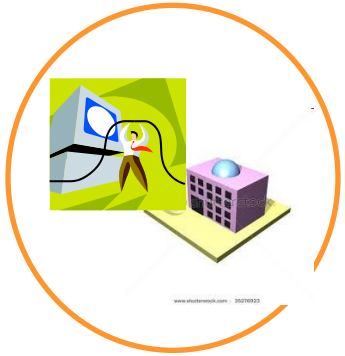
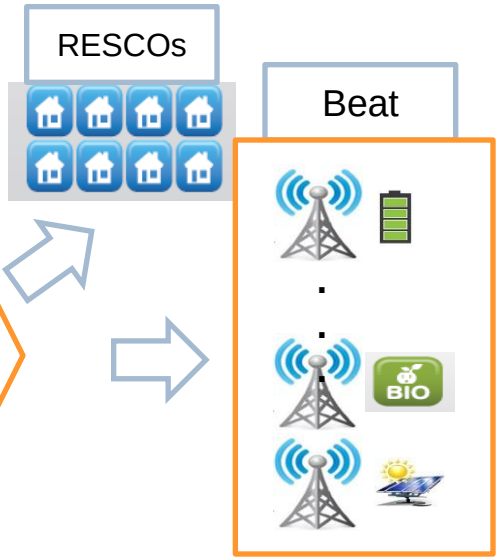
Solution Trials in Jodhpur has cut DG usage completely with 100% uptime over 275 cumulative run days

	Paramters	Site-1	Site-2	Site-3	Site-4
Site	*Site Name*	Shoutaka	Gaderi	Ramrawas	Rorod
Operator Details	*BTS-1*	Bharti	Bharti	Bharti	Bharti
	BTS-2	Idea	Bharti	Bharti	Vodafone
	BTS-3	Aircel			
Total Pilot Run	*Commissiong date*	27-Jan-12	4-Feb-12	8-Feb-12	19-Feb-12
	Till date	10-Apr-12	10-Apr-12	10-Apr-12	10-Apr-12
	Total Site Run	74.08	65.92	61.96	50.92
Run Hours	*Bio-Mass Run Hours*	1219	792	1164	850
	EB Run Hours	440	323	88	180
	DG Run Hours	8	0	6	5
	Average EB Availability	5.94	4.90	1.42	3.54



- ~4500 run hours from biomass systems
- With 100% uptime and 0.3% DG usage
- Systems equipped with RMS to send fault alerts/ SMS and live runtime data

Regional infrastructure coordinating a dense network is key to making distributed renewables successful

Operations Unit	Regional Operating Center	Warehouse	RESCOs / Beat
			
Resources	**500 towers** • Regional office infrastructure • 1 Administrative, • 1 supply chain and • 1 technical manager	**5-7 beats** • Fuel receiving, processing, bagging and transport infrastructure • Backup DG / battery banks • FMS response center	**10 towers** • 1 technical supervisor • 1-3 operators
Function	• Customer & local interface • Monthly reports & billing • Local Procurement function	• Fuel handling • Uptime management	• Site operations • Regular O&M

Small scale, distributed generation biomass systems provides strategic advantages in fuel supply chain management

Distributed Generation enables manageable biomass fuel supply chains

ROC

- About the size of a 1-2 10MW plant with fuel supply distributed across the state



Warehouse
(50 miles radius)

- About 10 tons / day

- About 1 truck per day
- Captive supply from 100-200 acres of nearby land



Fuel Requirement

- About 4-5 tons / month

- About 3 acres dedicated fuel plantation per tower annually

KMRI will have vertically integrated long term fuel contracts with predictable pricing & supply

1. At-least two-thirds through sustainable plantation crop farming
2. Rest sourced through identified local sources with biomass residues and leftovers

What is the potential first steps in Bangladesh?

1. Select a high potential for success area (high diesel usage, strong community organization infrastructure) and try green districts across operators?
    - 100 towers across all operators, deploy all proven green technologies as per site needs
    - Start with realistic expectations: 5% cost savings, reduce diesel by 80% in the district
    - Launch community power in subset of towers via BRAC, IDCOL
2. Local appetite?
3. Timeframes?

Major Roadblock for ESCO : While better regulations can help main challenge is telecom expectations vs. reality mismatch

We want … green power, costing 7-8 Rs/kwh, 99.99% reliability, no capex, no risk to us, while you are at it you must power to the 200Mn people that state utilities could not do.

Need for Realistic Cost Expectations

- Optimizing Cost Structure takes Time and Scale



2000
- >20 Rs /min
- Corporate users



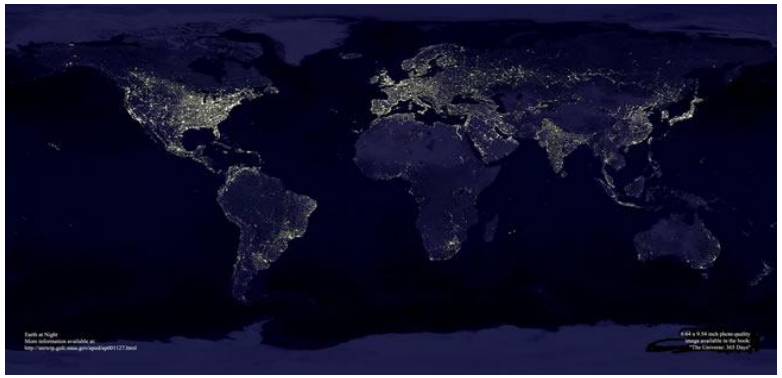
2010
- <1 Rs / min
- 500 Million users

Need Constructive Partnership

- This is not equipment sale purchase negotiation. It requires active collaboration
  - Finding green alternative to diesel that is reliable, operationally viable and scalable is the challenge. Cost savings is a by product
- This is a non-trivial problem and not unique to telecom
  - Also exists for Mining firms, Diesel Mini-grids, bank networks, resorts, Railway stations etc.
  - Need global players with world class skills and perspective

RESCO/ Community Power from Telecom – Right sequencing and business model is Key

Telecom can be a key enabler, but telecom firms mandating community power cannot make it so



2007

- 26% grid connectivity in Africa

2011

- 31%. >$40 Bn spent by World Bank alone in 2007-2011

- Community Energy is a much bigger problem and market : BOP customers spend 5-6 times as much on energy as on telecom

Telecom And community power: What comes first? And Who subsidizes whom?



Vs.



- Different markets, different price points , different challenges.
- Should telecom be just an anchor customer ? Or Telecom lead way first and enable community power
- Community power does not mean cheap grid parity price for telecom!

KMRI Value Proposition to Customers

Comprehensive Green Energy Solution	• *"technology agnostic"* approach to bring right technology mix to suit operational needs • *"integrated value chain focus"* with emphasis on necessary support infrastructure to ensure high reliability with RE • Cost effective alternative to diesel with price stability
No Risk Adoption Model	• No upfront capital investments, avoiding technology or financial risk of green adoption • Service level guarantees to meet same reliability as diesel
Scalable, long-term Partnership	• End to end solution – single vendor for energy needs • Long term PPA model that aligns mutual interests • Global footprint with capable local partners. Commitment to scale solution to meet evolving business needs.

KMRI finds and deploys sustainable and scalable renewable energy solutions that holistically meets its customers needs while reducing cost of green adoption