IFC International Finance Corporation World Bank Group

GSMA

Green Power for Mobile

In partnership with Netherlands



Green Power for Mobile Program Outlook

IFC

GPM Working Group Meeting
Dhaka, Bangladesh
October 2012

IFC in the World Bank Group

World Bank

IFC

MIGA

	IBRD International Bank for Reconstruction and Development	IDA International Development Association	IFC International Finance Corporation	MIGA Multilateral Investment and Guarantee Agency
	Est. 1945	Est. 1960	Est. 1956	Est. 1998
Role	To promote institutional, legal and regulatory reform	To promote institutional, legal and regulatory reform	To promote private sector development	To reduce political investment risk
Clients	Governments of member countries with per capita income between $1,025 and $6,055	Governments of poorest countries with per capita income of less than $1,025	Private companies in member countries	Foreign investors in member countries
Products	• Technical Assistance • Loans • Policy Advice	• Technical Assistance • Interest Free Loans • Policy Advice	• Investment Services • Advisory Services	• Political Risk Insurance

IFC invests Equity, Senior Debt, Everything in Between



- Corporate
- JV (early equity investments, Infraventures)
- Typically up to 20% shareholding
- Long-term investor, typically 6-8 year holding period

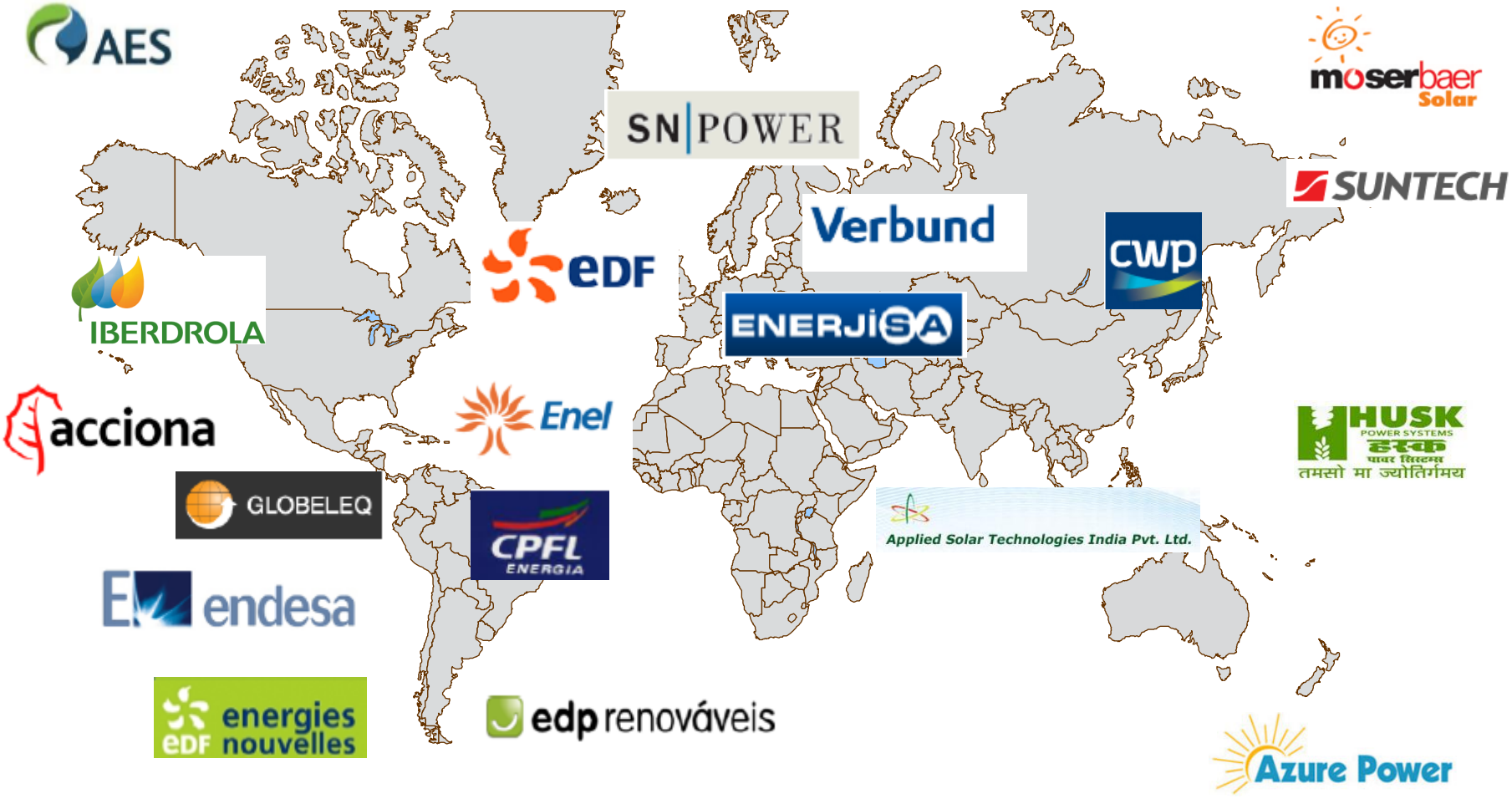
- Any number of structures/flavors of subordination
- Subordinated loans, income participating loans, convertible loans

- Senior Debt (corporate finance, project finance)
- Fixed/floating rates, USD, EUR and local currencies available
- Long maturities: 8-20 years, appropriate grace periods
- Range of security packages suited to project/country
- Mobilization of funds from other lenders and investors

IFC Investment in Telecom, Media & Tech (examples)



IFC Investment in Renewable Energy (examples)



GPM Opportunities

Opportunities

640,000 total off-grid sites

118,000 with 3 yr payback

Immediate opportunity

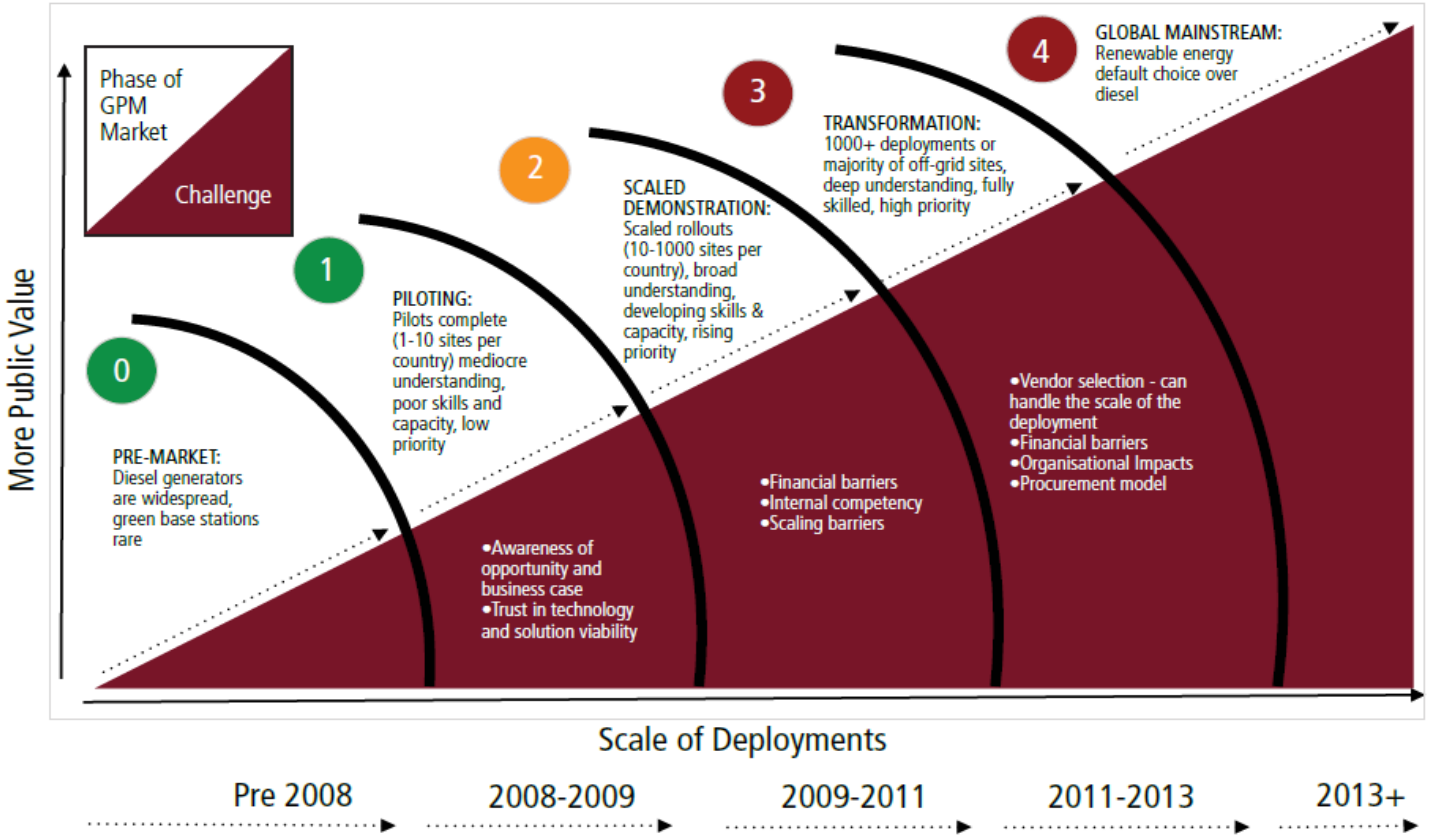
There may be x2~3 “bad-grid” sites

Priority countries

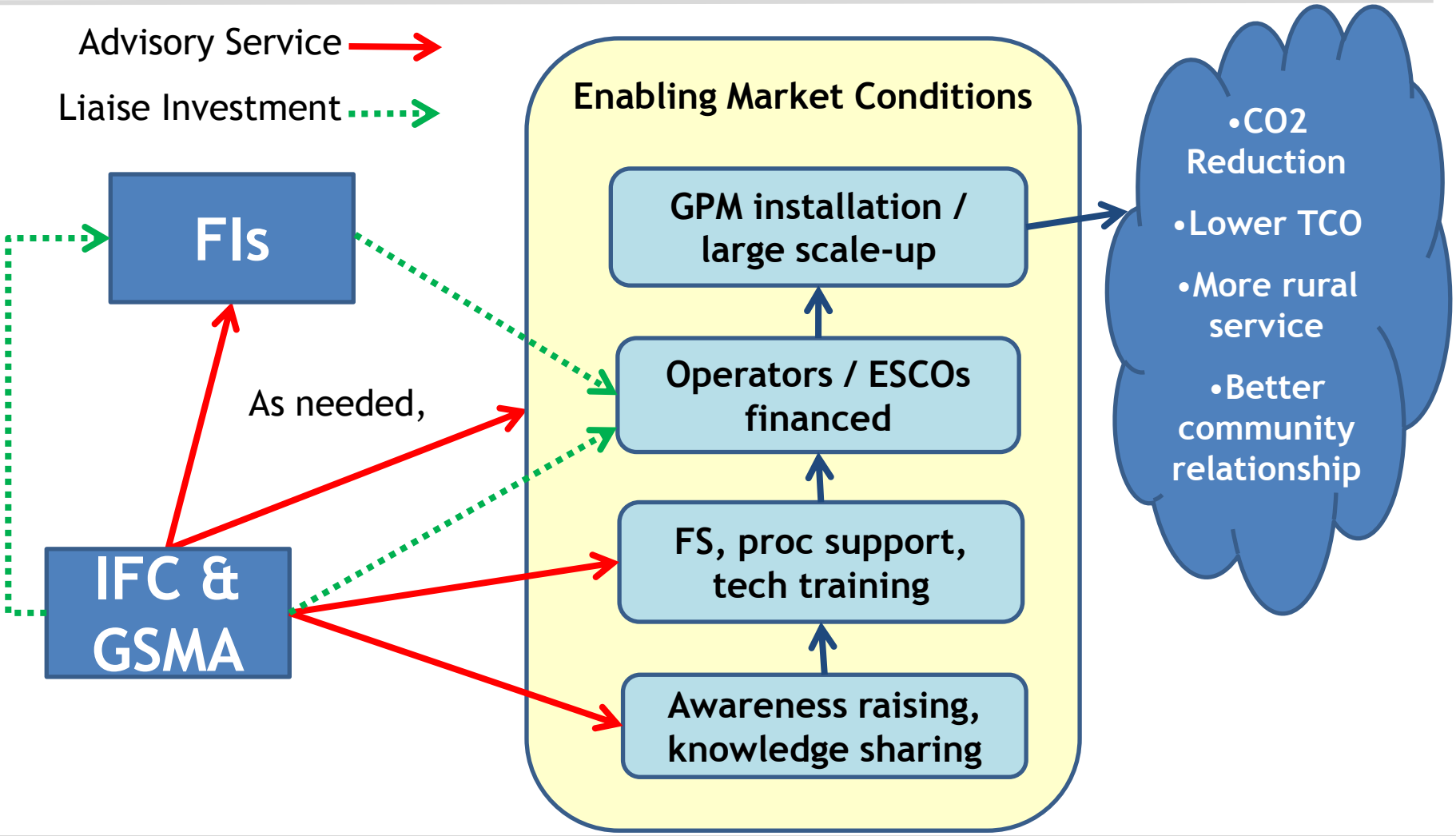
Country	Total Population 2010	Non-grid pop (%)	Non-grid connected population
India	1,170,938,000	44%	515,212,720
Bangladesh	164,425,491	68%	111,809,334
Indonesia	232,516,771	46%	106,957,715
Nigeria	158,258,917	54%	85,459,815
Pakistan	173,383,000	46%	79,756,180
Tanzania	45,039,573	89%	40,085,220
Kenya	40,862,900	86%	35,142,094
Uganda	33,796,461	91%	30,754,780
Afghanistan	30,605,401	93%	28,463,023
Philippines	93,616,853	19%	17,787,202
Vietnam	88,361,983	16%	14,137,917
China	1,338,300,000	1%	13,383,000
Sri Lanka	30,451,826	34%	10,353,621

(GSMA selected the top 13 countries based on RE availability, off-grid population, presence of interested MNOs as above.)

GPM Road Map


Phase of GPM Market
Challenge
More Public Value
0
PRE-MARKET:
Diesel generators are widespread, green base stations rare
1
PILOTING:
Pilots complete (1-10 sites per country) mediocre understanding, poor skills and capacity, low priority
•Awareness of opportunity and business case
•Trust in technology and solution viability
2
SCALED DEMONSTRATION:
Scaled rollouts (10-1000 sites per country), broad understanding, developing skills & capacity, rising priority
•Financial barriers
•Internal competency
•Scaling barriers
3
TRANSFORMATION:
1000+ deployments or majority of off-grid sites, deep understanding, fully skilled, high priority
•Vendor selection - can handle the scale of the deployment
•Financial barriers
•Organisational Impacts
•Procurement model
4
GLOBAL MAINSTREAM:
Renewable energy default choice over diesel
Scale of Deployments
Pre 2008
2008-2009
2009-2011
2011-2013
2013+

IFC Advisory Service in GPM



Results to Date (2009 ~ Aug 2012)

What project directly delivered:

(1) 25 feasibility studies
(2) 11 working group meetings
(3) 19 feasibility case reports + several other reports
(4) 2 GPM database
(5) 6 bi-annual reports, each distributed to 1,500 industry readers
(6) 3 training materials
(7) 204 people (30 operators + 2 org + 4 vendors) trained with GPM technical training program

Which directly / indirectly led to:

29,298* GPM sites by 93 operators in 64 countries (2012 Q3)
(Cf.) 9,093 sites by 32 operators in 30 countries (2009 Q1)

*translates to 1,179,537 metric tons / year (40.26 per site) of GHG reduction
(=209,815 cars taken off the road!)

Great job!!! However, ……

Operator Achievement

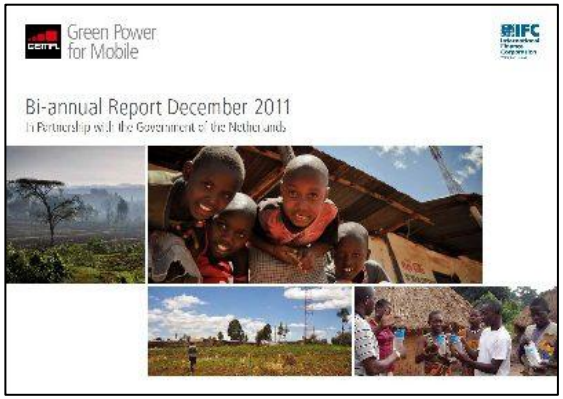
Stage	Operators (#GPM sites) : Total 93 operators (29,298 sites)	
Global mainstream	(Industry-wide stage)	
Transformation: 1,000+ or majority of off-grid sites (4 operators)	China Mobile (8,970), China Unicom (5,500), China Telecom (5,400), India Bharti Infratel (1,359) (FT Group 2,000 but no break down per operator)	
Scaled-demonstration: 10-1,000 sites (55 operators)	Cambodia Cellcard (CamGSM) (862) India Indus Towers (658) Saudi Arabia STC (Saudi Telecom) (500) Indonesia 3 (Hutchison) (472) India Vodafone (Vodafone Essar) (390) Australia Telstra (200) Egypt Etisalat (190) Egypt Vodafone (166) Nigeria Etisalat (EMTS) (150) Nepal Mero Mobile (Spice) (142) Cambodia Beeline (121)	Philippines Smart (PLDT) (114) South Africa Vodacom (111) Indonesia Indosat (106) Idea Cellular (105) Niger Airtel (105) Ecuador Movistar (100) Egypt Mobinil (ECMS) (100) Ecuador Movistar (Telefonica) (100) Guinea Orange (Sonatel) (100) GrameenPhone (97) Banglalink (25) + 33 other operators (80-10)
Piloting: 1-9 sites (34 operators)	34 operators	
Pre-market	410 operators	

Data from GPM Deployment Tracker at http://apps.wirelessintelligence.com/green-power/tracker/ as of October 1, 2012

DG-battery hybrid (10,953 sites), counted separately.

Resources for Moving Up

Stage	Barriers	Resources
Scaled-demonstration: 10-1,000 sites	Vendors with limited capacity Financial barriers Organizational impact Procurement model	GPM requirement specification task work Market analyses ESCO business development / capacity building Procurement model RFP & tender support
Piloting: 1-9 sites	Financial barriers Scaling barriers Lack of in-house expertise	Best practice procurement guide GPM technical training Feasibility case reports
Pre-market	Awareness of opportunities and business case	



Common Resources
GPM working group meetings Bi-annual reports Technology trend analysis Vendor list GPM deployment tracker database

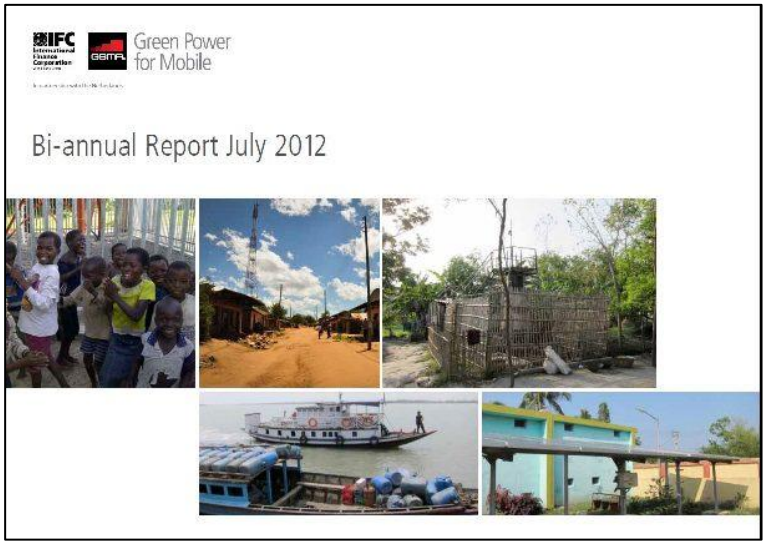
All above reports are available at:
http://www.gsma.com/developmentfund/programmes/green-power-for-mobile/resources/

Services for Moving Up

- **GPM technical trainings**

- **Bangladesh GPM market research**
  - **Market analysis (Nov 2012)**
  - **Vendor landscape (Feb 2013)**
  - **Best procurement guide (May 2013)**

- **RFP & tender support (for operators)**



- **GPM Working Group Meetings**

Region-wide meetings:
For operators from Africa – Ghana (Nov 2012), Nairobi (April 2013, tbc), Dakar (Nov 2013, tbc)
For operators from Asia – Cambodia (July 2012), Hong Kong (July 2013, tbc)*

Country-focus meetings :
Bangladesh (Oct 2012), Indonesia (Dec 2012, tbc), Nigeria (Jan 2013, tbc), Bangladesh (2013 Q1, tbc), Afghanistan & Pakistan in Dubai (2013 Q2, tbc), Ghana (2013 Q4, tbc)

*Bangladeshi operators are welcome to attend the Asia region-wide one in addition to the country focus ones.

Annexes







Resources 1

Feasibility Case Reports

Region	Available case reports (publish year)	
Asia	Azercel Azerbaijan (2011)	Ncell Nepal (2011)
	Banglalink Bangladesh (Mar 2012)	Tcell Tajikistan (2011)
	Digicel Vanuatu (Nov 2009 bi-annual report)	Teliasonera Group (2011)
	Hello Cambodia (2011)	Geocell Georgia, Ucell Uzbekistan (2012)
Africa	Econet Burundi (Jun 2010)	Telecel CAR (Mar 2011)
	Econet Lesotho (Sep 2010)	Telecel Zimbabwe (Apr 2011)
	Econet Zimbabwe (Nov 2010)	Telecom Network Malawi (Jan 2012)
	Leo Burundi (Nov 2011)	Zantel Tanzania (Mar 2010)
	MTN Uganda (Mar 2010)	
LAC	Digicel Haiti (Mar 2010)	
	Movistar (Telefonica) Group (Argentina, Chile, Colombia, Mexico, Nicaragua, Venezuela) (2011)	
MENA	Mobinil (Dec 2010)	

GPM Technical Training

- HOMER Software Training Guide for Renewable Energy Base Station Design
- Green Power for Mobile Interactive Replication Guide
- Procurement Model Analysis: CAPEX vs OPEX

All above reports are available at:
http://www.gsma.com/developmentfund/programmes/green-power-for-mobile/resources/

GPM Deployment Tracker Database
http://apps.wirelessintelligence.com/green-power/tracker/

Resources 2

Technology trend analysis
- Green Power for Mobile: Top Ten Findings report
- Flow Battery Technology for Telecom Industry (Dec 2011 bi-annual report)
- Fuel Cell Deep Dive Study (Dec 2011 bi-annual report)
- DC Generator / Battery Hybrid (July 2011 bi-annual report)
- Bharti Infratel White Paper (Dec 2011) – This covers solar DG hybrid, Fuel cells, IPMs, Fuel catalysts, variable speed DC DGs, DCFCU and GenX

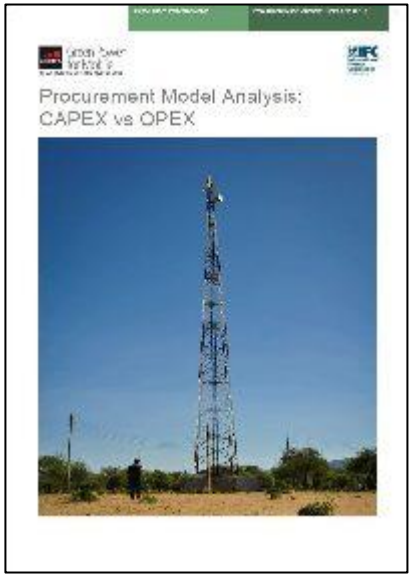
Market Analysis
- Energy for the Telecom Towers - India Market Sizing and Forecasting

GPM Vendor Database
The following reports are available on the GPM Resources page
- GPM Vendor Directory (Jan 2012)
- Telecoms Renewable Energy Vendors / ESCOs Landscape in India

Best Practice Procurement Guide
- Best Practice Procurement Guide for Green Energy in India

Procurement model (business model)
- Procurement Model Analysis - CAPEX vs OPEX (March 2012)
- Move to Outsourcing Model (Jul 2011 Bi-annual Report)

Bi-annual Reports



All above reports are available at:
http://www.gsma.com/developmentfund/programmes/green-power-for-mobile/resources/

C.f., China Mobile GPM Data

Using Alternative Energy

Indicators	2009	2010	2011
Alternative Energy Base Stations-Total	6,372	7,795	8,970
Solar Energy	5,581	6,279	7,057
Wind Energy	72	308	435
Solar and Wind	689	1,069	1,316
Fuel Cells	30	139	162

(China Mobile Sustainability Report 2011)