

What, no power? How Grameenphone cracked the energy challenge

It's the nightmare scenario for modern operators: **What do you do when you have no power?** This was the situation faced by Grameenphone when the national electricity distributor announced that no new base stations would be connected to the grid. The operator's response was **a fascinating exercise in business and risk management.**

► Founded in 1997, Grameenphone (the name means "rural phone") is a joint venture between multinational telecoms company Telenor and local operator Grameen Telecom, a non-profit sister organization of microcredit pioneer Grameen Bank. Over the past 14 years, Grameenphone has grown to be the largest provider of mobile services in Bangladesh, with more than 30 million subscribers – around 44 percent market share – across the country. Clearly the introduction of mobile telephony has been massively popular in Bangladesh.

For many years, rolling load-shedding (scheduled electricity blackouts) has been used throughout Bangladesh to allocate scarce energy resources to the homes and businesses of this populous country. Even today outages of two to 12 hours a day are common. Naturally this is very disruptive to people's lives, and represents an ongoing challenge to companies.

Over the years, the government has tried to improve the power supply. However, in 2009 the energy problems came to a head for Grameenphone, with the national supplier unable to provide grid power to new mobile base stations.

TAKING POWER INTO YOUR OWN HANDS

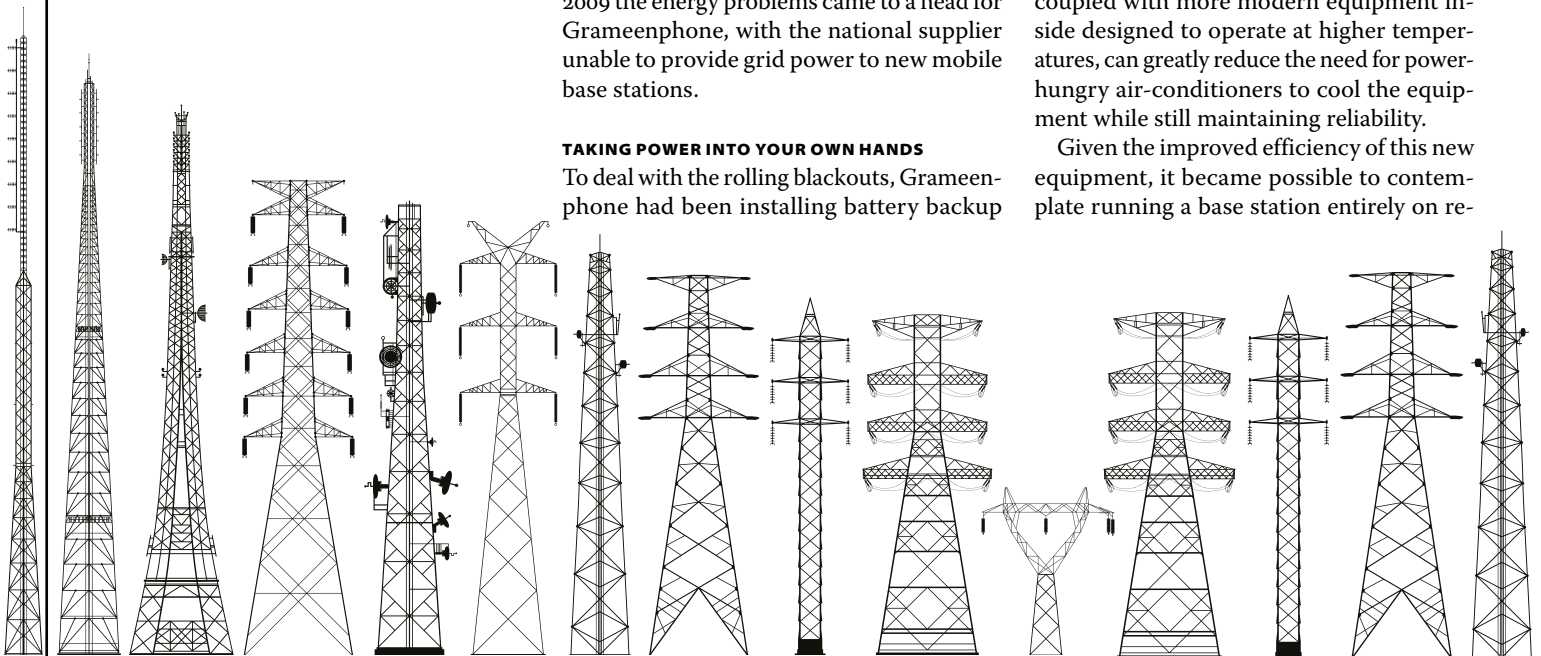
To deal with the rolling blackouts, Grameenphone had been installing battery backup

equipment as a standard part of its base-station site equipment. Operators around the world commonly make such arrangements, backed up with generators and regular supplies of diesel to run them. However, the increasing price of diesel and the additional cost of regular fuel deliveries are disincentives for such a solution. Noise and toxic fumes also mean the use of diesel generators is unpopular in urban areas.

Grameenphone had trialed renewable energy sources for several years, and had sites in more isolated parts of the country without access to the grid. Through these trials, it had gained an understanding of the realities of using photovoltaic (PV) modules – solar panels – and wind generators as mainstream sources of energy.

Furthermore, new thinking has developed concerning the need for air-conditioning for telecoms equipment, with such equipment today generally being run at higher temperatures than before. The use of carefully designed shelters with improved ventilation, coupled with more modern equipment inside designed to operate at higher temperatures, can greatly reduce the need for power-hungry air-conditioners to cool the equipment while still maintaining reliability.

Given the improved efficiency of this new equipment, it became possible to contemplate running a base station entirely on re-



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newable energy, primarily solar. And so the stage was set for Grameenphone to adopt a new approach to running its rural radio network.

BALANCING RISK ACROSS THE BUSINESS

Those familiar with the changes in renewable-energy technology, batteries, PVs and wind-power generation know how daunting it can be to select and invest in these technologies. Even specialists will debate the service lives of batteries with different temperature and usage profiles, or the output of different types of PVs under real-world solar and cloud conditions.

Consequently, Grameenphone management identified technology risk – the potential for technology change to make renewable power systems obsolete quickly – as a major challenge to their business if they were to make significant capital investments into new, renewables-based systems for their base stations.

Risk is inevitable in all business ventures. Mobile operators in every country face market risk (the uncertainty of attracting and sustaining the customer base in the face of competition) and technology risk (the uncertainty of key technological assets achieving their planned service life). However, the technology risk of investing in and maintaining an alternative energy supply is not one faced by most operators in developed countries.

NEW APPROACHES TO ENERGY SUPPLY

Clearly, Grameenphone had to adopt new approaches to energy supply to allow both the company and subscriber numbers to grow. But management wanted this to be achieved without excessive further technical risk.

The breakthrough came following discussions between Grameenphone and its partner Ericsson over a novel business solution. The concept was that a dedicated energy-supply company would be created specifically to build and operate the energy systems at base-station sites. This new company would secure the capital to invest in the energy systems, and provide the expertise to deploy and maintain them. Grameenphone would commit to a 10-year supply contract or power-purchase agreement (PPA), paying for electricity at an agreed kilowatt price, with the opportunity to buy the assets on conclusion of the contract or in the event of failure by the power supplier.

The first such PPA was established in September 2010. Since then, more PPAs have been made with other providers, using a similar commercial model, so that Grameenphone now has a diversified set of energy providers with wide-ranging associated in-

vestors. In urban areas with larger base stations and major switching nodes, it continues to use the electricity grid, in conjunction with high-capacity battery backup.

CHALLENGING TARGETS

For Grameenphone, the introduction of the PPA model has meant the ability to expand its business, and to continue to offer a highly valued service to its subscribers.

Like all modern telcos, Grameenphone has challenging targets to meet regarding energy-usage costs and the reduction of carbon emissions. Specifically, its ambition is to reduce carbon emissions by 30 percent by 2015 from a 2008 baseline, and to do so while broadening the customer base.

Grameenphone has already made great strides toward these targets, with major savings through new ways of working among staff, and the impressive design of the new company headquarters. So the new approach to powering base stations through PPAs is welcomed as part of the company's strategy. Each base station powered under a PPA brings a 25-ton reduction in carbon emissions by avoiding the use of 9,000 liters of diesel each year.

At its core, however, the introduction of the new PPA business model is a carefully planned business strategy designed to ensure the survival, profitability and growth of the organization, which also contributes to realizing the company's "green" targets. ●

AUTHOR



► **COLIN GOODWIN** is the Broadband Strategy Manager for Ericsson Australia and New Zealand. He has over 20 years' experience in telecommunications, ranging

from technical development and support and consulting on technical and financial aspects of telecommunications strategies to product development and management. Before joining Ericsson in 2001, Goodwin worked as a Senior Product Manager for Telstra. He has also worked for UB Networks, Data General and BHP. Goodwin holds an MEngSc from Monash University in Melbourne, Australia. (colin.goodwin@ericsson.com)

AUTHOR



► **ROBERT HONYBUN** leads the Energy Solutions program for Ericsson South East Asia and Oceania. His team of business and technical experts works across the re-

gion in such diverse markets as Indonesia, Bangladesh, the Philippines, Papua New Guinea and Australia. Honybun is a Senior Consultant in Ericsson's Strategy Consulting group, and has more than 22 years' experience of consulting in the ICT industry, working with operators, and government and industry bodies, around the world. (robert.honybun@ericsson.com)

Community power projects in the pipeline

► It's obvious that life in rural Bangladesh is very different from urban life in Madrid or Chicago. Amenities most of us take for granted are simply not available, making the introduction of new technologies very difficult.

For many isolated villagers in Bangladesh, even the sporadic grid-power supply in towns and cities seems luxurious. These people have little hope of getting a grid connection in the immediate future. So how do you charge a mobile phone if you have no connection to the grid?

However, the establishment of independently powered base stations in isolated areas also creates the possibility of providing a limited energy supply to nearby villages.

With an electricity micro-grid, limited power can be provided for domestic lighting, running a health clinic, for example, or even a small internet café at the community center. And of course, the charging of mobile devices.

Grameenphone is investigating the potential of such community power projects in an attempt to identify socially sustainable models that will lead to long-term business success – and perhaps one day to connect rural Bangladesh to Madrid or Chicago.

Bangladesh

- **Population:** 157 million
- **Area:** 143,998 sq km

Grameenphone

- **Founded:** March 26, 1997.
- **Annual revenue (2010):** BDT 74.7bn (USD 0.99bn).
- **Market share:** Approximately 44 percent (largest in the country).
- **National coverage:** 98 percent of the population.
- **Number of mobile subscribers:** More than 30 million.
- **Employees:** Approx 5,000.
- **Ownership:** Telenor 55.8 percent, Grameen Telecom 34.2 percent, public 10 percent.