

## Power to the people

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**Iqbal Quadir pioneered wider access to mobile phones in Bangladesh. Can he do the same for electricity and clean water?**



AS A young boy in rural Bangladesh in 1971, Iqbal Quadir walked ten miles to collect some medicine for a sibling who was unwell. But when he arrived at his destination, the medicine man was not there, so he had to walk home empty-handed, having wasted an entire day. Many years later, having moved to America and become an investment banker, Mr Quadir was reminded of this episode when the network at his New York office stopped working. Without communications, he realised, people are far less productive, whether in a modern office or a rural village; a simple telephone call could have prevented him from making that unnecessary round trip

all those years earlier. As he waited for the e-mail to start flowing again, Mr Quadir was seized by the idea that "a telephone is a weapon against poverty". He decided to dedicate himself to making telephones more widely available to the poor in his homeland. "I didn't know anything about telecoms," he says. "But maybe that was helpful."

It was only after having many fruitless meetings with firms and policymakers that Mr Quadir finally hit upon the right approach. He was inspired by Grameen Bank, a Bangladeshi organisation well known for supplying "microcredit", or small loans, mainly to the rural poor. In a typical example, a woman borrows enough money to buy a cow, and then repays the loan using the profits that result from selling its milk. The loan is repaid, the woman earns an income from the cow, and her neighbours can buy milk. Mr Quadir looked at this model and realised that "a cell phone could be a cow". He formed a consortium with Grameen Bank and Telenor, a Norwegian mobile operator that provided the required telecoms expertise. He was then able to secure loans from development banks and aid agencies, and won a licence from the Bangladeshi government. GrameenPhone launched its service in March 1997, and today has more than 6m subscribers, making it the country's largest telecoms operator. Bangladesh now has six mobile operators and more than 9m subscribers in what has become a booming market.

Around 200,000 of GrameenPhone's subscribers are "telephone ladies" who provide access to telephony in more than 50,000 rural villages, with a total population of 80m people. Despite accounting for a small proportion of the mobile phones in circulation, these "village phones" account for one-third of the traffic on the network, since they are shared between a large number of users. By making telephony widely available, says Mr Quadir, GrameenPhone has increased the country's GDP by a far greater amount than repeated infusions of foreign aid. Mobile phones promote economic activity, prevent wasted journeys, make it easier to look for work, and widen access to markets. GrameenPhone is not a charity, but a profitable venture: it made net profits of \$101m in 2004. Its approach is now being replicated in other countries in Asia and sub-Saharan Africa, including Uganda and Rwanda.

GrameenPhone's success is a striking endorsement of Mr Quadir's unusual approach to promoting economic development. The problem with the traditional top-down approach of supplying developmental aid to governments, he complains, is that it widens the gap between politicians and the people, by increasing the power of central authorities. "The key to economic progress in Bangladesh does not lie in foreign aid, but in the hands and brains of its

masses," he says. "We need to find technologies that can activate those hands and brains for productive purposes." Using technology to empower citizens from below, as mobile phones do, is a far better way to promote development, says Mr Quadir: "Top-down approaches do not work. The bottleneck is at the top of the bottle."

### **Between the geek and the meek**

There are historical precedents for this bottom-up approach, notes Mr Quadir, who lectured in technology and economic development at Harvard University's Kennedy School of Government for four years from 2001 and has recently moved to the Massachusetts Institute of Technology, where he is establishing a new programme in development entrepreneurship. In medieval Europe, innovations such as spectacles, water wheels, clocks and printing had the effect of empowering people from below and stimulating economic development, often in the face of opposition from church and state. Similarly, the industrial revolution was the result of entrepreneurial, bottom-up activity, not government planning. Having proven the effectiveness of his approach with GrameenPhone, Mr Quadir is now working to apply the same combination of technology and bottom-up entrepreneurship in other areas, starting with the supply of electricity. "I see myself as an entrepreneur between the geek and the meek," he says.

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The aim of his new venture, Emergence Energy, is to establish small, neighbourhood power plants in Bangladesh that can provide electricity to a handful of homes, shops and businesses. This time he has teamed up with Dean Kamen, an American inventor best known for creating the Segway electric scooter. During 2005 they conducted a six-month trial in two rural villages in Bangladesh of prototype generators, created by Mr Kamen, based on a design called a Stirling engine.

The generators can be powered by biogas extracted from cow manure. The idea is that one entrepreneur, funded by a microcredit loan, sets up a business to turn manure into methane gas and fertiliser; another entrepreneur, also funded by microcredit, buys the methane to power the generator, and sells the resulting electricity. This will, Mr Quadir hopes, unleash all kinds of economic activity. "Energy gives you the power to empower," he says.

The trial was intended as a test, to find out what people would use electricity for, and whether there was an economically viable business model. The results were promising: the scheme proved to

be technically feasible, there was strong demand for electrical power, and consumers were willing to pay for a regular supply. The main use of electricity was for lighting, says Mr Quadir; using low-power bulbs, each generator, which produces one kilowatt of power, was able to light up 20 households or shops.

This allowed shops to stay open later, enabled students to study for longer hours, and let people enjoy television and other forms of entertainment. Surprisingly, Mr Quadir found that some households already had televisions, powered using car batteries. Such batteries are also used to recharge mobile phones. This suggests that the potential "chicken and egg" problem that there would be no demand for electricity, since nobody owns any electrical appliances, will not arise. Access to a regular supply of electricity should, however, promote the wider adoption of electrical devices of all kinds.

The next step is to mass produce the generators so that the scheme can be launched commercially. Mr Quadir says he hopes to convince a manufacturing company to license Mr Kamen's design and set up a factory in Bangladesh to build the generators. This would have several advantages over simply importing the technology (as happened with the mobile phones): it would create jobs, avoid import tariffs that would otherwise make the generators less affordable, and the resulting transfer of technology and skills would ensure that the machines could be fixed by locals, rather than having to rely on foreign technicians.

To finance the purchase of the generators by entrepreneurs, Mr Quadir is working with BRAC, another microcredit lender. The generators will cost several thousand dollars, far more than a mobile phone. But microloans are already being used to finance larger purchases, such as houses, says Mr Quadir, so he is confident that the microcredit model can be applied to the new venture. The result, as entrepreneurs start to install generators in villages, will be to produce electricity, fertiliser and jobs.

### **Bubbling up**

At the same time, Mr Quadir is pursuing two other bottom-up initiatives. The first, CleanWater, is dedicated to supplying safe drinking water to Bangladeshi villages, where arsenic contamination is a grave problem. Rather than relying on aid agencies or governments to install equipment, Mr Quadir hopes to license a chemical preparation that can remove arsenic from water and make it safe to drink. The chemical would then be distributed and sold, like salt, via a network of local entrepreneurs; Mr Quadir estimates that buyers would have to spend around \$3 per person per year on the chemical to ensure a safe water supply, which is well within

reach of most villagers. Again, this initiative would create jobs, provide a wider societal benefit, and give people the means to solve a serious problem themselves.

The second initiative, developed by Mr Quadir's brother Kamal, is called CellBazaar. The idea is to create an electronic marketplace that can be accessed via mobile phones—a phone-based equivalent of newspaper classified advertisements. If somebody wants to sell a bicycle, for example, they can list it in CellBazaar, where it will be visible to potential buyers, says Mr Quadir. This will also have the effect of making price information more transparent and widely available. The system is designed to be as simple as possible: it will not handle transactions, but will simply put buyers and sellers in contact with each other via mobile phone. It will be possible to access the system using just text messages. Electronic commerce could prove to have even greater appeal in developing countries, where the transport infrastructure is often poor, than in developed ones.

Trying to change things from the ground up is more effective than lobbying authorities, insists Mr Quadir. "Without necessarily introducing enlightenment or new arguments, technology can quietly initiate novel ways of making things or trading them, potentially redistributing economic and political clout," he says. Just as economists invoke the "invisible hand" of the market, he likes to speak of a technology as an "invisible leg" that can move an economy from one state to another.

And even when a government adopts a sensible policy, there is no guarantee it will be implemented. Before the establishment of GrameenPhone, for example, the Bangladeshi government's stated policy was to promote universal access to telecommunications; but in practice not much happened. The clear success of GrameenPhone, however, prompted the government to issue more mobile licences, which led to today's thriving market. Technology, in short, makes it possible to change the facts on the ground first, so that government policy can then follow, says Mr Quadir. Power to the people, indeed.