



100% Electrification but What Comes Next for Bangladesh? Lessons from Insiders

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Abstract

In 2002 when over 70% of the country's rural population had for generations never known electric light, the most dynamic off-grid electrification program in the world was launched. Its purpose: to provide rural households with Solar Home Systems. Within a decade, Bangladesh was on its way to becoming the world's fastest growing off-grid solar market. This market did not emerge by chance. Here new ideas were at work with both the leadership and the resources to put them into practice: the World Bank as investor; IDCOL, Bangladesh's financial intermediary, as project manager; and rural entrepreneurs as solar service providers. Yet, there is a further remarkable achievement in the Bangladesh energy market. Over 90% of the people in Bangladesh now have access to the electric grid. What role will solar technology play in future? Will the solar market move away from Solar Home Systems towards grid-connected distributed renewable energy systems? What is next for Bangladesh? These are the topics we want to explore in this chapter. This chapter reports hands-on experience from the insiders of the program, and relates their lessons from the past to perspectives for the future.

Keywords

Bangladesh · Rural electrification · Off-grid electrification · Solar technology · Financing

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1 Introduction: A Project Triggered by Chance

Bangladesh is a fascinating country. In the 1970s, it spawned a groundbreaking microfinance model for the rural poor, which has since been adapted worldwide to serve millions of people with financial services. Where there were no micro-finance institutions (MFI) a few decades ago, now there are thousands, serving millions—among them the world's largest and most successful in Bangladesh: BRAC, ASA International and the Grameen Bank.

30 years later, these MFIs would take part in a bold experiment to bring solar electricity to the hinterland of Bangladesh, where still 70% of its population lived, worked and went to school. In this respect, Bangladesh is no different from other developing countries in Asia and Africa. However, here Bangladesh stands out: Within a decade, rural entrepreneurs had provided nearly a quarter of off-grid rural households, schools and clinics with solar home systems (SHS). A solar market emerged with local suppliers and production. Over 50 solar companies had village service centers in every district of the country. How is this possible? Moreover, could this market have developed all by itself without IDCOL?

In response to this question all experts agree that with 70% of the Bangladesh population living in rural areas—and with more than 65% of the Gross Domestic Product (GDP) generated from there—rural electrification is absolutely needed. The SHS project has in fact now developed into a fully commercialized open market. However, this market could not have developed without IDCOL's start-up concessional financing, quality standards and leadership. This will be true in other developing countries as well, which can learn much from IDCOL's successful business model.

It may, however, come as a surprise that what would later become the world's fastest growing off-grid solar market was in the beginning: a project triggered by chance. Wimmer (2012, 2019) includes more details of this story.

2 IDCOL's Journey of Success

IDCOL, the Infrastructure Development Company Limited, came into this SHS Program by accident. IDCOL was established by the Government of Bangladesh (GOB) with a USD 225 million loan from the World Bank. As a 100% state-owned public limited company, IDCOL's initial function was to on-lend funds to privately sponsored infrastructure projects. Its first project was financing for a 450 MW Independent Power Plant (IPP) on the Meghna River, which it successfully completed on schedule in 2001. However, despite World Bank approval,

IDCOL's CEO had a problem. Dr. Fouzul Khan and his now well-trained management team had no further projects to finance, largely due to the Bank's rigid project eligibility criteria. The result? They were limited to a meager USD 80 million investment out of the USD 225 million World Bank fund. IDCOL was out of a job. There were even rumors about closing down the company when the CEO got a surprise visit.

The World Bank's Task Manager for Bangladesh approached IDCOL with a unique proposal. Would the CEO of the Infrastructure Development Company be interested in managing a pilot project for solar home systems in rural Bangladesh? The systems were on average 50 Wp, the bank's funding for the pilot about USD 25 million and the target, 50,000 installed SHS in five years. It takes little imagination to guess that the former project manager of a 450 MW Power Plant was not amused. Still, he agreed to have a look at a solar home system in a nearby village. What he saw only confirmed his expectations: a clumsy looking system with a cheap car battery, overpriced and unaffordable for the rural population. He refused the bank's offer, but still purchased two solar systems for his family and for a mosque on the off-grid island of Sandwip on the Bay of Bengal.

The arrival of a post card from his family in Sandwip led to a surprising twist in this story. His nieces were overjoyed to have light at the turn of a switch and reliable electricity for their TV. Not enough: a letter from the local mosque told him that villagers were praying for his wellbeing in gratitude for solar electricity. It powered their lights and their microphone for Adhan, the call to prayer without any problems. A call from Dhaka to the Task Manager in Washington D.C. changed everything: Dr. Fouzul Khan would accept the Bank's proposal—but only after having a say in the SHS project's design.

The SHS pilot project was launched in 2002 and met its target in 2005—two and a half years before the target date of five and a half years. One of the main reasons for this unprecedented success was the project's design: It was tailor-made for a low-income population in rural Bangladesh. Its finance model, for example, was a blending of microfinance and project finance, both of which were loans given in local currency with little or no collateral. This allowed even low-income customers to own an expensive solar home system through affordable monthly installments.

With extended funding from the World Bank, SHS installations continued unabated—further accelerated by unexpected tailwinds. While the prices for kerosene continued to rise, solar panel prices were coming down—a veritable windfall for a SHS project. To top it all off, LED lights were introduced to the solar market. Smaller, more affordable 30 Wp solar systems now allowed the same advantages

as a 50 Wp system. The rural market for solar home systems was booming. By 2013, solar entrepreneurs were installing 65,000 solar home systems a month.

Nevertheless, while tailwinds propelled market growth to ever new heights in 2013, strong headwinds were forming to soon bring it to a halt. The Bangladesh government started giving away free solar home systems under its social safety network program for the poor. It accelerated extension of the electric grid into rural areas. A private unregulated SHS market emerged when electronics traders in old Dhaka began marketing cheap Chinese solar systems to rural customers. As a result, the installation of the six million solar home systems envisioned by IDCOL did not materialize. Solar customers defaulted on their loans. Solar companies were unable to repay their loans to IDCOL. The money ‘got stuck’. And IDCOL was hard put to find solutions to these problems.

There is however yet another headwind to be mentioned, claims Dr. Khan. “Some kind of complacency drifted into IDCOL. Success was so great. Everybody was in a celebrating mood and not thinking about this. However, the hallmark of IDCOL has always been that it was proactive rather than reactive to events. The success of the SHS project was a collective effort. The World Bank, IDCOL, the rural entrepreneurs, academics—all contributed to its success. But it was IDCOL that was always in the lead. This is what is meant by public entrepreneurship. IDCOL must become more proactive and place itself in the forefront again.”

What can we learn from Dr. Khan’s story. First and foremost: that seeing is believing. While he did in fact see the solar home system, he did not believe in its value for the rural population until literally seeing it through the eyes of his family on an off-grid island. Demonstration is fundamental to rural business. In addition, I can confirm from my years of experience with solar engineers in rural Bangladesh how hard it was to explain to people that energy from the sun could light up their houses at night.

We also learned about innovation. Innovative breakthroughs often come from combining existing methods in new ways and then testing them. The strength of IDCOL’s innovative financial model was the blending of microfinance and project finance. In addition, it was designed in a way that had to be tested by trial and error and continuous iteration. This is something to remember when building a rural market.

“Bangladesh is unique in having so many successful microfinance organizations. But you chose not to subsidize them or to subsidize their product, but to incentivize private enterprise to develop a solar market. Why was that your choice?” Dr. Khan: “Well you see, from the beginning our goal was to commercialize solar home systems. So our dream was that you could buy a radio from the rural market. However,

to achieve this we would have to break the barriers in the market and our answer was to give rural companies two types of subsidy: a capital buy down grant to lower customers' installment payments; and a subsidy to the rural companies for institution building. But you see, these were all gradually reduced and eliminated."

Dr. Khan further explained that the purpose of the subsidies was from the start to strengthen private enterprise to create a solar market. This was also the purpose of IDCOL's concessional loans. As the market evolved, the interest rates increased, so that the rural companies and the market could later stand on their own without help from IDCOL. This was also the reason for inviting large, private companies like Singer, Bangladesh to participate in the SHS project. Unfortunately, they did not find this business worthwhile and left the program. It's a fact: rural business is full of risks and takes time to develop.

3 IDCOL's Journey into the Future

Having looked at the past, we now turn to discuss IDCOL's journey into the future. Monir Islam is the company's first accountant and its present Chief Financial Officer (CFO): "If you really want to understand this level of success, you need to first understand the context." When the SHS project was launched, access to electricity was less than 40%, so solar power was urgently needed in rural Bangladesh. The challenge was to create awareness for a new and exotic technology by showing people that sunlight can really produce electricity. This was hard going in the beginning. However, from that level of awareness, Bangladesh is now known as a solar nation.

To better understand IDCOL's past success you must also see how it developed an ecosystem for this market. In the beginning, there were hardly any solar manufacturers and suppliers and solar equipment had to be imported. Therefore, IDCOL developed local capacity with now over 200 solar manufacturers and suppliers' that work and manufacture in Bangladesh. Then there was the challenge of supporting the partner organizations to demonstrate, deliver and service this new technology in the villages. In the end, finding workable solutions to all these problems created IDCOL's past success.

"And we learned," adds Monir. "Still there were interventions beyond our control. Grid connectivity, for example. Beginning in 2014 about 300,000 connections were being made each month. But a year beforehand we hardly knew about this plan. So there was a clear lack of coordination and that was a big lesson for us, which will probably help us in future."

In addition, the future looks promising according to IDCOL's Deputy CEO. Its past success also motivated the company to take up other renewable energy interventions. It has supported the installation of 26 solar minigrid projects and 1514 solar irrigation pumps. A successful biogas and bio fertilizer program has been launched. In only a few years, 57,000 domestic biogas plants are now supplying clean energy for cooking and lighting across rural Bangladesh. Still experiments but promising, are biomass and biogas-based electricity projects for commercial enterprises in the poultry industry.

IDCOL's main focus at present is on solar rooftop projects, in particular in the industrial sector. Surveys show that there is a potential of more than 500 megawatts alone in the garments and textile manufacturing industries. IDCOL has begun implementing these projects with a target of 300 megawatt generation capacity on industrial rooftops by 2023. In addition, although the COVID 19 pandemic seriously slowed down progress, IDCOL's active pipeline promises more business in the solar sector in future.

As impressive as these achievements are, no national solar energy program can succeed at length without government policy. The good news: IDCOL's past success in the solar sector motivated the Bangladesh government to introduce various policy and strategy documents in support of solar power. The problem is they come from as many different government agencies and lack coordination. There is, for example, the Master Plan, the Bangladesh Delta Plan, the Eight & Five Year Plan, and now under the banner of the G20 Group, the Multi-Climate Prosperity Plan for the next two decades.

All of these strategic documents promote the implementation of different renewable energy projects with different targets in the coming years. IDCOL is forging strategic plans to be part of the targets set by the Bangladesh government. The government has already transferred a number of grid-connected solar projects to the private sector. IDCOL has financed one project so far with a capacity of 10 megawatt electricity from a solar park. Still, more projects are in the pipeline, which IDCOL plans to finance.

My response to Monir focused on rural business. "If Bangladesh is to live up to its goal of becoming a solar nation, certainly it will have to support solar projects in urban areas as well. But we know rural business to be far more challenging. Can you please tell us what rural energy projects are moving fastest and where progress is slow and difficult?"

Monir's response comes as little surprise: "the rooftop projects are going great. But solar powered irrigation and minigrid projects remain the most challenging for two reasons: extension of the electric grid has limited the expansion of minigrid projects to off-grid islands as defined by the government. And the

solar irrigation pump projects still require a subsidy to compete with the diesel-run pumps. But we remain optimistic. We have successfully implemented more than 1500 pumps already and are discussing with development partners how we can take this project to the next level.”

4 The Private Sector Perspective

The private sector perspective is represented by the Managing Director of Rahimafrooz Renewable Energy, Mr. Munawar Moin. The solar sector has experienced dramatic growth during the past decade with 22 solar battery manufacturers, 83 solar LED light manufacturers, 9 solar panel manufacturers and more.

Munawar reports on the role of the private sector in demonstrating solar technology. This began as early as the mid-1990s, but if you look at the solar home system, just demonstrating that this technology actually works was done by private players. This moved on to solar powered irrigation pumps and even rooftops. Munawar remembers when potential solar rooftop owners simply would not believe that energy could come from the sun and get into the grid and then light up the building. Therefore, the key role played by the private sector was to demonstrate solar technology works, is efficient and reliable.

After a decade of rapid market growth, solar technology has now become a purely commercial open market. Six million rural households are enjoying solar electricity and need replacement products and service. Even urban customers are investing in solar systems. Everyone knows that last mile electricity delivery by the grid will be inconsistent in the near future. So solar systems have become backup power systems for reliable power during breakdowns. Five to ten thousand solar systems are sold every month for this reason.

This is all a continuation of the SHS project. The challenge is now to take this market to the next level of growth. It could be rooftops and irrigation pumps. Alternatively, it could be productive applications like milk chiller storage and rice driers. Whatever you may call it, renewable energy technology will really ramp up based on how directly we can link it to productive use. This is the challenge we face: to come up with solar solutions which educate users on their benefits. The solar powered irrigation pump is a good example of productive use for farmers. Solar rooftop owners now see clearly how they benefit in terms of cost and sustainability from green energy.

But these benefits must also be clearly demonstrated to be understood. Why? Because whenever you try to do something new with renewable energy, its opponents grill you. You understand how efficient and cost effective solar power is. Still when you look at conventional energy, it is getting all the subsidies. You understand the significant inefficiencies of the electric grid, but they are simply overlooked. Renewable energy is not an option.

Munawar is however still optimistic that the present dilemma will inspire the solar sector to ensure that new technologies are demonstrated, piloted and are commercially viable. In addition, by this he means all players—from consumers, financiers and regulators to the manufacturers and suppliers. All should be aligned and part of this process to show the benefits of renewable technology. So in rural Bangladesh, where 70% of the population lives and much of the productivity—up to 65% GDP—comes from there, any renewable energy solution that helps to improve agro output, livestock output, fisheries output, small medium enterprise output is vital to Bangladesh's future growth. These solutions are in fact already becoming feasible.

IDCOL is today the only finance institution specialized in renewables. However, when talking about future growth for renewables, this will require hundreds of millions of dollars' worth of financing in the sector. This is what the financial sector has to learn from IDCOL: as IDCOL grows the solar market, the whole finance sector must also grow in this direction to support renewable energy technologies with productive use. In addition, because IDCOL is the only loan-specialized financing institution for renewables, it has demonstrated to the world what this can mean when developing a solar market. But now, if private businesses want to scale up, they will need many more financial institutions for the simple reason that IDCOL alone cannot be funding everything.

Let us say we need three hundred thousand irrigation pumps to be rolled out right now. Alternatively, we need two to three gigahertz of solar rooftops. IDCOL alone cannot fund these projects. Maybe it will do 50%. However, who will do the rest? Other financial institutions will also have to come up. The Bangladesh Bank will have to play a much more proactive role. Commercial banks with networks all over the country can learn from IDCOL and see how they can finance renewables. The Bangladesh Bank has introduced the Green Funds, but that policy has not yet been as effective as IDCOL's support for renewables to the last mile. This is what will move the sector forward.

5 What Africa can Learn from Bangladesh

In this section, we address the issue of transferability of lessons, in particular what lessons from Bangladesh are relevant to Sub-Sahara Africa, where Pay-As-You-Go (PayG) companies are rapidly expanding their solar business. Sanjoy Sanal, an entrepreneur from the Indian Institute of Management in Calcutta (India) summarizes the three things he believes IDCOL has to teach Africa: first of all at the policy level. IDCOL's policy ensured that public finance reached the local MFIs and that microfinance reached the rural households. The second lesson focuses more on private enterprise, particularly important for Bangladesh business people. IDCOL's partner organizations (POs) were both lenders to rural households and solar suppliers. As a result, dozens of businesses outside the program emerged as the solar market matured: 22 battery and 83 LED manufacturers in total. Bangladesh business people should therefore be thinking about expanding their business to Africa.

Thirdly, and most important: African countries should learn from Bangladesh that international development aid and international policy advice go only so far to make a country prosperous. Rather, it is the ability of people like IDCOL's CEO to be able to sit across the table with a World Bank professional and say: this works in this way in my country and I will experiment and pilot this SHS project in my own way.

In what follows, Sanjoy breaks down each of these points to explain them in detail. With regard to the policy issues on the finance side, he describes his frustration with international conferences held in big cities like Amsterdam and Vienna every year—and which every year seem to try to reinvent the wheel with regard to finance for developing countries. Why do none of them ever talk about Bangladesh? After all, it is the only country in the world that succeeded in electrifying a large percentage of rural households. 25 million people are now using solar home systems. Where in the world has this happened?

What can be learned from Bangladesh is how IDCOL made local currency debt available at a reasonable price to its partner organizations, which in turn made it reasonable for rural households. The POs borrow in local currency from IDCOL at 6% interest with a loan tenor of five to seven years, and then on-lend to their solar customers at 12% interest over three years. That's project finance meeting microfinance.

The second lesson the SHS project has to teach is how it ensured quality products. Rural households are hesitant to finance solar systems because they often fail. In contrast, IDCOL set up an entire quality infrastructure from quality

standards to certification to testing solar home systems in the field by IDCOL inspectors.

Last, not least, the third lesson stresses the importance of the partner organizations for the success of the SHS project. They had the ability to go to people's houses to provide customer service and collect the monthly installments. More than this, they were given the incentives to do the job. This is, as Dr. Khan pointed out, a results-based financing program.

So in conclusion, even after working for seven years in Africa, Sanjoy cannot think of any African nation being able to replicate and adapt a decentralized renewable energy program without these building blocks. You can say Pay-as-You-Go companies in Africa are doing the same thing and that is true. These solar companies are lending to households. However, because they do not have domestic local currency debt financing, they have to put up these very complicated structures overseas—like raising money off-balance sheet and sending it to Africa. This leads to three problems.

Number one: there will never be those 22 battery manufacturers and 83 LED manufacturers in Africa. Second, it is very risky if one of these companies fails. Third, it is very expensive if it is foreign currency debt subject to foreign currency fluctuations. This means maybe a poor African farmer has to then pay more for electricity. Is that fair? Is it fair to subject a poor farmer to the vagaries of the market?

Sanjoy concludes by adding that businesses in Bangladesh need to think about moving out and thinking about Africa. Monir Islam said earlier today that all the component manufacturers really emerged in Bangladesh. However, where are these component manufacturers in Africa when Rwanda is setting up its Made in Rwanda Policy and inviting foreign direct investment? Companies from the Netherlands are investing there. Bangladesh business people have to ask themselves why we could not see that opportunity.

Therefore, the lesson is: it is important for Bangladesh to say to the world that we did this thing, that today we are a middle-income country—, and that the time has come for us to be confident, to go to the world, and to tell our story.

My first response to Sanjoy came from my own experience as presenter at international conferences: Although I was invited to speak about the SHS market in Bangladesh, I was introduced as 'now Nancy Wimmer will tell us about India'. Bangladesh is somehow not on the map—just one reason I wrote two books on its astonishing success in developing a rural market for solar home systems (Wimmer, 2012, 2019). Another is why this country has very good reason to be proud: the development of a solar market in rural Bangladesh proved to the world that

the impetus for market development can come from within a developing country—driven by local entrepreneurs under IDCOL’s leadership.

There are indeed many good ideas to learn from. Of particular importance was how solar companies in Kenya and Tanzania are dependent on foreign capital for funding. In contrast to the POs in Bangladesh which borrow from IDCOL in local currency, these PayGo companies must either absorb foreign currency fluctuations or pass them on to their customers—like the poor farmer who must now pay more for electricity. Bangladesh can in turn learn how new technologies like PayGo can drive the solar market. IDCOL recognized too late, how innovative tech companies like SOLshare could take the solar home system market to the next level.

6 What Comes Next for Bangladesh?

In this final section, we discuss the future, after having reached almost 100% electrification for Bangladesh. What is next for the solar energy sector? Dr. Khan explains that two things are most important: electricity access and the quality of the electricity provided. We have done quite well in terms of grid extension, which includes off-grid solar home systems. What is next is the quality of the electricity we are getting: how many interruptions per day for how many hours, what voltage is right, for example.

A third issue is sustainability. Bangladesh’s focus remains on fossil fuel based energy. This is unfortunate, because in the long run this is not sustainable. However, you know, people make tons of money through energy imports. Therefore, it is a balancing act between fossil fuels and solar energy for the sake of sustainability. We have to first fill in the gaps with renewables, because although now 96% of Bangladesh households are officially grid-connected, there are many gaps in the quality we have to plug up. We must also move up the energy ladder from DC electricity to great quality electricity provided by rooftop solar, irrigation pumps and especially to promote income generating activities through electricity.

Dr. Khan also stresses his strong belief in institutions. He has good reason to do so. There were to wit two assassination attempts to shut the company down: the first by Bangladesh’s Finance Ministry because IDCOL was unable to utilize the entire World Bank fund for infrastructure projects. Fortunately, the CEO could prevent the worst by explaining the problem in depth to the Finance Minister after which the Minister contributed BDT 50 Crore (500 hundred million) to IDCOL to increase its equity capital!

The second assassination attempt was by the World Bank itself. Following the closure of the Bank's fund, a project completion mission visited IDCOL. The Task Manager proposed to close down IDCOL and divert the reflows to the Investment Promotion and Financing Facility (IPFF), a new project he was developing. This attempt failed. IDCOL was a wholly government-owned company. Only the government could decide its fate.

Ironically, the third near-death experience was in part a result of IDCOL's success. The SHS pilot project met its target two and a half years before the target date of five and a half years and then ran out of grant funding. Rapid growth was in this sense a disaster for the SHS project. Luckily, the CEO was able to secure grant funding for the project after a meeting with the German Ministry for Economic Development in Berlin: again by chance.

In contrast, Monir Islam, IDCOL's Deputy CEO goes straight to the immediate challenge confronting IDCOL. But first the good news: inspired by the SHS project's success, the Bangladesh government (GOB) set a target of ten percent of the total generation capacity to come from renewable energy sources by 2021.

"But if we can achieve this 10% target in even the next five years," claims Monir—and this is the challenge—"this would mean around 3000 megawatt coming from renewable energy. Our achievement so far is about 3.5%. Therefore, we have a long way to go. The good thing is that all the right policies are in place. We have targets and pathways set by the GOB. We now know about the potential of unexplored renewable energy sources, like offshore wind energy and floating solar projects. We have done assessments and we have the expertise. So yes, I am hopeful and optimistic that we can reach the GOB's target for renewable energy. There will be more success stories coming up in the near future."

Munawar Moin summarizes the experience from the private sector in the following way: Success in Bangladesh mainly happens because there is a plurality of drivers. "You know multiple people in different areas all doing their job with a lot of commitment and heart," explains Munawar. "And I think we see this in the solar sector right now. Despite its difficulties, this is happening and this is what's going to happen at least in the foreseeable future".

Still, institutional support for the continued growth of the renewable energy sector is crucial. Even in very recent discussions with policy makers, the private sector has been telling them what it believes is needed: a single ministry similar to the Ministry for Renewable Energy in India, which is empowered with a budget program and resources to accelerate market development for renewables. As an added incentive, Bangladesh's honourable Prime Minister, committed

Bangladesh to 100% renewables by 2050 at a climate conference in Morocco in 2016.

True, the progress in rooftop solar is encouraging and will continue because of its commercial viability and the net metering policy. However, the main thing is we need a paradigm shift in thinking at the policy level. If we think that progress in the renewables sector will happen only by an increase in megawatts, solar power plants and similar projects, we are thinking very much like in the past. What has to happen in future—and this has already begun—is more distributed renewable energy systems, many grid-connected, for productive use.

In addition, this again needs demonstration, since energy cannot be seen by itself. It needs to be connected to productive use. An example: over one million vehicles are transporting anywhere between 8 to 10 million people every day and are still being charged with grid electricity. It is a huge business, employing 1.5 million people. Now just imagine this same business if these vehicles were solar powered or being charged from solar hybrid charging stations. Here you see a whole system, which is fully connected with enormous potential for renewables.

With a clear vision for the future, Munawar believes: at the end of the day, we will have more energy efficient and sustainable energy systems, which lead to more economic and social upliftment. This is already happening with solar powered irrigation pumps. However, its future success depends on what IDCOL alone cannot do. The government must come up with a feasible proposition to support the continued acceleration of the renewable energy sector, where “we all collectively work to make this vision reality: 100% renewables by 2050”.

According to Sanjoy Sanal, the primary issue in Bangladesh in the next decade will be climate adaptation and resilience. Bangladesh must be thinking about how to incorporate renewable energy thinking into climate resolution issues, for example with productive use and electric vehicles. In view of the dim forecasts for extreme climate change in the delta in future, this cannot wait.

The second thing Sanjoy wants to see continue is innovation. Bangladesh should continue to innovate on the infrastructure it has built. The company, SOLshare, with its innovative peer-to-peer solar trading model is a good example. Village milling or rice husking centers run by renewable energy, another. Opportunities for innovation abound, including the Green Climate Fund (GCF). IDCOL has been accredited and is mobilizing funds from the GCF for climate adaptation and climate mitigation projects. It will now be easier for the renewable energy sector to achieve its 10% target, since it can source funding not only from the government or its development partners. In future climate mitigation projects can be funded through the GCF.

Following two decades of development in the renewable energy sector, Bangladesh is now perfectly positioned to move onto the next level. Yet, whether strong tailwinds will come from funds like the GCF or increased institutional support from the Bangladesh government—or both—is not yet certain. Bangladesh's renewable energy sector has good reason to be optimistic. It not only demonstrated that the development of a rural market for solar power is doable and profitable. It proved to the world that this market development could come from within a developing country—driven by local entrepreneurial companies.

References

- Wimmer, N. (2012). *Green energy for a billion poor: How Grameen Shakti created a winning model for social business*. MCRE-Verl.
- Wimmer, N. (2019). *The Marketmakers: Solar for the Hinterland of Bangladesh*. CreateSpace Independent Publishing Platform.

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