Solar Power Is Reaching Where Wires Can’t

By DAVID LIPSCHULTZ

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Solar power is opening doors to the Internet for many people with no access to traditional energy sources. The arrival of solar panels at Myeka High School in a remote area of South Africa, above, has allowed students to learn online skills, left. Panels are also used in homes, below.

Two billion people, roughly 30 percent of the world’s population, are off the energy grid, living in areas without utility services. And a billion of them have the means to pay for power, said Prof. Daniel M. Kammen, director of the Renewable and Appropriate Energy Laboratory at the University of California at Berkeley.

According to solar industry vendors and analysts, many of these billion people spend $5 to $10 a month on kerosene, almost exclusively for lights. Solar power, of course, has many more uses, and by amortizing the start-up costs over perhaps five years, the total cash outlay is about the same.

"There’s a lot of money to be made in converting those people to solar," said Dr. Allen M. Barnett, chief executive of Astropower, a publicly traded company based in Newark. In July, for example, Shell Solar signed an agreement with the Sun Oasis Company, a distributor in Beijing, to supply systems for up to 75,000 households in rural western China.

Moreover, solar energy has no moving parts, unlike other renewable sources, including wind and hydro, which makes it easy to maintain in areas where technicians are hard to find. Solar power’s attractiveness off the grid, and an overall interest among governments, corporations and international organizations in bridging the digital divide, have put it in a sweet spot.

Robert A. Freling, executive director of SELF, said, "There’s no question that telecommunications and computer availability are major issues when trying to get communities online, but without energy you can’t even talk about those.”

Solar power has become the energy of choice in many rural markets, in large part because the price has dropped considerably in the last few years. Proctoring over roughly 10 years, the upfront cost of solar panels and accompanying batteries gives the energy a cost of roughly 18 cents a kilowatt-hour, competitive with any off-grid power.

SIDe from selling directly to remote areas, solar energy companies are expected to achieve much of their growth in powering telecommunications companies that want to extend their services, including the Internet. "In some cases the economics involving off-grid power, such as power generators, don’t allow telecom carriers to go further out,” said David Dunsworth, director for power systems of Hutton Communications, a Dallas-based distributor of telecommunications equipment. "Solar allows them to do it.”

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forward for local solar companies,” said
Steve Cunningham, an investment officer
for the Energy House Capital Corporation
of Bloomfield, N.J., one of several private
American equity firms that have millions
of dollars to invest in energy companies
in rural markets in the developing world.

But big challenges remain. Though they
can last for 20 years, solar panels and
batteries cost a minimum of $500 for a
small house. That would be a huge up-
front payment for many people, said
Charles Gay, a director of Greenstar, a
nonprofit group based in Los Angeles that
promotes the use of solar energy in bring-
ing remote areas online.

“Coming up with a viable financing
arrangement is definitely one of the big-
gest challenges,” Mr. Barnett of Astro-
Power said.

International organizations like the
World Bank and the United Nations De-
velopment Program have started to put
money into projects, and businesses, to
help solve the financing problem.

Two years ago, the International Fi-
nance Corporation, the private investment
arm of the World Bank, began investing
$30 million through its Photovoltaic Mar-
et Transformation Initiative for solar
projects in developing countries like India
and Morocco.

But some people contend that even
though these projects provide power for
remote areas, many people in those areas
have more pressing priorities than spend-
ing their scarce dollars on computers and
Internet access.

“Clearly, for those numerous people in
the developing world that are hungry or
sick, food and health must take priority
over everything, even education,” said
Lester Brown, chairman of the World-
watch Institute in Washington.

But many people who are involved in
solar projects say the access to power can
help deal with those issues, too.

In some remote villages, the economy is
"a barter system where they exchange
crops for kerosene, kerosene for medicine
and things like that," Mr. Gay said. "You
have to give them the resources to trans-
form themselves into a real currency-
earning society."

In Parvathapur, a remote village in
south-central India that is off the
power grid, Greenstar is starting to
find evidence of that. Last year, Greenstar
invested about $75,000 in solar panels,
computers and Internet access to provide
the village with money-generating tools.

The village now sells its music, art and
calendars online to customers who in-
clude expatriate Indians in the United
States. Fifty-five percent of the revenue
now goes to Greenstar to pay back the
initial solar and infrastructure expendi-
ture. “Within four years, we expect to
have recovered our investment,” Mr. Gay
said.

Once the money is paid back, Green-
star's share will fall to 10 percent, which
will go toward financing other projects in
places like Jamaica, Ghana and the West
Bank or future ones in Brazil and Tibet.

"It's a self-replicating finance mecha-
nism," he said.

In return, villages like Parvathapur re-
ceive not only a way to build a micro-
economy for their music and arts prod-
ucts, but also a tool to better support their
principal source of income, agriculture.

Mr. Gay said the village is using the
Internet to learn the most efficient times
to plant and harvest crops and the best
markets in which to sell them. "The vil-
lage is making more money than before," he said.

Over the last two years, with a similar
goal in mind, the Grameen Bank has fi-
nanced more than 30 rural communities
in Bangladesh for energy projects. It
gives interest-bearing loans to people in
those areas to buy Internet connectivity
products like solar panels and phone
equipment. Enough entrepreneurial activ-
ity has emerged to achieve a 90 percent
payback rate on the loans.

SELF has provided revolving-credit
loans to various areas for home lighting.
When it comes to projects with fully inte-
grated Internet access, SELF relies on
grants and does not have a specific repay-
ment plan. It says it hopes that some type
of commerce arises from the efforts.

Building such commerce appears cru-
cial. Many vendors and project managers
agree that if a village cannot set up a busi-
ness model and generate enough income
from the new energy and the Internet ac-
cess, it will eventually be in the dark
again.

“I’ve seen it many times,” Mr. Gay said.
“If the community isn’t self-sustaining
after a while, none of this will work.”