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BUARIKI, KIRIBATI -- As late as 1990, nightfall in Kiribati (pronounced "Kiribass"), a patchwork of tiny islands in the middle of the Pacific Ocean, was accompanied by a peculiar odor. More than 60 per cent of the country"s 103,000 people had no electricity, and whenever dusk fell, many of them would light greasy kerosene lamps in order to see.

The kerosene fumes were unavoidable, villagers recalled, and the light was not quite suitable for weaving or reef fishing -- two economic activities that are central to village livelihoods. "Uncomfortable and annoying," recalled Roniti Piripi, a villager on North Tarawa, a two-hour boat ride from the grid-connected capital in South Tarawa.

"Once we got solar energy, everything was easy," Piripi"s wife, Taanti Kaitangare, recalled as she sat in a thatch-roofed, open-air meeting space, known as a maneaba. "We"re so much happier."

Since 1991, the state-owned Kiribati Solar Energy Company (KSEC) has distributed approximately 4,400 home solar systems across 21 of the country"s 33 islands and received millions of dollars in development assistance from Japan and then the European Union, according to Tavita Airam, the company"s chief executive.

Villagers in off-grid areas are "really happy because women can do the weaving, and men can go out fishing, using the lights," he said recently in his office, a squat residential building in South Tarawa, near the country"s only industrial seaport.

But the 25-year solar rollout in Kiribati hasn"t always gone smoothly, according to officials and energy consultants. Airam also concedes that KSEC"s US$75,000 maintenance fund for its solar equipment is underfunded by half, and that with EU assistance scheduled to formally end in March, the company"s long-term growth strategy will depend on the government"s willingness to subsidize it.

Kiribati"s energy story highlights both the successes and pitfalls of off-grid solar projects in the South Pacific, a region that includes some of the world"s poorest countries. On one hand, energy experts say such initiatives have brought power to thousands of remote villages despite enormous geographic and logistical obstacles. But they add that the region"s solar programs, which are typically funded by international donors, have been plagued by bureaucratic inefficiency and a chronic lack of attention to long-term economic and technical sustainability.

"Systems are installed, and then what? The batteries fail, and after five or six years people want to replace them -- but no one has money set aside," said Peter Konings, chief executive of Asia-Pacific Energy Group, an American energy company that operates across Asia, Europe and Africa and specializes in off-grid solar

development.

"You want to do a good job, but basically you"re putting solar systems in places where there"s no cash economy," he continued. "There"s no monthly income, so how can they make monthly payments?"

Kiribati"s 33 islands are spread across 3.5 million square kilometres of ocean, but the total land mass is about half the size of greater London. The two-hour boat ride across an ocean lagoon from South to North Tarawa is short by local standards; Airam said it can take nearly two weeks to ship KSEC solar equipment from South Tarawa"s port to some of Kiribati"s more remote islands. (He usually flies to site visits.)

The vast swaths of ocean that separate Pacific Island states from each other, and from the nearest continents, coupled with a lack of fossil-fuel reserves and (for Kiribati and some of its neighbours) arable land for subsistence agriculture, make long boat trips and extensive imports of food, fuel and other essential goods a fact of life. It does not help that the populations of Pacific Island states are highly dispersed, or that the fixtures of the region"s economic life -- fishing boats -- require a constant flow of gasoline.

All of that makes Pacific Island states especially vulnerable to swings in prices of essential commodities, particularly transportation and cooking fuel. A study by the Asian Development Bank found that, in 2006, fossil fuel -- mainly oil -- made up 85 per cent of the countries" total energy mix. If the region"s most populous countries, Fiji and Papua New Guinea, were excluded from that calculation, the rate climbed to 99 per cent. By contrast, the average for the Asia-Pacific region was 45 per cent, and just 34 per cent globally.