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Africa, Offline: Waiting for the Web

By [RON NIXON](#)

ON a muggy day in Kigali in 2003, some of the highest-ranking officials in the Rwandan government, including President [Paul Kagame](#), flanked an American businessman, Greg Wyler, as he boldly described how he could help turn their small country into a hub of Internet activity.

Mr. Wyler, an executive based in Boston who made his fortune during the tech boom, said he would lace Rwanda with fiber optic cables, connecting schools, government institutions and homes with low-cost, high-speed Internet service. Until that point, Mr. Wyler, 37, had never set foot in Africa — he was invited by a Rwandan government official he had met at a wedding. Mr. Wyler never expected to start a business there; he simply wanted to try to help the war-torn country.

Even so, Mr. Wyler's company, [Terracom](#), was granted a contract to connect 300 schools to the Internet. Later, the company would buy 99 percent of the shares in Rwandatel, the country's national telecommunications company, for \$20 million.

But after nearly four years, most of the benefits hailed by him and his company have failed to materialize, Rwandan officials say. "The bottom line is that he promised many things and didn't deliver," said Albert Butare, the country's telecommunications minister.

Mr. Wyler says he sees things quite differently, and he and Rwandan officials will probably never agree on why their joint venture has been so slow to get off the ground. But Terracom's tale is more than a story about a business dispute in Rwanda. It is also emblematic of what can happen when good intentions run into the technical, political and business realities of Africa.

Attempts to bring affordable high-speed Internet service to the masses have made little headway on the continent. Less than 4 percent of Africa's population is connected to the Web; most subscribers are in North African countries and the republic of South Africa.

A lack of infrastructure is the biggest problem. In many countries, communications networks were destroyed during years of civil conflict, and continuing political instability deters governments or companies from investing in new systems. E-mail messages and phone calls sent from some African countries have to be routed through Britain, or even the United States, increasing expenses and delivery times. About 75 percent of African Internet traffic is routed this way and costs African countries billions of extra dollars each year that they would not incur if their infrastructure was up to speed.

"Most African governments haven't paid much attention to their infrastructure," said Vincent Oria, an associate professor of computer science at the [New Jersey Institute of Technology](#) and a native of the Ivory Coast. "In places where hunger, AIDS and poverty are rampant, they didn't see it as critical until now."

Africa's only connection to the network of computers and fiber optic cables that are the Internet's backbone is a \$600 million undersea cable running from Portugal down the west coast of Africa. Built in 2002, the cable was supposed to provide cheaper and faster Web access, but so far that has not happened.

Prices remain high because the national telecommunications linked to the cable maintain a monopoly over access, squeezing out potential competitors. And plans for a fiber optic cable along the East African coast have stalled over similar access issues. Most countries in Eastern Africa, like Rwanda, depend on slower satellite technology for Internet service.

The result is that Africa remains the least connected region in the world, and the digital gap between it and the developed world is widening rapidly. "Unless you can offer Internet access that is the same as the rest of the world, Africa can't be part of the global economy or academic environment," said Lawrence H. Landweber, professor emeritus of computer science at the [University of Wisconsin](#) in Madison, who was also part of an early effort to bring the Web to Africa in the mid-1990s. "The benefits of the Internet age will bypass the continent."

RWANDAN officials were especially interested in wiring primary and secondary schools, seeing information technology as crucial to modernizing the country's rural economy. Some 90 percent of the country's eight million people work in agriculture.

But as of mid-July, only one-third of the 300 schools covered in Terracom's contract had high-speed Internet service. All 300 were supposed to have been connected by 2006.

Over all, less than 1 percent of the population is connected to the Internet. Rwandan officials say the company seems more interested in tapping the more lucrative cellphone market than in being an Internet service provider. (In November, Mr. Wyler stepped down as chief executive of Terracom, saying he wanted to spend more time with his family; he still serves on the board.)

In a telephone interview from his home in Boston, Mr. Wyler said he would not address the government's criticism, saying he did not want to be quoted as saying anything negative. But he said there were some things he had not anticipated, particularly the technical challenges of linking Rwanda's Internet network to the rest of the world. The only way to do it is to buy bandwidth capacity on satellites, but there are not enough satellites to meet demand.

Mr. Wyler also says he believes that Terracom suffers from unrealistic expectations. "Terracom has done everything it can," he said. "Because of the technical challenges, the Internet service is as good as it's going to get. But given what we started from, I still think we have accomplished a lot. In the beginning there were a few people with Internet service; now there are thousands."

The Rwandan government had hoped that the number of Web surfers would be much higher by now. Rwanda, which is about the size of Maryland, has little industry, and its infrastructure is still being rebuilt after being left in shambles by a 1994 genocide in which 800,000 to a million people were killed.

"We have almost no natural resources and no seaports in Rwanda, which leaves us only with trying to become a knowledge-based society," said Romain Murenzi, the minister of science, technology and scientific research.

Officials saw Terracom's investment as crucial to its transformation. Unlike many African governments, Rwanda's was eager to privatize the national telecommunications company, which had outdated equipment, high prices and few subscribers.

But from the start, government officials say, there were problems with Terracom. Mr. Butare, the telecommunications minister, said the government had trouble getting basic information from the company.

Complicating the situation, Mr. Butare said, was that Mr. Wyler tried to run Terracom from the United States, visiting Rwanda just a few weeks at a time. He left day-to-day management to a poorly trained staff, Mr. Butare said.

"There were spots where they did some things here and there," Mr. Butare said. "But over all they have failed to do what they promised."

Internet rates have been lowered, from about \$1,000 a month when Terracom arrived in 2003, but most people still can't afford it. The average Rwandan makes about \$220 a year, and a fixed-line Internet hookup costs about \$90 a month. Basic wireless Internet is about \$63 a month. Those rich enough to pay the fees complain about poor service.

Government officials say the company has spent more time marketing and signing up cellphone customers than on expanding Internet service. According to government figures, Terracom has 30,000 to 40,000 mobile phone subscribers and about 20,000 Internet customers.

The situation came to a head late last year, when government officials contended that Terracom secretly tried to trade its shares in the Rwandan telecom to GV Telecom, a regional African telecommunications company incorporated in the British Virgin Islands. Rwandan officials were furious, saying this was a violation of the contract signed by the two parties.

The plan was scrapped and Mr. Wyler was widely criticized. In June, the government fined Terracom nearly \$400,000 for failing to comply with its licensing obligations, failing to provide information about its operations and failing to pay several fees.

"We decided to penalize Terracom after they failed to fulfill their obligations for a long time," said Beatha Mukangabo, legal officer for the Rwanda Utilities Regulatory Agency. Terracom said it has paid the fines and is working with the government to meet all of its obligations.

Mr. Wyler said he has not been involved in Terracom for nearly 10 months and could not comment on its current operations.

Christopher Lundh, Terracom's new chief executive and a former executive of [Gateway](#) Communications in London, has worked in several African countries. He now lives and works full time in Rwanda, and many government officials say Terracom's performance has improved under his leadership.

Mr. Lundh acknowledged that there were problems with the company's operations in the past. "The former management did make some promises that they were not able to keep," he said. "That's why I was brought in to professionalize things." He also said that the company could have better handled the matter with GV Telecom but that he thinks the government overreacted.

He said the Rwandan government is to blame for some of the delays. "We would get to schools that don't even have electricity or computers," he said. "That is not our fault." In addition, he said that many of the complaints about the company concerned things beyond its ability to control. Getting adequate bandwidth remains a constant challenge.

Like most telecommunications companies in eastern Africa, Terracom depends on satellites for Internet service. Satellite service is much slower than cable because of delays in the signals. Satellites also provide less bandwidth than cable.

Adding to the problem is that most of the satellites serving Africa were launched nearly 20 years ago and are aging or going out of commission. A satellite set to go into service last year blew up on the launching pad. Power is also an issue, as intermittent power failures in Rwanda hamper efforts to provide a steady electricity source.

DESPITE these limitations and earlier setbacks, Mr. Lundh says Terracom is moving ahead with plans to give Rwanda the most advanced Internet infrastructure in Africa. A nationwide wireless connection should begin operating near year-end, he said, about the time a nonprofit group, One Laptop Per Child, based in Boston, is to introduce a \$100 laptop in the country.

And Terracom is continuing to lay fiber optic cables to connect Rwanda to several other African countries, eliminating a need for phone calls and Internet traffic to be routed via European or American networks.

The government, meanwhile, is moving forward with its own plans to build a fiber optic network. It also has granted Internet service licenses to South African companies and plans to issue several more. "We think we are going to have a healthier market pretty soon," said Nkubito Bakuramutsa, director general of the Rwanda Information Technology Authority. "We have learned from past experience."

Mr. Bakuramutsa said he hopes to bring the price of Internet service down to about \$10 a month.

Mr. Lundh said his company welcomes the competition. But, he added, getting necessary bandwidth remains an issue and no matter what company supplies Internet service, speed will be a problem. "Eventually you reach a point of diminishing returns," he said. "Unless there is a new undersea fiber optic cable built or a new satellite launched, it's going to be difficult."

Magnus K. Mazimpaka contributed reporting from Rwanda.

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