

Lighting Africa Enters New Phase

An international campaign to bring modern lighting to one-fourth of Africa's people enters a new phase this week with talks to draw investors to markets beyond the reach of the continent's outdated power grid.

According to IPSNews, representatives of the global lighting industry, governments, donor agencies, and non-governmental organizations have gathered in Accra, Ghana from May 6 for what organizers call the first global business conference on off-grid lighting in Africa.

The event is part of the "Lighting Africa" campaign launched last September by the World Bank and its private-sector unit, the International Finance Corporation (IFC). In addition to stimulating investor interest in the emerging off-grid lighting market, the agencies plan to use the Ghana conference to help firms establish strategic business and financial partnerships.

Electricity woes are considered a major impediment to economic and social development. Supply interruptions plague industry and repel investors, and health and education initiatives rise and fall on the availability of current to light classrooms or refrigerate vaccines. By 2030, Lighting Africa seeks to reach 250 million people cut off from existing power infrastructure and to free them from dependence on expensive and hazardous fuels.

Rising energy prices underscore the urgency of this mission, said organizers of the May 6-8 talks.

"Increasing access to affordable and clean lighting is essential to Africa's development," said Anil



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Cabraal, lead energy specialist at the World Bank. "Waiting for an expansion of the electricity grid is not an option, given today's energy concerns."

Even before utilities and their customers confronted surging fuel prices, only 26 percent of Africans had access to electricity. In some countries, the figure remains as low as 5 percent. The continent's power grid long has been characterized by crumbling infrastructure, outdated technology, and corruption.

"Energy-poor" Africans spend some 40 billion dollars per year on fossil fuel-based lighting products which the World Bank describes as "costly, inefficient, poor-quality, [and] polluting". The most common among these are kerosene lanterns, which the bank says consume 10-30 percent of household expenses in Africa below the Sahara desert.

Since the 1980s, ambitious efforts to boost the quantity and reliability of the continent's power supply—including major infrastructure projects backed by the bank and IFC and executed by international and domestic firms—appear to have had little effect: Africa is home to about one in six humans but generates about four percent of the world's electricity.

Now, the bank and IFC are promoting alternatives such as light emitting diodes (LEDs) and compact fluorescent lamps. Both technologies produce more light per watt than incandescent bulbs and they last longer than the traditional bulbs, although initial costs often are higher.

Additionally, the agencies are trying to reduce political barriers that, in their view, interfere with the private sector's efforts to penetrate the off-grid

market.

"By building a coalition between all parties in the industry, we hope to reduce hurdles and perceived uncertainties that accompany the development of a market as undiscovered as this one," said Monika Weber-Fahr, manager of the IFC's Sustainability Business Innovator Group.

At the Ghana talks, the bank and IFC expect to announce the winners of a competition for the design and delivery of innovative lighting products. The agencies then will help translate winning proposals into actual services that prove affordable for low-income African consumers and profitable for the companies.

Also to be unveiled at the conference is pilot research on consumer demand, behavior, and preferences in Ghana and Kenya.

Additional market research is being conducted

in Ethiopia, Tanzania, and Zambia, according to the bank and IFC. This research marks the first detailed exploration of what the bank has described as a potentially huge market for safe and reliable lighting products that are cost-competitive with fuel-based lamps and that are powered by renewable energy or mechanical sources.

Lead sponsors of this week's conference include the Energy Sector Management Assistance Program, a technical consultancy set up by the World Bank and UN Development Program; the multi-donor Global Environment Facility; and the Public-Private Infrastructure Advisory Facility, which the British and Japanese governments established, with World Bank help, to ease private participation in development efforts funded by public agencies.

In the News

Can Airplanes Go Green?

Alternative fuels for cars and trucks are becoming increasingly viable, but there's another area of the transportation sector where they haven't quite taken off: aviation.

Convincing the aircraft industry to start full-scale use of petroleum alternatives won't be easy because of the risks involved with testing new fuels in airplanes. If the switch can be made, though, there are several advantages to using biodiesel over traditional jet fuel, said Robert Dunn, a food and oil researcher at the US Department of Agriculture, Energy-daily said.

"It's renewable, it can be domestically derived, it's readily biodegradable, it's relatively safe to handle and store and it reduces most emissions," Dunn said at the World Congress on Industrial Biotechnology and Bioprocessing held last week in Chicago.

Any concerted effort to decrease global CO2 emissions will have to include the aviation industry, considering its large carbon footprint. The industry consumes 13 percent of the fossil fuels used by the transportation sector worldwide, according to the UN Intergovernmental Panel on Climate Change.

And the effects of airplane emissions are much harsher on the atmosphere because of the high altitudes at which they operate, said Max Schauck, chair of the Institute of Air Science at Baylor University in Waco, Texas.

"There's very little exchange with (air near) the ground, so the residence time of the pollutants is much longer and the air is less dense so it's more fragile," Schauck told United Press International. "This means that a substance does much more damage than the same quantity at a lower altitude."

Workable Jet Fuel

But many factors have made it difficult to develop a workable jet fuel for the industry, including the strict performance standards for jet fuel and the extreme temperatures at which aircraft operate, said Wayne Seames, a chemical engineering professor at the University of North Dakota.

"The annoying thing is that if you're 33,000 feet up, your fuel is going to be solid unless you heat it," said Seames, who currently leads a team of researchers developing biofuels for aviation. Other factors also create difficulties, such as the low density of many biofuels compared with their petroleum-based counterparts.

"Biodiesel has a lower density than traditional fuels, and in aircraft, especially military aircraft, this is a problem because it reduces" the distance a plane can fly without refueling, Seames said. By using the newest technologies available, though, a number of these barriers can be overcome, said John Plaza, president of Imperium Renewables, a biodiesel technology company.

"The opportunity exists to make a jet fuel from any feedstock and have it be identical to petroleum," Plaza told UPI. In February a biofuel created by Imperium powered the first commercial test flight run on bio jet fuel. The biodiesel product created by the company for the flight is molecularly identical to petroleum, eliminating freezing point or density concerns, said Plaza, a former Northwest Airlines pilot.

Sustainable Resource

Oils from coconuts and babassu plants, native to South America, provided the feedstock for the fuel. While the test flight proved the fuel's ability to work in airplanes, it won't be going commercial any time soon. That's because coconut oil doesn't represent a sustainable resource, although babassu might. But company executives aren't worried about that.

Problems with the sustainability of biofuels, evidenced lately by claims that ethanol has contributed to soaring food prices, represent one of the main challenges in trying to use biofuels in the large aviation industry, said Grazia Zanin, research director for Baylor's Institute of Air Science.

"That is the biggest problem," Zanin told UPI. "As it is right now, with what we have available with the biomass base, it would be very hard to produce all the jet fuel needed to run all the airplanes in the world."

However, new, non-food feedstock potentials could solve that problem as well, said Terrance Scott, environmental spokesperson for Boeing, the largest manufacturer of commercial jetliners and military aircraft combined.

"We're really focused on next-generation biofuels, so ones that don't compete with food and that don't take a lot of land or water (to grow)," Scott said.

The company is looking at biofuels made from a variety of non-food sources, including halophytes, a saltwater grass; algae; jatropha, a plant that can grow in wastelands; and switch grass, a North American grass. The outlook is promising, Scott told UPI.

Another feedstock option may be leftover animal fats and vegetable oil, according to researchers at North Carolina State University and Diversified Energy Corp. who have developed a technology using fats such as chicken grease, beef tallow and hog lard to produce a biofuel that could be used to power airplanes and other vehicles.

While this could be converted to more than a billion gallons of fuel, the aviation industry uses 70 billion gallons annually. So although technologies like Centia can help chip away at aviation emissions, in the end, Roberts said, the real answer lies in conservation. "It's a lot easier to save 20 percent (of the fuel being used) than to make 20 percent more," he told UPI. "But that's not the answer anyone wants to hear."

Chinese Protest Oil, Petrochem Projects

Hundreds of people marched in a western provincial capital in China over the weekend to protest environmental risks they say are associated with the construction of a petrochemical factory and oil refinery, witnesses said on May 5.

It was the latest in a series of rare but increasingly ambitious organized movements in Chinese cities aimed at derailing government-backed industrial projects that could damage the environment and people's health, NYTimes reported.

The protest on May 4, like its predecessors, was organized through websites, blogs and cell phone text messages, showing how some Chinese are using digital technology, despite government attempts to control the Internet, to spur on the kind of civic movements that officials strongly discourage.

The protestors in Chengdu, the capital of Sichuan Province, walked peacefully through downtown for several hours on May 4 afternoon to criticize the building of an ethylene plant and oil refinery in Pengzhou, an area 18 miles northwest of the city center. Some protesters wore white face masks to highlight the dangers of pollution.

About 400 to 500 protesters took part in the march, which was watched by dozens of police, witnesses said. Organizers circumvented a law that requires protesters to apply for a permit by saying they were only out for a "stroll."

The government has not done proper environmental reviews of the project, which could pollute the air and water and lead to health haz-

ards, critics of the project said.

"We're not dissidents; we're just people who care about our homeland," said Wen Di, an independent blogger and former journalist living in Chengdu.

"What we're saying is that if you want to have this project, you need to follow certain procedures: for example, a public hearing and independent environmental assessment. We want a fair and open process."

Fan Xiao, a geologist and environmental advocate based in Chengdu, sent out a mass cell phone text message on May 5 morning written by a leader of the protest movement and widely circulated across the country: "Protect our Chengdu, safeguard our homeland," it said. "Stay away from the threat of pollution. Restore the clear water and green mountains of Sichuan."

"People have been hoping this issue would get more attention," Fan said in an interview.

The chemical plant and oil refinery is a joint venture of the Sichuan provincial government and PetroChina, an oil company with shares traded on the stock market. It is an arm of state-owned China National Petroleum Corporation, the country's largest oil producer.

The project, approved last year, is expected to produce 800,000 tons of ethylene per year and refine 10 million tons of crude oil per year, according to the joint venture's website. Ethylene is widely used in the manufacture of plastics, insulation and other products.