

## Crude Awakening

### **As Alternative Energy Heats Up, Environmental Concerns Grow**

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Crop of Renewable 'Biofuels'  
Could Have Drawbacks;

Fires Across Indonesia

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Palm-Oil Boom Ignites Debate.

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By PATRICK BARTA  
And JANE SPENCER

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PONTIANAK, Indonesia -- Investors are pouring billions of dollars into "renewable" energy sources such as ethanol, biodiesel and solar power that promise to reduce the world's reliance on petroleum. But exploiting these alternatives may produce unintended environmental and economic consequences that offset the expected benefits.

Here on the island of Borneo, a thick haze often encloses this city of 500,000 people. The cause: forest fires that have blazed across the island. Many of them were set to clear land to produce palm oil -- a key ingredient in biodiesel, a clean-burning diesel fuel alternative. [See a slideshow]1 Patrick Barta At a new oil-palm plantation, the hillsides have been cleared and terraced.

The bluish smoke is at times so dense that it leaves the city dark and gloomy even at midday. The haze has sometimes closed Pontianak's airport and prompted local volunteers to distribute face-masks on city streets. From July through mid-October, Indonesian health officials reported 28,762 smog-related cases of respiratory illness across the country.

"I feel it in my breath when I breathe," said Imanuel Patasik, a 26-year-old delivery man, as he sat in one of Pontianak's many open-air coffee shops on a recent evening. When the smoke is really bad, he wears a mask to work, but still wakes up the next morning feeling sick. "It's part of life here," he sighed.

Seasonal rains have helped quell the fires over the past few weeks. But the miasma of smoke from Borneo and the island of Sumatra -- an annual phenomenon that blankets large parts of Southeast Asia in smog -- underscores a troubling dark side of the world's alternative-energy boom. Among other problems, the fires in Indonesia spew millions of tons of carbon dioxide and other greenhouse gases into the atmosphere, experts say. In doing so, they exacerbate the very global-warming concerns biofuels are meant to alleviate.

Such side effects are not an isolated problem. In Indonesia, Malaysia, Canada and elsewhere, forests are being slashed for new energy-yielding crops or other unconventional fuels. In India, environmental activists say, water tables are dropping as farmers try to boost production of ethanol-yielding sugar.

"Let's be brutally frank: [The push for alternative fuels] is going to cause significant changes for the environment," says Sean Darby, an equities analyst and expert on alternative energy companies at Nomura International in Hong Kong. He is most worried about the strain on water resources caused by accelerated crop production. Water, he says, is "just as precious" as oil.

Some experts are also concerned that crops for biofuels will compete with other farmland, possibly driving up global costs of basic food production. [Chart]

It's not clear how serious these problems will become -- or whether they eventually will be resolved through new technologies and stricter environmental measures. Proponents of alternative energy, including some palm oil industry executives, say the dangers are exaggerated and are outweighed by the benefits new fuels promise.

"We're unfairly targeted," says M.R. Chandran, former chief executive of the Malaysian Palm Oil Association. He contends that the timber industry and local farmers are much to blame for destroying Indonesia's forests.

The alternative energy field "is almost like the Internet in terms of the pace of how fast all this is changing," says Chris Flavin, president of Worldwatch Institute, an environmental organization. He believes that new technologies could help resolve some concerns over collateral damage. One of the hottest, for example, is called cellulosic ethanol, which uses different kinds of waste -- including municipal garbage -- to create fuel.

In the U.S., questions about corn-based ethanol are swirling in academic and agricultural circles, in part because of the work of a Cornell University professor. David Pimentel, who teaches environmental policy, has long held doubts about the fuel's value. He argues that expanding corn production for biofuels would deplete water resources and pollute soils with added fertilizer and chemicals. It would also require huge volumes of traditional energy for farming equipment and ethanol-conversion facilities -- a toll that could nullify gains from the less-polluting fuel produced.

Other studies, including reports by researchers at the U.S. Department of Agriculture, have reached much more optimistic conclusions and have criticized Mr. Pimentel's methodology.

### Big Implications for Business

Critiques of alternative energy -- even if they prove to be exaggerated -- could have big implications for business. Last year, investors globally poured a record \$49 billion into energies such as solar power, ethanol and biodiesel, according to New Energy Finance, a London-based firm that specializes in analyzing renewable energies. That was a 60% increase from the previous year.

But commercializing many alternative fuels relies on political support in the form of government subsidies or

tax incentives. So the rise of local resistance could jeopardize the new fuels' economic viability.

This is particularly true for palm oil, a once-mundane commodity whose price has climbed about 31% so far this year. The spike is partly attributable to demand for biofuels.

In October, a European Parliament committee recommended a ban on all biofuel made from palm oil, citing fears that the crop encourages deforestation in tropical countries. In Indonesia, activists helped block an \$8 billion Chinese-backed project that would have created one of the world's largest palm-oil plantations.

And last month, one of Britain's largest power companies, RWE npower, a subsidiary of the German power giant RWE AG, said it would abandon a project that was to use several hundred thousand tons of palm oil a year to generate power. An environmental group, Friends of the Earth, had complained that the project would contribute to unsustainable global demand for palm oil, contributing to rain-forest destruction in South East Asia. RWE npower said it dropped the project because it couldn't secure an adequate supply of sustainably grown palm oil.

Most consumers still think of palm oil mainly as a source of cooking oil. The oil is squeezed from bunches of red fruit that grow on oil palms, primarily in Malaysia and Indonesia. But the oil can also be processed to make fuel. Then it's mixed with conventional diesel to form a hybrid energy source -- for instance, 80% regular diesel and 20% biofuel -- that can be pumped directly into fuel tanks.

Biodiesel offers lots of upsides. Renewable crops such as palm oil reduce the need for fossil fuels such as petroleum whose supplies are finite. It also burns more cleanly than carbon-based liquid fuel, releasing fewer of the gases thought to cause global warming.

As oil prices have surged, a number of companies, including Chevron Corp., have announced plans to build or invest in biodiesel plants. In a recent report, Credit Suisse analysts said there's enough refining capacity under development to produce as much as 20 million metric tons of fuel annually by late 2008. That capacity, more than twice that of today's levels, would "easily soak up" all the world's available palm oil -- creating even more demand for plantations.

Indonesian authorities hope to capitalize on such demand to bring economic growth to impoverished regions. The government is offering low-interest loans for plantation companies, with a goal of adding 3.7 million acres of new plantations over the next five years, an area more than half the size of New Hampshire. Officials maintain this can be done on designated land areas without causing widespread environmental damage.

## Different Outcome

But what's happening on the ground in Borneo suggests a different outcome. Among the world's most fabled islands, Borneo -- which is divided between Indonesia and Malaysia -- is considered by environmentalists to be one of the last great tropical wildernesses. It's home to rare and unusual species, including the wild orangutan, the clouded leopard and the Sumatran rhinoceros.

It's also home to some of the world's last headhunters. The indigenous Dayaks resurrected the grisly practice as recently as the late 1990s in interethnic clashes. Some Dayaks still live in villages that can only be reached by river, and sleep in wooden "longhouse" buildings on stilts. [Forest Fires Photo] A fire at this oil-palm plantation near Pontianak, Indonesia, made some local villagers sick.

In the 1800s, Dutch and British traders began carving up parts of the island to produce rubber and other

commodities. Later, Malaysian and Indonesian timber barons devastated millions of acres of forest logging tropical hardwoods. Today, only a little more than half of Borneo's once-ubiquitous forest cover remains, according to WWF, the global conservation organization.

Now, the palm-oil boom threatens what's left. In West Kalimantan, a province along the western coast, the palms cover about 988,000 acres or more, up from less than 37,000 acres in 1984. Fleets of orange and mustard-colored trucks ply the province's few paved roads, ferrying the oil to river ports.

The plantations have meant jobs and opportunities for many Dayak families. Some have even taken ownership stakes in the operations.

As residents are discovering, though, the spreading plantations have deleterious effects. They can alter water-catchment areas, destroy animal habitats and contribute to the months-long bouts of haze that spreads hundreds of kilometers across Southeast Asia.

As fires burn deep into the dry peat soil beneath Indonesia's forests, centuries of carbon trapped in the biomass are released into the atmosphere. A study presented last month at a U.N. Climate Change Conference in Nairobi showed that Indonesia is the world's third-biggest carbon emitter behind the U.S. and China, when emissions from fires and other factors are considered.

"Stopping these fires could be one way of getting rid of some significant carbon emissions to the atmosphere," says Susan Page, a senior lecturer at Britain's University of Leicester who studies carbon emissions in Southeast Asia. [Smoke Photo] A ship on the Kapuas River, in the Indonesian section of the island of Borneo, is shrouded by smoke from forest fires.

To be sure, palm-oil plantations aren't the only cause of deforestation and smoke on Borneo. Loggers have degraded huge swathes of forest. And indigenous residents have long practiced their own form of slash-and-burn agriculture that involves setting fires to clear fields for planting.

But Indonesian environmental officials say plantation companies are exacerbating the problem, and some palm-oil executives concede their industry is partly to blame. Often, companies hack down the trees, leaving behind a mass of debris that must be removed before they can plant oil palms. The cheapest and easiest way is simply to torch it.

One new oil-palm plantation, four hours by dirt road from Pontianak, offers a glimpse of the fallout from the flames.

The plantation stretches across some 2,740 acres and features a series of blackened and largely bare hills. Charred stumps stick up from the soil and blistered tree trunks litter the ground. In the distance, a wall of misty jungle marks the border of the property.

Villagers nearby say smoke and flames from fires at the site destroyed fruit and rubber trees on which they relied. They also made many people in the area sick. One villager began acting like he was possessed and was placed in a cage where he remained for weeks, the village chief says.

Nearby, on a ridge overlooking the property, a man in a floppy sun hat who identifies himself as the plantation manager says he didn't know who started the fires. "We are one of the victims," says the man, Kong Tamcheng.

Mr. Kong says his employer, an Indonesian company called Incasi Raya Group, has a strict no-burning policy. He suggests the fire might have been started by a careless worker flicking cigarette butts, or by

"interested parties" out to "smear" the company's reputation.

But Untad Dharmawan, director of environmental impact assessment for West Kalimantan, says Indonesian authorities are investigating nine palm-oil companies for illegal burning, including Incasi Raya Group and its manager, Mr. Kong. He displays a dossier of photos of the Incasi Raya site, adding that his department has witnesses with evidence the company started the fires.

Phone calls to Incasi Raya's office in Padang, Indonesia went unanswered.

Indonesian officials say they're doing the best they can to fight the fires and prevent illegal forest-clearing. Among other tactics, they hired two giant Russian planes to drop "water bombs" and launched projects to hand out water pumps to local villagers.

But they're hamstrung by tight budgets and the logistical difficulties of policing such a vast area with few roads. At best, "we can just minimize the spread" of fires, laments Mr. Dharmawan, the provincial environmental official.

Palm-oil companies, meanwhile, have joined with environment organizations, energy companies and others to set up a group known as the Roundtable on Sustainable Palm Oil that plans to certify plantation companies that follow guidelines to minimize ecological damage.

Back in Borneo, Tony Hartono, head of a local plantation association in West Kalimantan, says he still believes biodiesel derived from palm oil will play a big role in solving the world's energy problems. After all, "it's a renewable energy," he says. "It's our future."

---- Puspa Madani in Jakarta and Celine Fernandez in Kuala Lumpur contributed to this article.

Write to Patrick Barta at [patrick.barta@wsj.com](mailto:patrick.barta@wsj.com)<sup>2</sup> and Jane Spencer at [jane.spencer@wsj.com](mailto:jane.spencer@wsj.com)<sup>3</sup> URL for this article: <http://online.wsj.com/article/SB116501541088338547.html>