

Biofuel Can't Cure All Energy Ills

Biofuel has been heralded as the answer to air pollution and energy dependency while creating jobs, but German environmental groups say it's not necessarily the panacea some portray it as.

The goal of creating fuel from corn and rapeseed has long been to reduce oil and gas imports while lowering costs for energy companies and doing something good for the environment at the same time. But some groups in Germany say not all biofuels are created equal.

"There should not be a green light for all biofuels," said Imke Lübbecke, an energy expert for the German World Wildlife Fund, adding that some renewable sources of energy are not necessarily good for the environment.

But while the WWF and other environmental organizations said that it is irresponsible to cut down large swaths of carbon dioxide absorbing rainforests to make way for renewable crops that could potentially be the power sources of the future, there is still room for Europe expand its fields of biofuel producing plants.

"A million hectares of farmland, that's 10 percent of cultivable land in Germany, are fallow and this standstill is even supported by the government," said Jürgen Zeddies, an agricultural



Rapeseed can be a useful plant, if it's not planted in environmentally sensitive areas.

economist at the University of Hohenheim, adding that some of these fields could be used to grow renewable material for fuels, Dw-world.de reported.

Danger for Local Flora

Other environmental protection groups, however, warn that using all the fields for fuel material could lead to the extinction of a number of plant types in Germany as soil properties change due to the new crops.

"That will make it crucial to find environmentally friendly ways of creating biofuel," Lübbecke said.

"We have to be careful that biofuel is made in an environmentally friendly way," she said. "It doesn't make any sense to sacrifice important protected

areas or soil and water protection zones for rapeseed and sugar beets for biofuels."

Biomass is a solution that Lübbecke and Zeddies agreed could be an intelligent way to create power and heat in an environmentally friendly way, especially as most of these types of energy comes from coal power plants.

Replacing Worst Polluters

"The question is always what types of energy you are using bioenergy to replace," said Nils Rettenmaier of Heidelberg's Institute for Energy and Environmental Research. "And it makes sense to replace the ones that are the most carbon heavy."

Rettenmaier added that he feels biofuels are often not used as intelligently as they could be and called on the auto industry not to just make engines that use biofuels but to make more efficient engines in general.

"The automobile industry uses biofuels for its lobbying work," he said. "It tries to turn attention from its task of building efficient vehicles."

There may be a ray of light coming for Rettenmaier and other environmental protection groups from the European Union next week. That's when Environment Commissioner Stavros Dimas plans to announce new guidelines limiting CO₂ exhaust in new cars by 25 percent by 2012.

Australia to Change Lightbulbs To Curb Warming

Australia will be the world's first country to ban incandescent lightbulbs in a bid to curb greenhouse gas emissions, with the government saying on Tuesday they would be phased out within three years. Environment Minister Malcolm Turnbull said yellow incandescent bulbs, which have been in use virtually unchanged for 125 years, would be replaced by more efficient compact fluorescent bulbs by 2009.

"By that stage you simply won't be able to buy incandescent lightbulbs, because they won't meet the energy standard," Turnbull told local radio, ENN.com said. Australia along with the US has refused to sign up to the Kyoto Protocol setting Greenhouse Gas reduction targets, calling instead for an agreement requiring energy-hungry developing countries like India and

China to help combat climate change.

Turnbull said the banning of incandescent bulbs would help trim 800,000 tons from Australia's current emissions level by 2012 and lower household lighting costs by 66 percent.

British and Californian lawmakers also have been lobbying for bans on incandescent lightbulbs, which lose much of their energy as heat.

Australia's conservative Prime Minister John Howard said he would not adopt any Greenhouse targets which hurt the country's resource-reliant economy.

Australians are per head among the world's biggest greenhouse gas producers, but climate change issues are shaping up as major concerns for voters in national elections due later this year as severe drought grips the country.

UK Offshore Wind Farm to Generate 500 MW

Greater Gabbard Offshore Winds Limited (GGOWL), a joint venture between Irish wind giant Airtricity and Texas-based Fortune 500 company Fluor, received planning permission on Monday from the British government for the construction of a 500 megawatt (MW) offshore wind farm to be located in the Outer Thames Estuary.

The proposed Greater Gabbard Offshore Wind Farm will feature up to 140 wind turbines, located around two sand banks known as the Inner Gabbard and The Gallop, approximately 23 km off the coast of Suffolk.

The project is the third consent to be awarded by the UK Secretary of State for Trade and Industry, Alistair Darling, in the government's second phase of offshore wind development, and follows on the heels of two consents granted in December for the 341-turbine London Array project and 100-turbine Thanet Solaraccess.com said.

"We need more renewable energy as part of the mix of generation of electricity. It cuts emissions while powering homes. We are seeing this industry grow by the day. Only two weeks ago we reached the 2 GW wind energy landmark, it took more than 10 years to get the first GW and less than 20 months to get the second," said Darling. "It is a key part of our approach; we will continue to back it."

In addition, the GGOWL recently received permission to connect the wind farm to the electricity grid via a new substation planned at Sizewell from the Suffolk

Coastal District Council. This will be connected to the offshore wind farm via underground and sub-sea cabling and will link to the existing overhead transmission lines in the area.

planned out of a total of 10 GW for the whole of the UK. Presently there are two phases of offshore development in the UK--Round 1 which awarded 17 sites with 30 turbines and Round 2--a far greater

of this decision, aside from the notable benefits to the UK in terms of clean carbon free generation, is the continuing clear signal from the UK to the rest of the world that this country is open



The east coast of England is a key area for offshore wind projects with approximately 6.5 GW of capacity currently planned out of a total of 10 GW for the whole of the UK.

"This is a great boon for the United Kingdom. Wind on such scale will bring strong economic and environmental benefits for the UK. When the wind blows free generation replaces generation that costs. Wind reduces risk because the cost of the power offered will be fixed in price and offers price benefits for the consumer. Such large scale offshore wind provides consistent power and will push down the prices for fossil fuels," said Eddie O'Connor, Airtricity CEO.

"This price decrease is caused by the diminishment in demand for fossil fuels, something we've seen frequently in Northern Europe.

The east coast of England is a key area for offshore wind projects with approximately 6.5 GW of capacity currently

scope with higher numbers of turbines and at greater distances from shore.

There are currently five offshore wind farms operational in the UK: Scroby Sands, Kentish Flats, North Hoyle, Barrow and Blyth. Ten have received consent (includes the London Array and Thanet in the Thames Estuary) and eight are in the planning stage.

According to the British Wind Energy Association (BWEA), the Greater Gabbard projects brings the UK's consented offshore portfolio to 2,484 MW--with an additional 303 MW already operating and 294 MW under construction.

BWEA is delighted by the next consent in the second phase of the UK's world-leading offshore program. The significance

for business for offshore wind and we look forward to more consents in the near future," said BWEA Chief Executive Maria McCaffery.

Receipt of planning consent allows the joint venture to progress the project design and to structure the project financing arrangements as well as the power purchase agreements that are required to allow the project to achieve financial close which is scheduled for second half of 2007.

GGOWL is already focusing on pre-construction activities: Fluor has been appointed as Engineering, Procurement and Construction contractor. The procurement process for turbines and other equipment has commenced, with offshore construction planned to commence in 2009.

Wave-Pump Technology Hits the Water

A new pump system designed to turn salt water into fresh water when combined with desalination systems--and produce clean renewable energy when combined with hydroelectric systems--is currently being tested in the Gulf of Mexico, off the Texas coast.

To create hydroelectricity, the SEADOG ocean-wave pump captures energy from ocean swells or waves to pump seawater to a land-based holding area or water tower, where the water can be returned to the ocean through hydroelectric turbines.

In addition, because the device pumps water to a reservoir, it can store salt water or desalinated fresh water in the form of potential energy to generate power on demand, even if the current wave regime during a particular period is too low to generate power.

Developed by Minnesota-based energy technology company Independent Natural Resources Inc. (INRI), preliminary estimates based on SEADOG test results suggest that 1 square mile field of SEADOG pumps could generate anywhere from 50 megawatts to more than 1,500 megawatts (MW) of hydropower on average, depending on the wave regime, according to Solaraccess.com.

"Our sea trial in the Gulf of Mexico has exceeded our expectations and we're confident our engineers have developed a new proprietary technology that serves as a safe, efficient system for gathering renewable energy from ocean waves," said Mark A. Thomas, chief executive officer, INRI. SEADOG's size, configuration and pumping capacity varies depending on the wave regime, height and frequency. During recent testing off the coast of Surfside, Texas, a single SEADOG pump experienced modest waves from 6 inches to 6 feet and consistently pumped a range of 15,000 to 40,000 gallons of seawater per day.

"Going forward, we're seeking actual ocean environments where we can place a wave-farm test field involving 14 to 200 SEADOG wave pumps. If the wave pump continues to perform as well as our sea tests have shown, we believe it has the potential to be a breakthrough for global energy production," added Thomas.

According to INRI's calculations, the company's wave-pump technology is capable of generating an average of 755 megawatts of hydroelectric energy for every 1 square mile pump field, assuming ocean swells averaging at least 9 feet. With swells of at least 5 feet, a 1 square mile pump field could generate approximately 242 MW.

The lack of sufficient fresh water is a growing concern in many regions of the world and seawater desalination is increasingly essential. The state of Texas alone has more than 100 desalination plants. Energy consumption is significant in desalination, sometimes accounting for as much as one-third of the operating cost of desalinated water.

Formed in January of 2002 by Thomas, the company



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developed and acquired the SEADOG pump technology from its inventor, Kenneth W. Welch, Jr., and co-inventors Curtis and Harold Roth.

Northern Nevada energy consumers can be excused if they have a sense of "sticker shock" when their power bills come due following the holiday season. Or, that they have a feeling of powerlessness as the price of gasoline climbs to \$3 per gallon. They wonder: will the days of the \$1 tank of gas ever return?

Thanks to research done by a University of Nevada, Reno professor in the area of hydrogen energy generation, soaring power bills could become a thing of the past. And, finding a power source for your car that costs as little as \$1 per gallon could also soon become a welcome reality, EurekAlert.org said.

Manoranjan Misra, professor of materials science and engineering, recently received a \$3 million research grant from the US Department of Energy to continue his groundbreaking work in various forms of renewable energy. Misra's current project focuses on harnessing photoactive material from the sun to generate hydrogen. Hydrogen is one of the cleanest forms of energy, and studies have shown that it is 33 percent more effi-

cient than liquid fuels. Northern Nevada, with its uncommonly sunny weather--with more than 300 sunny days per year--could become the perfect hub to generate hydrogen energy, according to Misra.

"We can utilize this great energy resource to our advantage to produce hydrogen," Misra said. "We are uniquely positioned in Northern Nevada, as the average

Hydrogen Fuel Will Cut Power Bills

energy from the sun is around one kilowatt per square meter area. In Reno it is much higher than that. Because it is so bright and sunny here in Reno, we have in many ways the perfect location for photo-hydrogen generation."

Misra and his research team have created a new hydrogen material that has more than a billion nanotubes, which gives it excellent potential to produce hydrogen from another abundant resource--water. Misra's small-scale hydrogen generation system, located in the Laxalt Mineral Research Building, produces

the material through an electrochemical process from applied ultrasonic waves.

"We are currently using simulated solar light in the lab," Misra said, "and we are finding our system to be a good and robust way to facilitate the movement of electrons by the incident light to produce hydrogen from water." By the end of the decade, Misra estimates that

the system could grow to a more industrial size scale, which would allow power companies to produce hydrogen that could be used to power automobiles or power your home.

The new power source is extremely cost-effective, Misra says. "What do we pay now for a tank of gas? A little less than three dollars per gallon? The equivalent for hydrogen generation might be something more along the lines of \$1 per gallon to produce," Misra says. "Plus, hydrogen is much more friendly to the environment. Given the weather in Northern Nevada, where on most days we have 10 to 15 percent more sunlight than in other areas of the country, the future of this type of this energy is limitless."