INTERNATIONAL
Herald Tribune

Studies conclude that biofuels are not so green

By Elisabeth Rosenthal
Thursday, February 7, 2008

Almost all biofuels used today cause more greenhouse gas emissions than conventional fuels if the pollution caused by producing these "green" fuels is taken into account, two studies published Thursday have concluded.

The benefits of biofuels have come under increasing attack in recent months as scientists have evaluated the global environmental cost of their production. The new studies, published by the journal Science, are likely to add to the controversy.

These studies for the first time take a comprehensive look at the emissions effects of the huge amount of land that is being converted to cropland globally to support biofuels development. The destruction of natural ecosystems - whether rain forest in the tropics or grasslands in South America - increases the release of greenhouse gases into the atmosphere because the ecosystems are the planet's natural sponge for carbon emissions.

"When you take this into account, most of the biofuel that people are using or planning to use would probably increase greenhouse gasses substantially," said Timothy Searchinger, the lead author of one of the studies and a researcher on the environment and economics at Princeton University. "Previously, there's been an accounting error: Land use change has been left out of prior analysis."

Plant-based fuels were originally billed as better than fossil fuels because the carbon released when they are burned is balanced by the carbon absorbed when the plants grow. But even that equation proved overly

simplistic because the process of turning plants into fuel causes it own emissions - through refining and transport, for example.

The land-use issue makes the balance sheet far more problematic: The clearance of grassland releases 93 times the amount of greenhouse gas that would be saved by the fuel made annually on that land, said Joseph Fargione, the lead author of the other study and a scientist at the Nature Conservancy. "So for the next 93 years, you're making climate change worse, just at the time when we need to be bringing down carbon emissions."

The United Nations Intergovernmental Panel on Climate Change has said that the world has to reverse the increase of greenhouse gas emissions by 2020 to avert disastrous environmental consequences.

Together, the two studies offer sweeping conclusions: It doesn't matter if it is rain forest or scrub land that is cleared, although the former releases more emissions than the latter. Taken globally, the production of almost all biofuels resulted in such clearing, directly or indirectly, intentionally or not.

The European Union and a number of national governments have recently tried to address the land-use issue with proposals for regulations stipulating that imported biofuels cannot come from land that was previously rain forest, for example.

But even with such restrictions, Searchinger's study said, the purchase of biofuels in Europe and the United States leads indirectly to the destruction of natural habitats. If vegetable oil prices go up globally, as they have because of increased demand for biofuel crops, new land is inevitably cleared as farmers in developing countries switch production. Crops from old plantations and fields go to Europe for biofuels, but new fields and plantations are created to feed people at home.

Fargione said that the dedication of so much cropland in the United States to growing corn for bioethanol had caused indirect land-use changes far away. Previously, U.S. farmers rotated corn with soybeans in their fields, alternating years. Now many grow only corn, meaning that soybeans must be grown elsewhere. That elsewhere, Fargione said, is increasingly Brazil, on land that was previously forest or savanna. "Brazilian farmers are planting more of the world's soybeans - and they're deforesting the Amazon to do it," he said.

International environmental groups and the United Nations responded cautiously to the studies, saying that biofuels could still be useful. "We don't want a total public backlash that would prevent us from getting the potential benefits," said Nicholas Nuttall, spokesman for the UN Environment Program.

"There was an unfortunate effort to dress up biofuels as the silver bullet of climate change," he said. "We fully believe that if biofuels are to be part of the solution rather than part of the problem, there urgently needs to be better sustainability criterion." He added that the United Nations had recently created a panel to study the evidence.

The EU has mandated that countries use 5.75 percent biofuel for transport by the end of 2008. In the United States, a proposed energy package would require that 15 percent of all transport fuels be made from biofuel by 2022. To reach these goals, biofuels production is heavily subsidized at many levels on both continents. On Thursday, Syngenta, a major global agricultural conglomerate in Switzerland that is involved in biofuel crops reported that its annual profit rose by 75 percent in the past year.

Bob Dineen, president of the Renewable Fuels Association in Washington, said the studies had "failed to put the issue in context."

"While it is important to analyze the climate-change consequences of differing energy strategies, we must all remember where we are today, how world demand for liquid fuels is growing, and what the realistic alternatives are to meet those growing demands," he said. "Biofuels like ethanol are the only tool readily available that can begin to address the challenges of energy security and environmental protection."

Most of the biofuel sold in Europe is biodiesel made from vegetable oils. Most of the biofuel in the United States is ethanol made from corn. "EU decision makers cannot ignore that the EU fuel market" is experiencing "an enduring diesel deficit - the EU is more and more dependent on Russia for conventional diesel imports," the European Biodiesel Board, a major industry group, said. The group has pushed for a sustainability certification program for biofuels, as well as criteria for assessing the greenhouse gas performance of such fuels, with input from industry.

But the new studies suggested that when land use is taken into account few, if any biofuels, will be acceptable.

"This land-use problem is not just a secondary effect," Searchinger said. "It is major. The comparison with fossil fuels is going to be adverse for virtually all biofuels on cropland."

The only possible exception he could see for now, he said, was sugar cane grown in Brazil, which takes relatively little energy to grow and is readily refined into fuel. He added that governments should quickly turn their attention to developing biofuels that did not require raising crops, such as those made from agricultural waste products.

The land-use debate started in the Netherlands in 2006, when researchers from Wetlands International and elsewhere found that imported palm oil used to generate "clean" electricity was often grown on palm plantations in Southeast Asia created from cleared peat land. The Dutch government has since canceled the palm oil subsidy and banned imports of the fuel, while hoping to develop better criteria to support sustainable biofuels. Even Wetlands does not support a total ban on biofuels, noting that some may be helpful.

Alex Kaat, a spokesman for the group, said: "If the whole point of biofuels directives was to reduce greenhouse gas emissions, we've found out that most biofuels are not really better than conventional fuels at that."