

CONFERENCE REPORT

Biofuels: The Impact of Oil Palm on Forests and Climate

National University of Singapore, Singapore
May 12-13, 2009

A conference jointly sponsored by:
Environmental Leadership & Training Initiative (ELTI) and
Department of Biological Sciences – National University of Singapore (DBS-NUS)

Background: In recent decades, vast areas of natural forest have been cleared across the tropics for oil palm plantations. This land conversion has reduced biodiversity, degraded ecosystem services, affected local communities and their livelihoods, and most likely compounded the effects of climate change. Even though only 5% of palm oil is currently used for biofuels, the recent surge of interest in this energy source as a strategy to reduce greenhouse-gas (GHG) emissions by partially replacing the use of fossil fuels, promises to further stimulate production in tropical areas around the world, with Southeast Asia leading the way. Currently, Indonesia and Malaysia alone account for approximately 85% of the world's total palm oil production. The benefits derived from the use of palm oil-based biodiesel in terms of GHG reductions, however, are now being heavily contested in light of evidence that oil palm production is resulting in the further transformation of forested landscapes, including carbon-rich peat swamp forests, to agricultural landscapes. In addition, the pressure that oil palm production has generated on rural and indigenous peoples, including the infringement of human rights, has become a cause of widespread concern.

Given ELTI's mandate to build capacity in creating sustainable landscapes, including addressing critical threats and impacts to forest ecosystems and dependent communities, and DBS-NUS' technically-based support for conservation efforts in the region, this conference was held with the intention of furthering discussions on the linkages between oil palm, tropical forests and climate change.

Conference objective: The conference was designed to serve as a thought-provoking forum that contributes towards discussions on how to improve practices in the production of oil palm in the region and significantly reduce threats and impacts to forest ecosystems and the communities that depend on them, as well minimize GHG emissions. Data and other forms of evidence were examined and discussed to provide answers to the following key questions:



- (1) To what extent have tropical forests been converted or will be converted to expand oil palm production for biofuels?
- (2) What factors determine the extent to which GHG emissions are reduced by using oil palm-derived biodiesel? Are they better reduced through Reduced Emissions from Deforestation and Degradation (REDD)?
- (3) What is the potential for second-generation biofuel feedstocks, such as jatropha and algae, to reduce the negative environmental impacts associated with oil palm?
- (4) What are the prospects for certification schemes to reduce the environmental impact of oil palm cultivation?
- (5) What additional steps can be taken to minimize the environmental impacts caused by the oil palm and biofuels industry?

Conference format: The conference was structured around five panels, each addressing one of the questions. The five panels were facilitated by Drs. Edward Webb, Richard Corlett, David Bickford, and Alan Ziegler from NUS and Dr. David Neidel from ELTI, respectively. Each panel had two to four speakers representing the palm oil or biofuels industry, academic institutions, conservation non-governmental organizations (NGOs), government agencies, and certification entities. A total of 16 experts presented during the conference. Periods for questions and answers were provided after each speaker and at the conclusion of every panel. A keynote address was delivered by Dr. William Laurance from the Smithsonian Tropical Research Institute (STRI), while the conference opening remarks and closing synthesis were given by Mr. Javier Mateo-Vega, Director of ELTI. Dr. David Neidel moderated the entire conference, while all logistics were handled by Ms. Hazel Consunji from ELTI with support from NUS staff. An agenda of the conference, including the list of speakers is provided in Appendix 1.



Summary of results: Biofuels, for the most part, fare better in terms of GHG emissions than other sources of energy derived from fossil fuels. But the most readily available types of biofuel feedstock, including palm oil, have the potential to generate much higher aggregate environmental costs and impacts depending on where and how they are produced. Even though palm oil-derived biofuels currently account for only a small percentage of energy demands on a global scale, and even though palm oil plantations account for a very small fraction of all agricultural land, its production is already generating significant land transformations, both directly and indirectly, including the loss and degradation of critical tracts of tropical forests.

It is very likely that demands for biofuels will continue to rise and thus, exert further pressures on these ecosystems and the communities that depend on the goods and services they provide. Strong evidence already exists that oil palm production continues to expand into areas that serve as home to rare and endemic species, and areas that – despite not being the most apt for production – are possibly the most accessible,

including the low-lying peat swamp forests in coastal areas of Indonesia and Malaysia. The implications of this is not only the loss of biodiversity but also the release of massive amounts of carbon into the atmosphere, undermining any benefits derived from reductions in GHG emissions through the replacement of fossil fuels with biofuels.

The evidence suggests that any increase in the production of biofuels feedstock will not only generate greater direct impacts on tropical forests, but also potentially compound a long list of already existing pressures and threats that are affecting the integrity and viability of these ecosystems. As such, the production of biofuels feedstock will most likely not only have greater cumulative impacts, but also synergistic environmental and social impacts. In the latter case, there is evidence that native customary rights have been and continue to be disrespected in oil palm producing areas, and human rights abuses are not uncommon. In cases where these types of abuses have already occurred, greater monitoring is required and adequate mitigation and compensation measures should be implemented.

In the case of mitigating environmental impacts, ongoing efforts to produce higher-yielding oil palm varieties clearly should continue in order to reduce the need for expanding cultivated areas. In the meantime, however, methodologies and guidelines for feedstock production in “responsible cultivation areas” should be widely adopted. Most importantly, if oil palm and other biofuel feedstock production promote deforestation and habitat degradation, it should not take place.

Alternative profitable land-use schemes to oil palm cultivation should also be considered, including forest conservation strategies such as Reduced Emissions from Deforestation and forest Degradation (REDD), which can play an important role in a portfolio of solutions to combat climate change and have a fighting chance against biofuel feedstock production, particularly when non-monetary, culturally-valued incentives are factored in. Other strategies involving forest-for-agricultural lands swaps, tied in with forest management and carbon offset opportunities may prove useful as ways to reduce the conversion of forested lands for oil palm. Potential biofuel feedstocks alternatives such as jathropha and microalgae also show promise, but any of these options should meet environmental and social sustainability criteria, demonstrate technical feasibility, and financial profitability if they are to adequately compete with oil palm.

Current and projected oil palm cultivation should seek certification by independent, impartial, and transparent entities. Certification schemes such as those provided by the Roundtable on Sustainable Palm Oil (RSPO) are steps in the right direction and can serve as a critical transformational mechanism for the industry. But key problems in their composition, structure, and procedures must be addressed and improved. These include finding ways to engage a greater percentage of the industry, avoiding niche creation that excludes medium and small-scale producers, and conducting or leveraging compliance monitoring to avoid blatant breaches in the principles and criteria employed for certification as has been demonstrated by some conservation organizations. Ongoing reforms in the RSPO, however, are beginning to address these problems and catalyze critically needed changes in the palm oil producing industry to significantly lessen, if not eliminate altogether, its impact on tropical forest ecosystems, rural and indigenous people’s livelihoods, and climate change.

Participants: Roughly ninety representatives from governmental agencies, NGOs, academic institutions, media, and the private sector attended the conference. Most participants were from Southeast Asian oil palm producing countries, but representatives from other producing, processing, or consuming nations were also present. Discussions were lively and engaging among the participants and speakers.

Media coverage: a number of articles regarding the conference were published through various media. Links to some of these articles are provided below:

- Casey, M, Activists: Palm oil industry drives deforestation (<http://www.forbes.com/feeds/ap/2009/05/13/ap6414850.html>)
- Casey, M. Activists: Palm oil co's grabbing land in Asia (<http://www.forbes.com/feeds/ap/2009/05/12/ap6409553.html>)
- Chua, G. Impact of oil palm (http://www.straitstimes.com/Breaking%2BNews/Singapore/Story/STIStory_375724.html)
- Chua, G. Certifying palm oil possible boon (http://www.straitstimes.com/Breaking%2BNews/Tech%2Band%2BScience/Story/STIStory_376319.html)
- Chua, G. Palm Oil: Boon and Bane for the Environment. The Straits Times, Home, P.B5, May 13, 2009 (see also <http://wildsingaporenews.blogspot.com/2009/05/palm-oil-boon-and-bane-for-environment.html>)
- Ng, D. Biofuels production to expand in the tropics. (<http://www.theasiomag.com/blog-types/writersblogs/debby-ng/biofuel-production-to-expand-in-the-tropics>)

Field Trip: The conference was followed on May 14 by a field trip to the Kulim (M) Berhad Sindora Plantation in the neighboring Malaysian state of Johor. The field trip was attended by ELTI Staff and conference speakers coming from outside of the region, including representatives from the California Energy Commission, the Roundtable on Sustainable Biofuels, and the World Resources Institute. The tour consisted of a visit to the plantation, as well as the estate's palm oil mill. The tour was very informative, explaining all stages in the oil palm production process, while the trip between Singapore and the plantation revealed the sheer extent of oil palm cultivation in this portion of peninsular Malaysia.



This event was possible thanks to the generous support of Arcadia.

Appendix 1: Conference Agenda

**BIOFUELS:
The Impact of Oil Palm on Forests and Climate**
NUS Centre for Life Sciences

DAY 1 TUESDAY, MAY 12, 2009	
8:00–9:00	REGISTRATION
9:00–9:15	OPENING REMARKS Mr. Javier Mateo-Vega / Environmental Leadership & Training Initiative
9:15–10:00	KEYNOTE ADDRESS Dr. William Laurance / Smithsonian Tropical Research Institute <i>How Green are Biofuels?: A Tropical Perspective</i>
10:00–10:15	Coffee break
10:15–1:00	PANEL 1: To What Extent Have Tropical Forests Been Converted or Will Be Converted to Expand Oil Palm Production For Biofuels? MODERATOR: Dr. Edward Webb / National University of Singapore <ul style="list-style-type: none"> • Dr. Kalyana Sundram / Malaysian Palm Oil Council <i>Providing the Correct Perspective of Oil Palm and its Impact on Land Use</i> • Dr. Koh Lian Pin / Swiss Federal Institute of Technology Zurich <i>Impacts of Biofuels on Southeast Asian Biodiversity Hotspots</i> • Mr. Fitriani Ardiansyah / World Wildlife Fund-Indonesia <i>Identification of Responsible Cultivation Areas for Biofuel Crops</i> • Mr. Mark Bujang / Borneo Resources Institute of Malaysia <i>Oil Palm Plantations in Sarawak: Impacts to the Indigenous Dayak Communities</i>
1:00–2:15	Lunch
2:15–5:00	PANEL 2: What Factors Determine the Extent to Which Greenhouse Gas Emissions Are Reduced by Using Oil Palm-Derived Biodiesel? Are They Better Reduced Through REDD? MODERATOR: Dr. Richard Corlett / National University of Singapore <ul style="list-style-type: none"> • Dr. Daniel Murdiyarso / Center for International Forestry Research <i>Palm-Oil Derived Biofuels: Are They Good for the Climate?</i> • Dr. Koh Lian Pin / Swiss Federal Institute of Technology Zurich <i>REDD in the Red: Palm Oil Could Undermine Carbon Payment Schemes</i> • Mr. Ibrahim H. Rehman / The Energy and Resources Institute <i>The Roundtable on Sustainable Biofuels: Ensuring that Biofuels Deliver on their Promise of Sustainability</i> • Mr. Jim McKinney / California Energy Commission <i>Sustainability Goals and Standards for California's Alternative and Renewable Fuel and Vehicle Funding Program</i>

DAY 2 WEDNESDAY, MAY 13, 2009

9:00–10:15	PANEL 3: What is the Potential for Second-Generation Biofuel Feedstocks, Such As <i>Jatropha</i> and Algae, to Reduce Negative Environmental Impacts Associated With Oil Palm? MODERATOR: Dr. David Bickford / National University of Singapore <ul style="list-style-type: none">• Mr. Toby Garrit / Eco-Emerald Ltd. <i>Potential for <i>Jatropha</i> to Reduce Environmental Impacts Associated with Oil Palm</i>• Dr. Jeff Obbard / National University of Singapore <i>Microalgae Derived Biofuels: The Quest for Renewable and Carbon Neutral Feedstocks</i>
10:15–10:30	Coffee break
10:30–1:00	PANEL 4: What are the Prospects for Certification Schemes to Reduce the Environmental Impact of Oil Palm Cultivation? MODERATOR: Dr. Alan Ziegler / National University of Singapore <ul style="list-style-type: none">• Dr. Vengeta Rao / Roundtable on Sustainable Palm Oil <i>RSPO</i>• Dr. Rosediana Suharto / Indonesian Palm Oil Commission <i>Certification for Sustainable Palm Oil to Reduce Environmental Impacts</i>• Mr. Bustar Maitar / Greenpeace <i>Biofuels and Palm Oil: Why Palm Oil Can Not Fuel the Biofuels Industry</i>
1:00–2:30	Lunch
2:30–4:45	PANEL 5: What Additional Steps Can Be Taken to Minimize the Environmental Impact of the Palm Oil and Biofuels Industry? MODERATOR: Dr. David Neidel / Environmental Leadership & Training Initiative <ul style="list-style-type: none">• Ms. Beth Gingold / World Resources Institute <i>Project POTICO: Harnessing Certification Schemes to Prevent Deforestation in Indonesia</i>• Mr. Darius Sarshar/New Forests Asia <i>Integrating Tropical Rainforest Conservation into the Palm Oil Supply Chain</i>
4:45–5:00	CLOSING REMARKS Mr. Javier Mateo-Vega / Environmental Leadership & Training Initiative