

May 10, 2024

Liane Randolph
Chair, California Air Resources Board

cc: Rajinder Sahota, Deputy Executive Officer, Climate Change & Research
Matthew Botill, Chief, Industrial Strategies Division

Re: WRI comments on the April 10 Low Carbon Fuel Standard Workshop

Dear Liane,

Thank you for the opportunity to comment on the additional Low Carbon Fuel Standard Program workshop held on April 10, 2024. With this letter, I'm writing to highlight the fundamental structural problems researchers have identified with the Global Trade Analysis Project (GTAP) model, which CARB currently uses to estimate emissions from land use change (LUC) associated with crop-based biofuels.

I have strongly supported the LCFS in the past and hope to be able to continue to support it in the future, but I am alarmed by the flood of crop-based renewable diesel that has entered the LCFS market in the last few years.

To respond to a question posed to environmental stakeholders during the April 10th workshop: I would love to see as much fossil diesel as possible replaced with cleaner drop in fuels during the transition to electrification, but only if those replacement fuels don't come at the expense of deforestation and food production. The problem is that crop-based biofuels, unlike waste-based fuels, do come at the expense of deforestation and food production, and are actually substantially worse for the climate than fossil diesel.

Slide 51 of the April 10th presentation says that biofuels production must not come at the expense of deforestation and food production. But that is exactly what crop-based renewable diesel does, as Colin Murphy and former CARB Board member Dan Sperling note in their [LA Times op-ed](#). This should also be clear from the sheer scope of the world's growing appetite for biofuels. Straightforward calculations indicate that supplying even 25% of the world aviation fuel from vegetable oil would require (at average yields) doubling the world's area of cropland. For this reason, the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) categorically excludes crop-based fuels and the European Union has capped their use under its renewable fuels policy.

Slide 56 shows that 6 million tons of US soybean production is going to non-food uses, particularly biofuels—A 50% increase since 2020. And while there are other factors as well, Slide 54 correctly notes that increased demand for biofuels has increased the price of vegetable oils.

Basic economic logic tells us that increased vegetable oil prices result in increased production, and empirical studies show that at least some of that increased production comes from deforestation. Globally, net cropland area expanded by about 11 million hectares per year during 2011-2019. Regardless of the specific source of feedstocks for crop-based biofuels, this market-driven deforestation

and the associated LUC emissions are the reason why the safeguards discussed in the April 10 workshop presentation do not solve the problem. This is also demonstrated by the extremely close relationship between the price of soybean vegetable oil in the U.S. and palm oil in Southeast Asia. (The GTAP model assumes otherwise, but there is no empirical basis for this assumption.)

Slide 65 proposes using an empirical approach to establishing LUC values for certain crop-based fuel-feedstock combinations. This could be an important step forward, depending on how it is done, but the empirical approach must include market-driven indirect land use change, rather than focus only of feedstocks sourced directly from converted areas. Furthermore, new empirically based LUC emission values are needed for all crop-based fuel pathways, including those that are covered in Table 6 of the current LCFS regulation. This is because the LUC values in Table 6 calculated with the GTAP model have no reasonable scientific basis and are systematically biased downward as demonstrated clearly by the report [submitted to the 45 day LCFS docket](#) by Professor Berry.

The values in Table 6 (reproduced on Slide 64) reflects the fundamental flaws in GTAP. Given that vegetable oils are largely substitutable for each other and that their prices are highly correlated there is no rational basis for believing that there is a substantially different LUC value for Palm Oil than for Soy Oil or Canola.

Recalculating LUC values for crop-based fuels using an approach grounded in reality may be the best way to ensure that biofuels don't come at the expense of deforestation and food production. Updating LUC values for crop-based fuels, particularly renewable diesel made from virgin vegetable oils, could be an effective safeguard. If CARB is able to accomplish this concurrently with the other updates to the LCFS considered in the current rulemaking. If this is not feasible then capping the use of crop-based fuels is essential in the interim to ensure that there is not a rapid increase in reliance on crop-based renewable diesel to levels well beyond those projected in CARB's modeling.

I would greatly appreciate an opportunity to discuss these issues with you and would be happy to arrange a meeting with Steve Berry and Tim Searchinger to discuss the findings of their analysis of the GTAP model.

Sincerely,

Dan Lashof, U.S. Director, World Resources Institute