

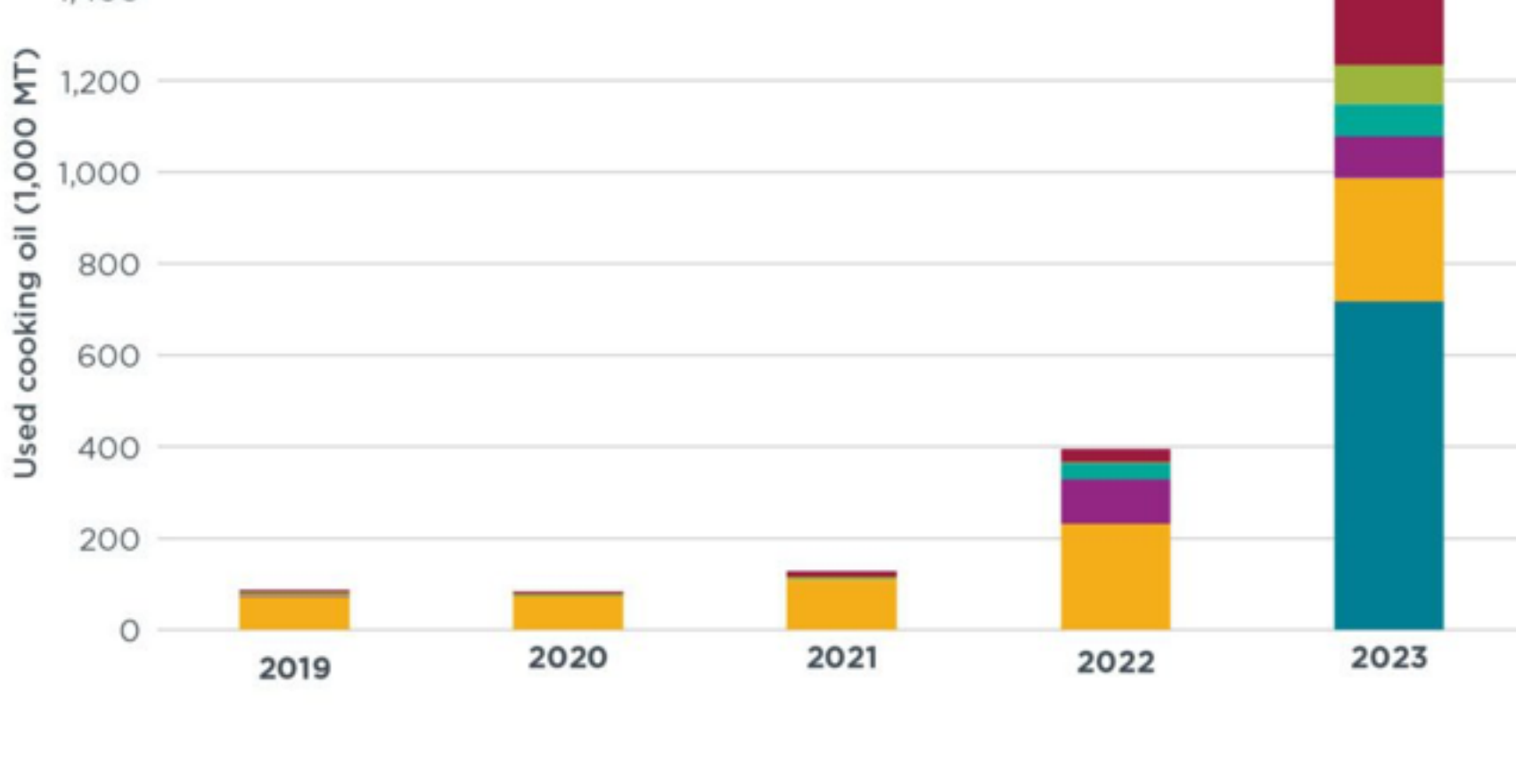
THE CASE FOR A LIPIDS CAP IN CALIFORNIA'S LOW CARBON FUEL STANDARD

May 29, 2024 | By: Gonca Seber

Waste oil imports into the United States [spiked in 2023](#) and the volume of imported used cooking oil (UCO) alone increased by a factor of three. What's driving this, and how would a limit on lipids like UCO in California fuels policy help prevent UCO-related sustainability risks in the biofuels supply chain?

UCO includes waste oils collected from restaurants, households, and the food processing industry, and Figure 1 illustrates the recent increase in UCO imports to the United States. In the past, the main motivation to collect UCO was to comply with waste-disposal regulations. More recently, though, policies that incentivize biofuels at the U.S. [federal](#) and [state](#) levels and those in the European Union [are driving collection](#). At the same time, the fraud cases involving waste oils [in the European Union](#) and [elsewhere](#) in recent years raise concerns about relying on distant supply chains that often have poor documentation. Trade periodicals are speculating that the U.S. Environmental Protection Agency is considering a [ban](#) on UCO sourced from Asia.

Figure 1. Origins of used cooking oil imports to the United States. *Source: United Nations Comtrade Database*



Before we get into what this means for California's Low Carbon Fuel Standard (LCFS), which is currently going through an [amendment process](#), let's discuss why the United States is importing more UCO. Because of its low life-cycle carbon intensity (CI), UCO is a popular material for producing biofuel. It's a waste that doesn't have the kind of upstream production emissions that are attributable to conventional, purpose-grown biofuel feedstocks like soy and corn. It's also one of few ultralow-carbon feedstocks that can be used to produce biofuels with commercialized technologies like hydroprocessing and biodiesel esterification. This [means lower costs](#), particularly lower capital costs, than other biofuel production pathways.

UCO also qualifies for large financial incentives, particularly from policies that prioritize low-CI fuels like California's LCFS. For credit prices ranging between \$50 and \$200/tonne, California's LCFS would provide between \$0.50 and \$1.80/gal of renewable diesel. With additional incentives from the national Renewable Fuel Standard, the amount of support would add up to \$1.20–\$2.50/gal of renewable diesel with the current credit prices under that scheme. Between 2022 and 2023, [consumption of renewable diesel from UCO](#) increased by 31% in California (Figure 2). Of the renewable diesel consumed in 2023, 26% was from UCO.

Figure 2. Renewable diesel (RD) consumption in California. *Source: LCFS quarterly summary*

There is [limited domestic availability of UCO](#) in the United States. As a result, U.S. fuel producers have been setting their sights abroad. China is the [largest UCO exporter](#) in the world. In 2022, the primary importers from China were the Netherlands, Spain, and Singapore. In 2023, the United States became the top importer from China, importing 718,000 MT. U.S. exports of UCO also decreased from 404,000 MT in 2022 to 194,000 MT in 2023.

A recent [ICCT study](#) estimated the potential for UCO collection in Asia and highlighted how, even in a region as populous as Asia, the supply of UCO is limited, especially for exports. Several Asian countries are already developing or could develop domestic biofuel programs to meet national climate policies, and that could cause competition between countries for UCO.

Here's the concern about the fraud cases I mentioned above: The high value of UCO strengthens demand, and it's possible to mislabel virgin vegetable oil as UCO, particularly when sourced from distant supply chains with poor documentation. Such fraud is possible because vegetable oil can be [tampered with to appear to be UCO](#), and the biofuels produced from waste oils and virgin vegetable oils are chemically the same.

UCO fraud could bring serious sustainability impacts. Rather than the low-CI fuels intended by policies like the LCFS, the mislabeled virgin oil used instead could be palm oil, which is associated with [substantial land use change emissions and deforestation risks](#). This would not only erase the intended benefits of UCO but could even lead to a net increase in emissions.

Renewable diesel is likely to be increasingly popular in the coming years, particularly if the LCFS is amended as proposed, with higher CI reduction targets and an auto-acceleration mechanism. An auto-acceleration mechanism would adjust the CI reduction targets upward when triggered by market conditions such as an increase in electric vehicle sales, and that could accelerate investments in biofuels. This, in turn, would be expected to further strengthen demand for scarce UCO and ripen the potential for fraud. This effect could be exacerbated by ambitious fuel policy targets in the European Union, as we expect the [SAF targets](#) will rely heavily on waste oils.

Considering the limited availability of waste oils like UCO and the potential for fraud, a [simple and direct safeguard for the LCFS would be a cap on lipids](#) that limits the total contribution of both virgin oils and waste fats toward the CI-reduction target. The California Air Resources Board (CARB) evaluated [a scenario proposed by CARB's Environmental Justice Advisory Committee](#) that included a cap on lipid-based fuels and other modifications, but it was rejected in the [proposed amendments](#). Instead, CARB's preferred scenario includes supply chain sustainability criteria for crop-based biofuels to prevent land use change emissions; independent auditors would be required to track feedstocks to their point of origin and certify their environmental attributes. These criteria do not apply to UCO.

Even if the sustainability criteria were to be extended to waste oils, they may be insufficient to curb the problem of waste oil fraud, as third-party verification schemes have previously been [unable to effectively track the waste oil supply chain](#) in the European Union. A cap on waste oils at present-day consumption levels similar to the one in the European Union's [Renewable Energy Directive](#) is an effective way to reduce the risk of fraud because it reduces the incentive to hunt abroad for more waste oils and instead directs efforts toward developing low-carbon feedstocks domestically.

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