

Misleading Solution: Biofuel

Why burning food for land-hungry biofuels is not sustainable option



About T&E



International advocates for clean transport & energy

- **7** offices across Europe
- **60** organisations in our network across **24** countries
- **145+** local partners through our **Clean Cities Campaign**
- Regional hub in **Singapore**
- **Indonesia**: prioritize HDV and the shipping work
- Australia: incubated **Energy Futures Foundation**

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Biofuels, are they sustainable?

The land and food problem



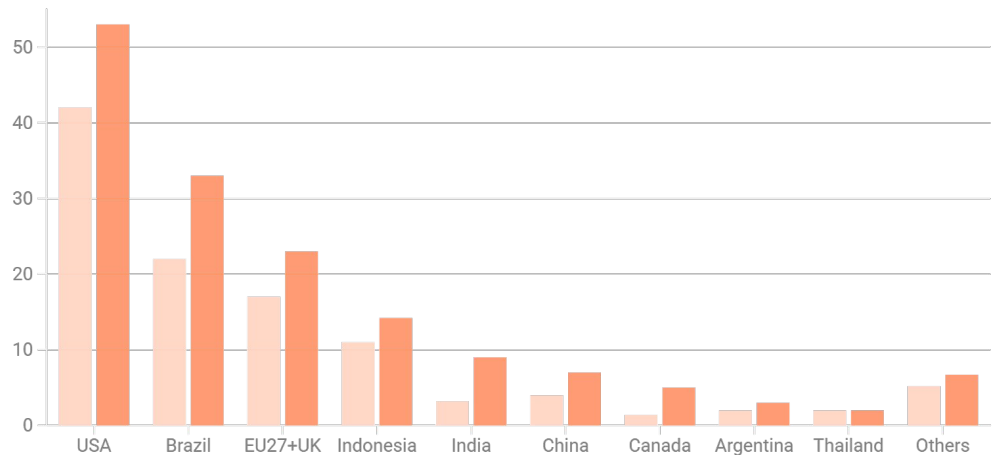
1. A handful of biofuel superpowers

- Biofuels today make **4%** of transport fuel demand.
- More than **90%** of global production is located in 10 countries.
- U.S. and Brazil lead biofuel production; **emerging growth markets** include Canada, India, and China.
- Growing global push for more biofuels: Brazil has launched a pledge ahead of COP30 to 4x sustainable fuels, incl. **more than doubling** global biofuels supply.

A few regions dominate global biofuel market, with demand expected to rise 40% by 2030

2023 2030

Biofuels demand (Mtoe)



Source: T&E, based on Ceruly (2024) • Projected biofuels demand based on adopted national policies.

Oil price volatility driven by global crises is the norm

Oil dependent states at the mercy of global crises and uncertainty

Europe Brent Spot Price FOB, US\$/bbl



2. Future supply still tied to damaging crops

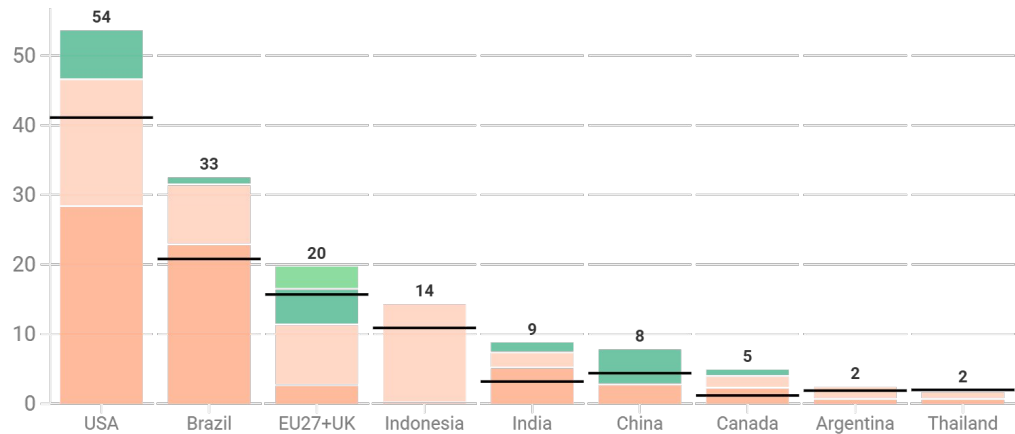
- Corn ethanol, sugarcane ethanol & palm biodiesel = **80%** of today's supply.
- By 2030, **90%** of biofuels will still be crop-based despite push for "advanced" options.
- **Limited second-generation biofuels** remain concentrated in Europe, US & China.

Biofuels will boom by 2030, but 90% will still be based on food and feed crops under current policies

— 2023 demand

2030 demand: ■ Sugar and starch crops ■ Vegetable oils ■ Waste oils ■ Other advanced biofuels

Biofuel demand (Mtoe)



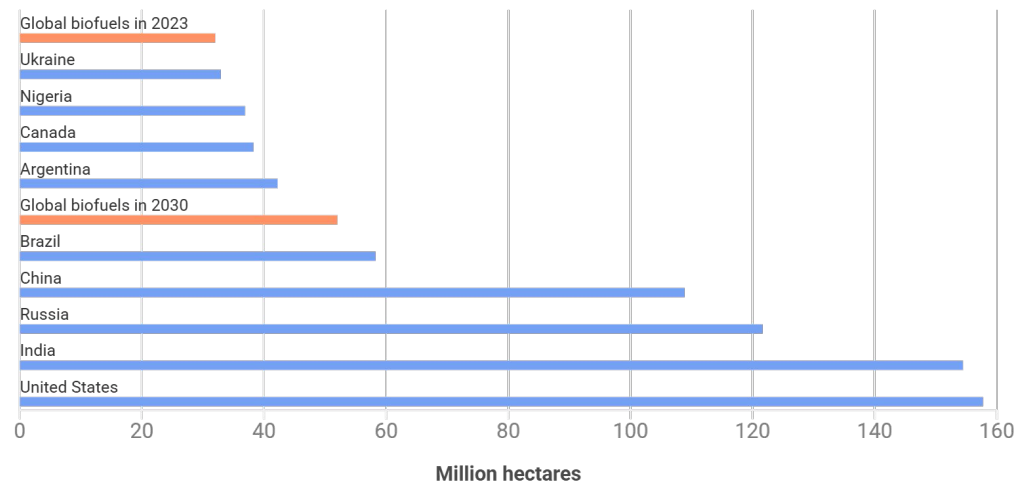
Source: T&E, based on Ceruly (2024)

3. Biofuels, a whole lot of land

- Today, crop-based biofuels require **arable land the size of Italy**.
- This is **set to rise 60%**, reaching 52 Mha, equivalent to the size of France by 2030.
- If biofuels were a country, they would thus be the **6th largest nation** in terms of arable land use.

A farming superpower: global demand for biofuels would make it the 6th largest country in terms of arable land in 2030

Biofuels land needs vs largest countries in terms of arable land currently used



Source: T&E, based on Cerully (2024) and World Bank (2021) • Global biofuels demand based on adopted national policies, not accounting for potential additional shipping demand currently under discussion at the IMO. Land required for biofuels co-products is excluded.

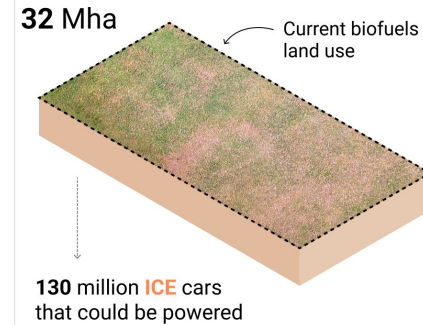
Land-based biofuels, an absurd solution

- Crop-based fuels are highly inefficient: the same land could power **90× more electric cars**.
- Just 3% of current biofuel land could supply **one-third of the global car fleet** with solar electricity.
- This would free land for food and nature.

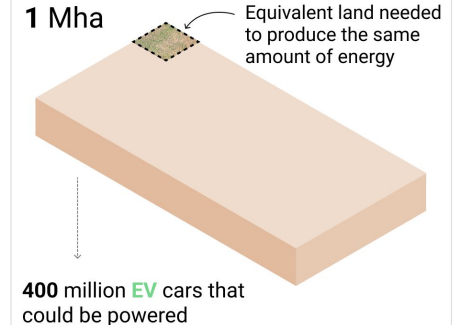
Only 3% of the current land used for biofuels could power close to a third of the global car fleet with solar electricity

■ =1 ■ Combustion engine car ■ Electric car

Biofuels and internal combustion engine



Solar panels and battery electric cars



T&E, based on Ceruly (2024) and own calculations. Assuming diesel cars running on 100% biofuels, while in practice biofuels are still mostly blended in small quantities with fossil diesel or petrol. More details in the Methodology section

The climate reality

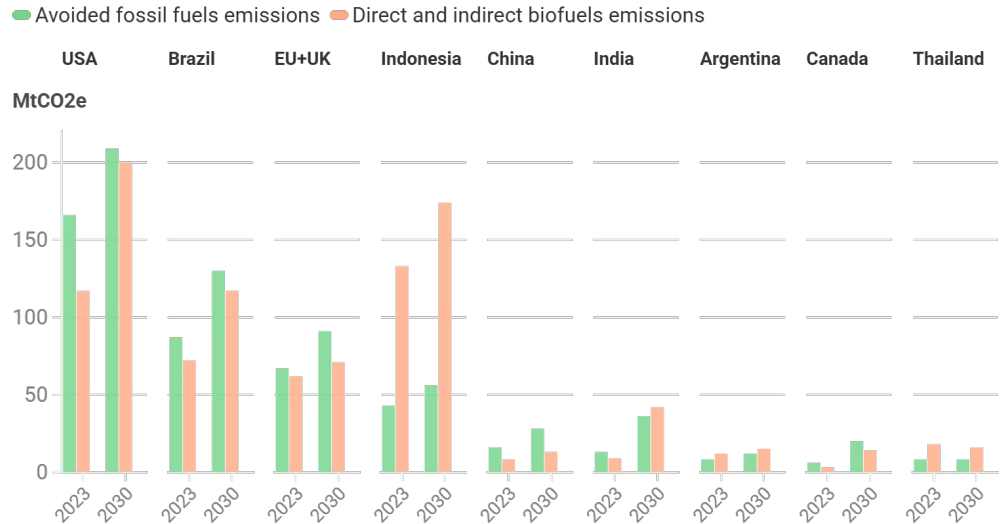
Why wasted-based biofuels are limited



Fueling deforestation and emissions

- **Indirect land use change (ILUC)** offsets most emissions savings from crop-based biofuels.
- Today, global biofuels **emit ~16% more** than the fossil fuels they replace.
- By 2030, biofuels could emit each year **70 MtCO₂e**, the equivalent to 30 million additional cars.

Biofuel policies will at best deliver limited emissions savings, when they don't do more harm than good



Source: T&E, based on Cerology (2024) • 2030 biofuels projections reflect the mix expected under existing regional policies. Indirect land use change emissions estimated using an adapted version of the EU GLOBIOM model.

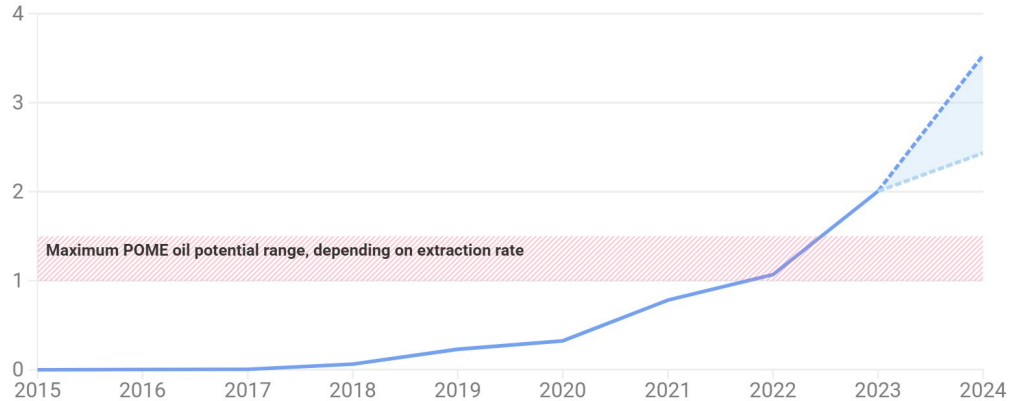
High demand for limited supplies and fraud risks

- EU biofuel mandates create **high incentives** for waste and residues.
- But sustainable feedstocks remain **very scarce**, and many processing technologies are not yet fully commercialised.
- Rapid increase in EU waste oil imports raised fraud concerns due to **unrealistic collection rates** in exporting countries.

POME use in EU and UK biofuels, nearly double the maximum global potential in 2023

Reported POME consumption High 2024 consumption forecast Low 2024 consumption forecast

POME feedstock volumes (Mt)



Source: T&E, based on data from EU SHARES, UK RTFO and UN Comtrade • Extrapolated 2024 consumption range based on Jan-Aug 2024 feedstock import increase. Maximum POME potential range based on crude palm oil supply, more details in Methodology. POME biofuels volumes converted to feedstock volumes based on standard yields from GREET.

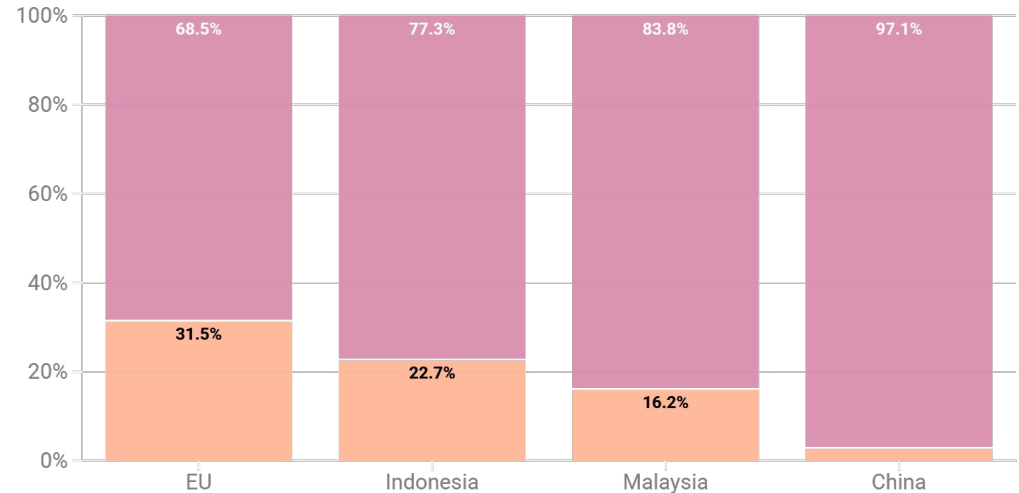
Weak certification undermines supply chain trust

- Biofuel certification relies on paper-based audits, **not physical testing or verification** of the product along the supply chain.
- **Only 9%** of ISCC-certified UCO collectors in CN, MY and ID had their points of origin verified with an on-site audit.
- For the remaining 91%, **verification relied on minimal checks** (phone, email, or online search).

Majority of Asian ISCC UCO collecting points certified with no points of origin verified via an audit

Sampling No sampling

Share of UCO CP certificates (%)



Source: T&E analysis, based on ISCC UCO summary audit reports accessed in October 2024

EU Deforestation Regulation (EUDR)

The EUDR aims to ensure products sold in the EU market are **free of deforestation** and forest degradation.

- **Scope:**
 - Soy, palm oil, cocoa, coffee, rubber, timber and derived products.
 - All actors in the supply chain, from producers to importers and EU traders.
- **Key elements:**
 - Mandatory due diligence and risk assessment
 - Deforestation cut off date: not after 2020

Current status: **enforcement postponed** to 30 Dec 2026 for medium / large operators and 30 Jun 2027 for small operators.



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Better alternative for decarbonizing the transport sector



Highlights/Takeaways/Key findings: Better alternative for decarbonizing the transport sector

- 01** Short-haul shipping and ferries should **prioritise direct electrification.**
Battery-electric vessels can use energy far more efficiently than crop-based fuels and avoid competition for land, food, and nature.
- 02** Renewable energy-based e-fuels like hydrogen offer a long-term pathway.
- 03** Genuine wastes and residues should be reserved for limited, high-value uses.
These feedstocks are scarce and should complement the transition, **not be treated as a mass-market solution.**



Thank you

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