Biofuels and land use change in Indonesia

23 November 2026

T&E

About T&E

Advocates for clean transport & energy



International presence

- **7** offices across Europe, **3** in Asia-Pacific

Convening power

- Network of **60 organisations** across **24 countries**

Local commitment

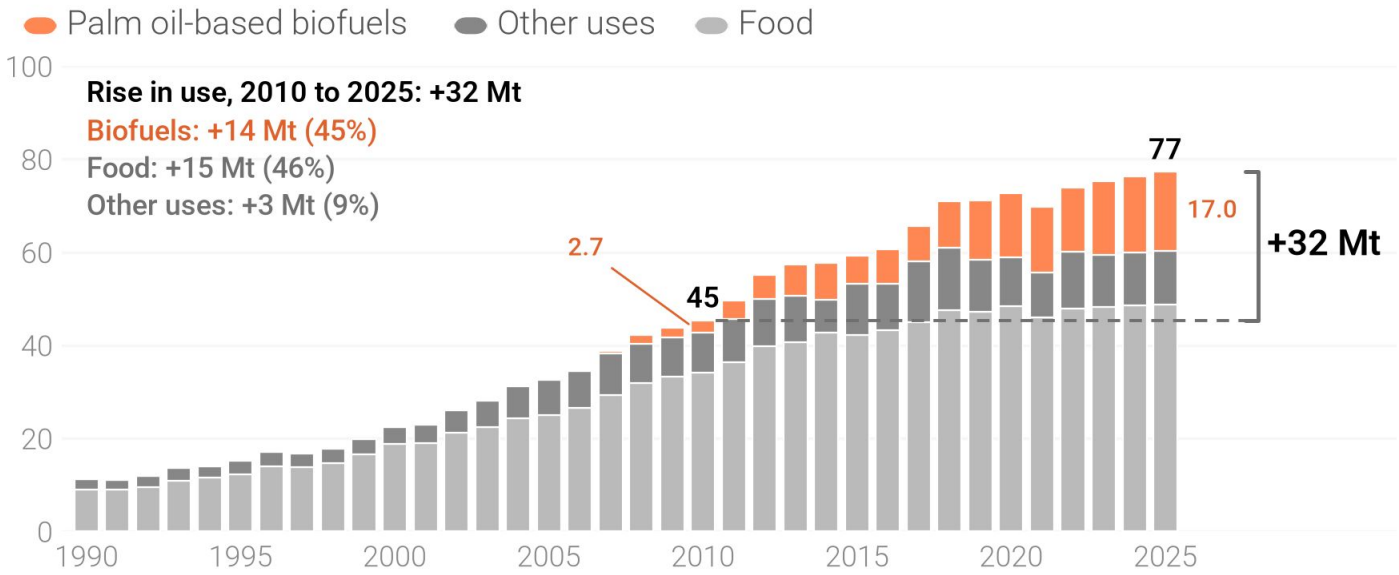
- Growing regional hub in **Singapore**

Track record

- **145+ local partners** through the Clean Cities Campaign
- Incubated **Energy Futures Foundation** in Australia

Biofuels account for around 45% of the rise in world palm oil use since 2010

World palm oil use, Mt



Source: T&E (2026), USDA (1990 to 2026), Stratas (2025). Palm oil biofuels are estimated for seven countries and counted from 2006; before that they sit in other uses. 2025 is estimated.

PALM OIL AND BIOFUELS

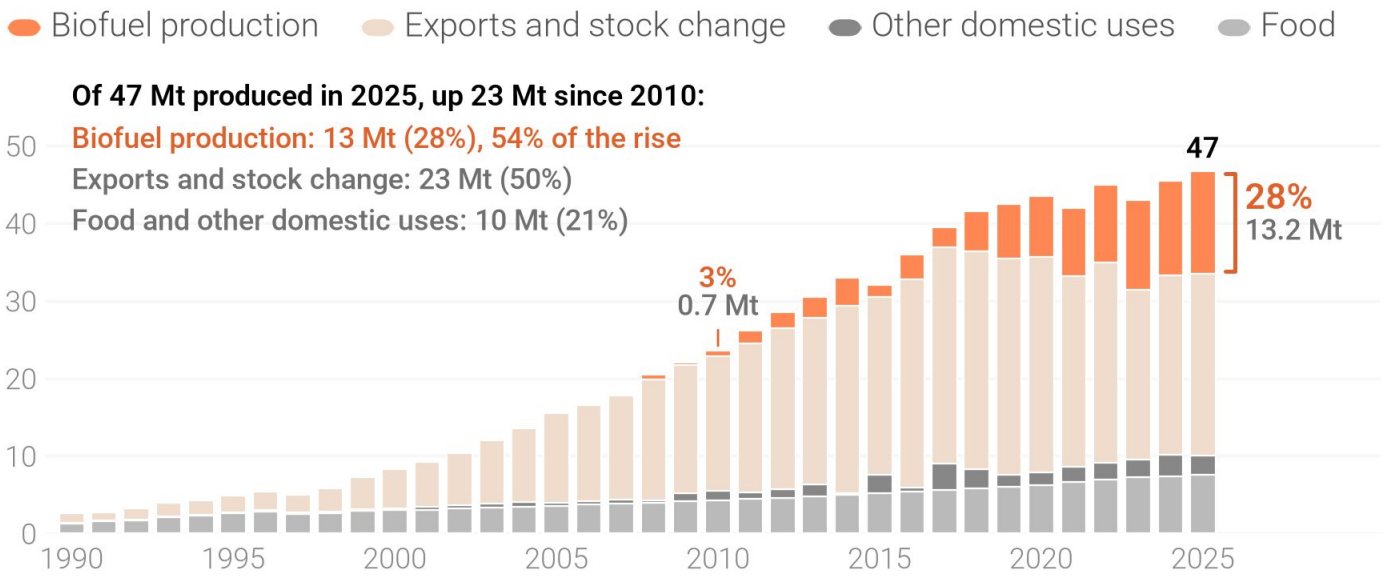
45%

of increase in palm oil demand used by biofuels. Palm oil-based biofuels grew from 2.7 Mt palm oil demand in 2010 to 17 Mt in 2025.

Palm oil use grew, from 45 to 77 Mt from 2010-2025. Yield stayed at 2.9 t per ha. So, the increase in output required more land.

Indonesian biofuels now take more than a quarter of the country's palm oil and used over half of its growth since 2010

Indonesian palm oil production by domestic use and exports, Mt



Source: T&E (2026), USDA (1990 to 2026). Palm oil biofuels are estimated and counted from 2006; before that they sit in other uses. Exports include stock change. 2025 is estimated.

PALM OIL AND BIOFUELS

54%

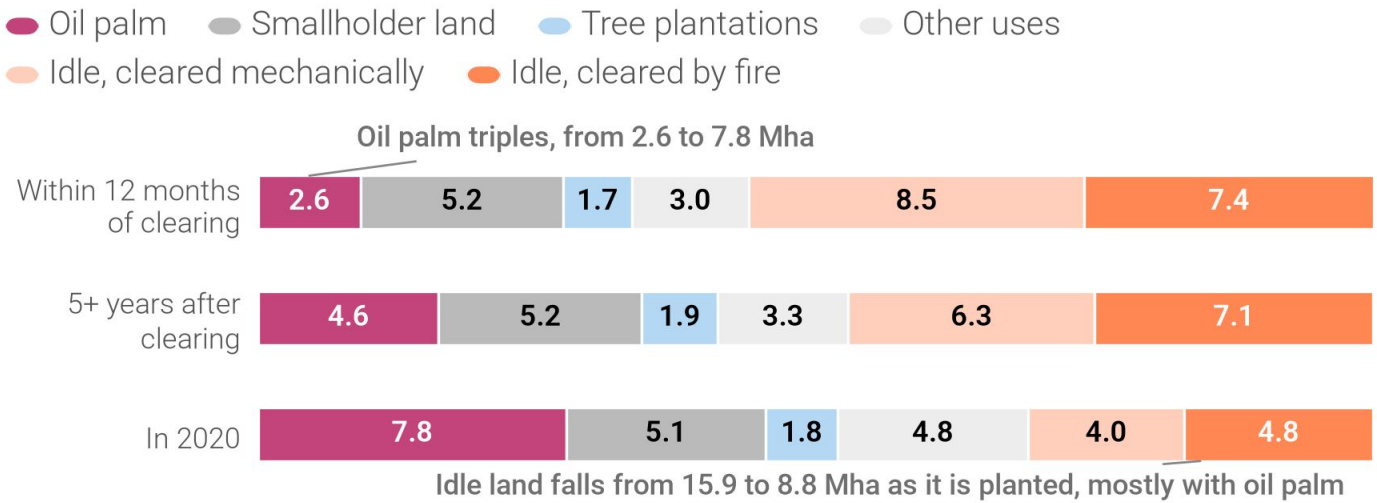
of increase in Indonesian palm oil production since 2010 went into domestic biofuels production.

Palm oil used for biofuels grew from 0.7 Mt in 2010 to 13.2 Mt in 2025.

T&E

The old plantations are cleared forest: over 7 Mha of Indonesian oil palm stand where primary forest stood

Land use of Indonesian primary forest cleared from 1991 to 2020 (28.4 Mha), Mha



Source: T&E (2026), Parker et al. (2024). Idle land has no visible use. For land cleared after 2015, 5+ years is the 2020 use.

PALM OIL AND FOREST

28%

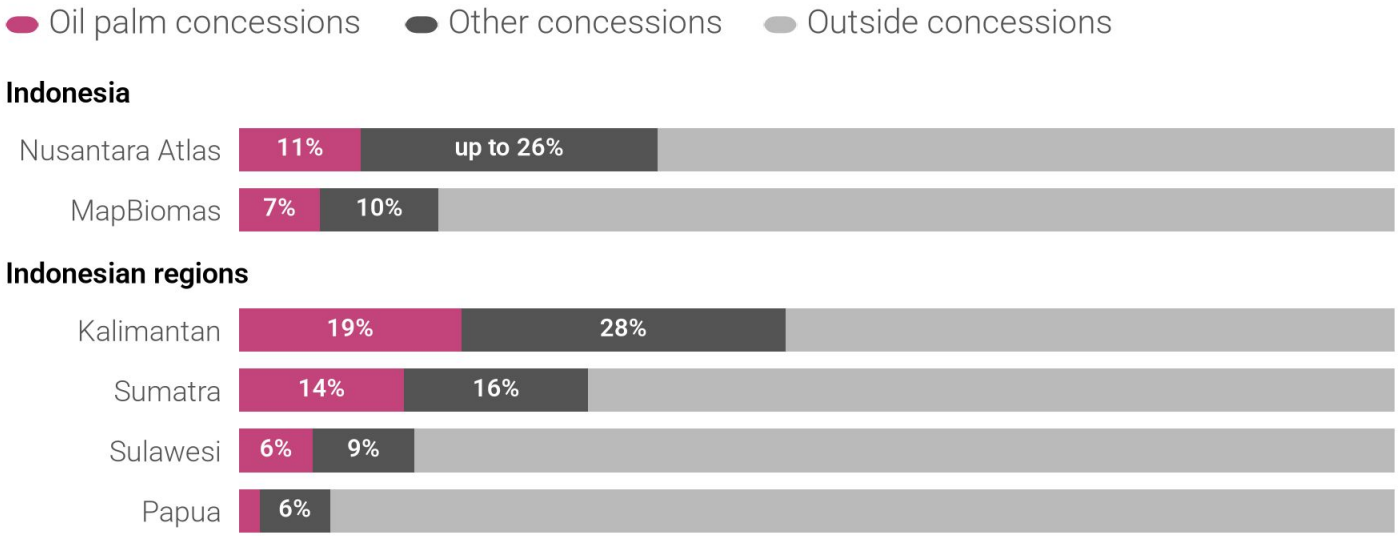
Share of the 28.4 Mha of Indonesian primary forest cleared from 1991 to 2020 that was oil palm by 2020.

Only 9% (2.6 Mha) was planted within a year of clearing.

Idle land fell from 15.9 Mha to 8.8 Mha as people planted it, mostly with oil palm.

Oil palm concessions held around 10% of the area burned in Indonesia in 2026, and a fifth in Kalimantan

Share of the area burned in 2026 by concession type, %



Source: T&E (2026), MapBiomas (2026, Jan to Aug, includes regional breakdown), TheTreeMap / Nusantara Atlas (2026, Jan to Sep). Nusantara Atlas concession types overlap because different authorities issue the permits, so there may be double-counting.

PALM OIL AND FIRE

~10%

of the area burned from January to September 2026 lay inside palm oil concessions.

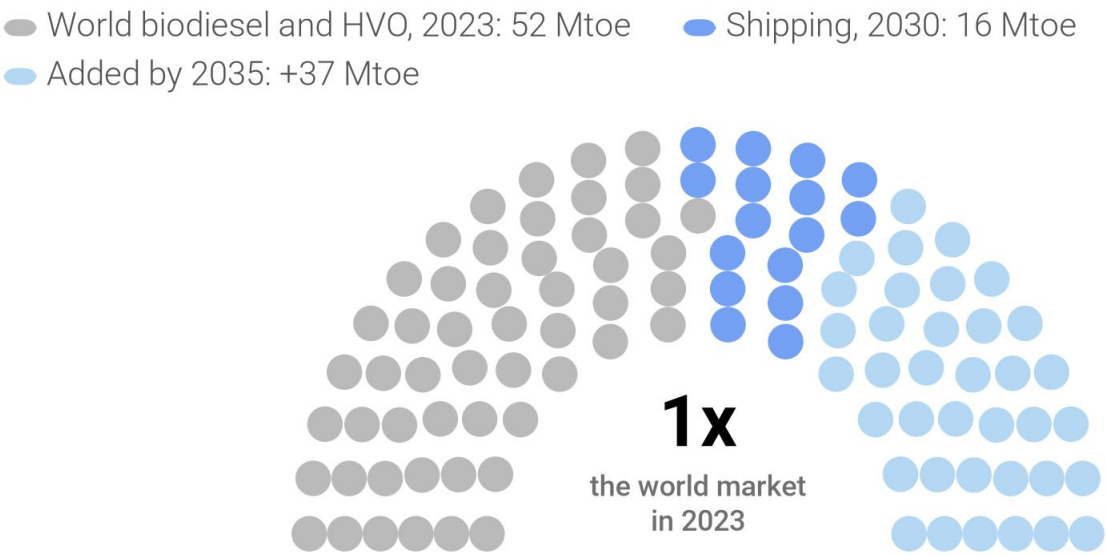
Concessions are permit boundaries, not necessarily planted land. Burned land inside can be idle, forest or peat.

Much of the forest cleared by fire stays idle for years. When it is planted later, palm oil is the most common use.

T&E

By 2035 shipping biodiesel could match today's entire world biodiesel and HVO market

Mtoe a year; each dot is 1 Mtoe



Source: T&E (2026), IEA (2024). HVO is hydrotreated vegetable oil. Marine demand includes only biodiesel.

BIOFUELS AND SHIPPING

50 Mtoe

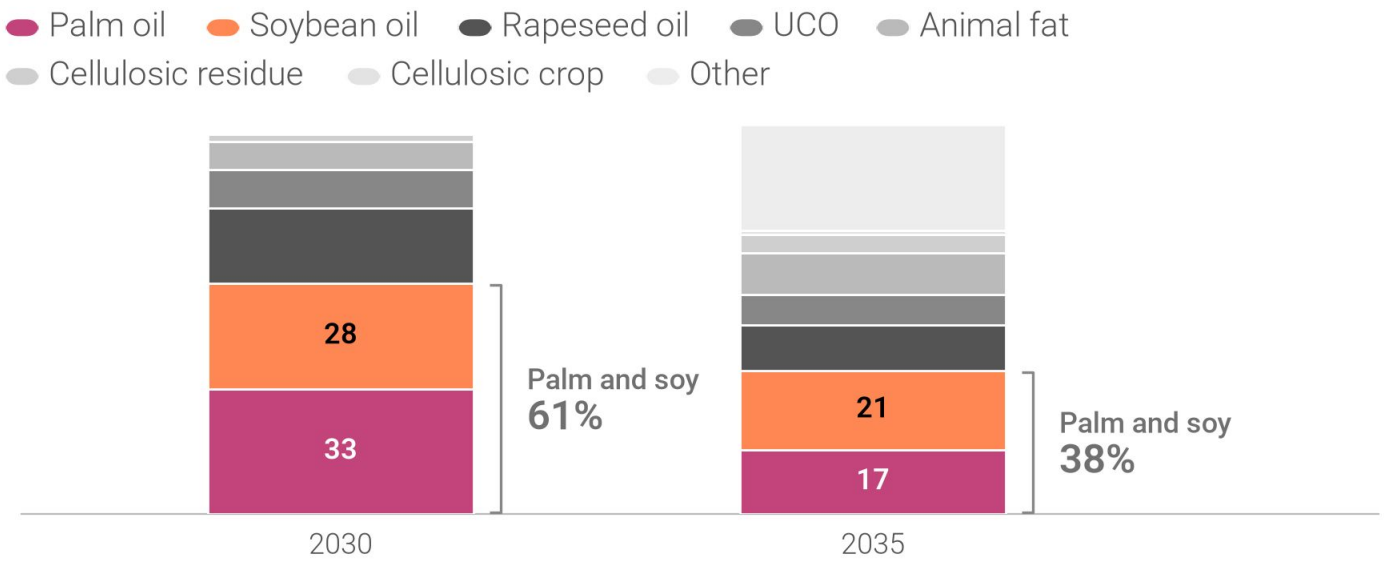
Shipping biodiesel could reach this level in 2035 in a worst-case scenario where the IMO net-zero framework does not restrict feedstocks.

The whole world used 50 Mtoe of biodiesel and renewable diesel in 2023.

Shipping biodiesel could be 16 Mtoe in 2030.

Palm and soy oil could supply about 60% of marine biodiesel in 2030 and 40% in 2035

Possible feedstock mix of marine biodiesel, % of energy



Source: T&E (2026), Cerulogy for T&E (2025). Other is unidentified supply. Shares sum to 103% in 2035 in the source.

BIOFUELS AND SHIPPING

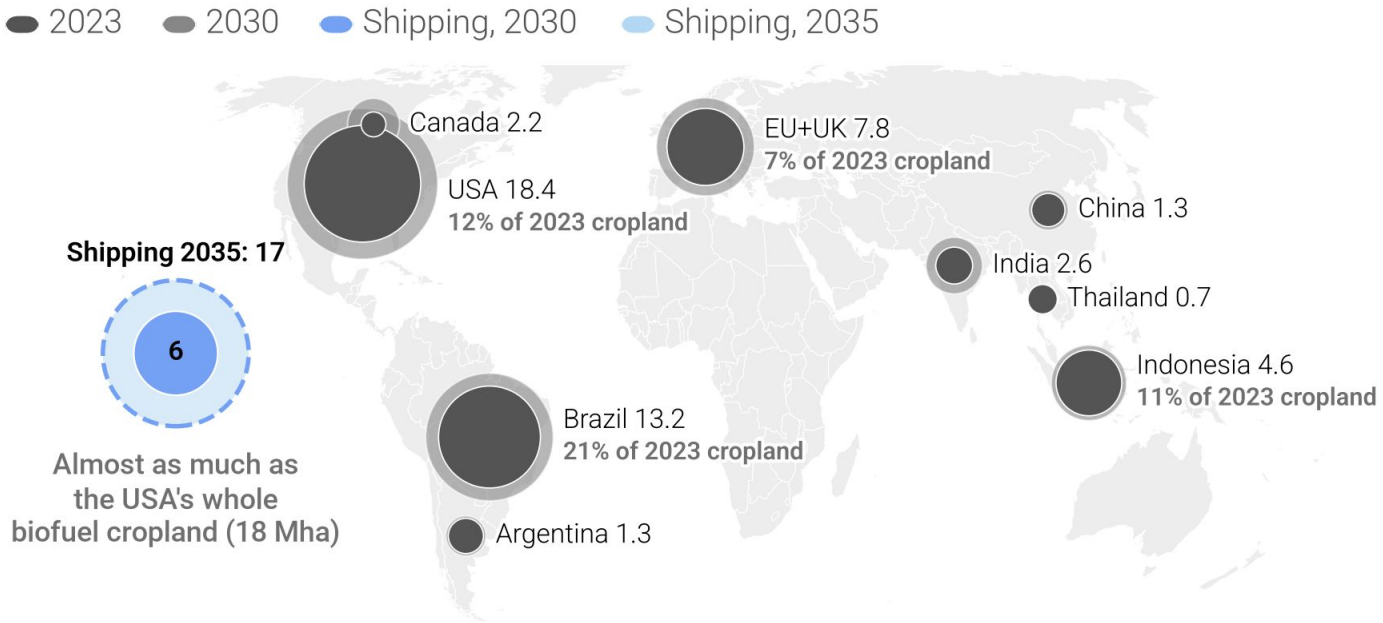
60%

Palm and soy could supply this share of marine biodiesel in 2030 in a scenario where the IMO net-zero framework does not restrict feedstocks.

Palm oil and soybean oil-based biofuels could be the cheapest way to comply with the IMO's net-zero framework driving their rapid uptake.

Biofuel cropland rises 65% by 2030, before shipping adds any

Net cropland for global biofuel production, Mha a year; labels show 2030



Source: T&E (2026), Cerulogy for T&E (2024, 2025), FAOSTAT. Global is estimated from the nine largest producers. Net land is the fuel's share. Bubble area is proportional to Mha.

BIOFUELS AND SHIPPING

+65%

Global biofuel cropland is set to grow from 2023 to 2030 without any additional shipping biofuel demand.

Shipping could add 17 Mha by 2035 in a worst-case scenario where the IMO net-zero framework does not restrict feedstocks.