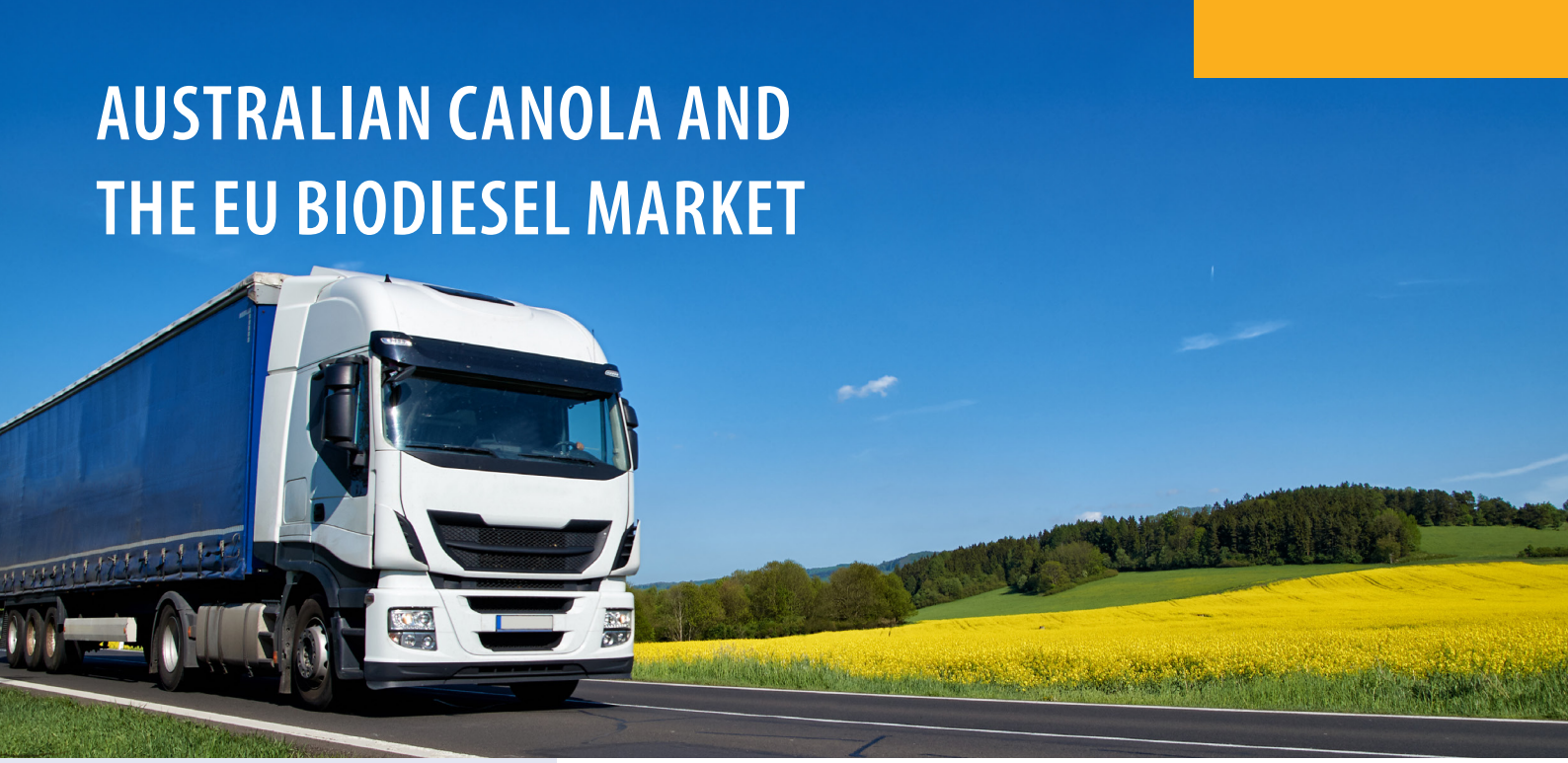
# AUSTRALIAN CANOLA AND THE EU BIODIESEL MARKET



## THE EU BIODIESEL MARKET

In 2009, the European Union (EU) introduced a Renewable Energy Directive (RED I) aiming to reduce greenhouse gas emissions from energy consumption, including in the transport sector.

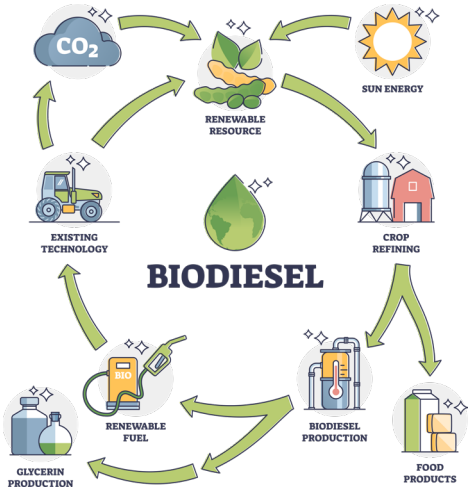
The RED I set a target to source at least 10% of all fuels used for transportation from renewable materials by 2020. This target was updated to 14% by 2030 in a second Directive (RED II) published in 2018[1].

The RED I created market demand for biodiesel, a blend of conventional diesel and biofuel made from renewable materials known as feedstocks[2]. Vegetable oils, including canola, palm oil, and soy, comprise almost 80% of the feedstock used in European biodiesel production, with canola having the largest share (Figure 1).

Australia is a major supplier of canola seed in the EU biodiesel market, averaging almost 1.7 million tonnes or around 75% of total exports over the past ten years (Figure 2).

All biofuel feedstocks supplied to the EU market must be certified as sustainable by an approved scheme. The Australian industry has adopted the ISCC (International Sustainability and Carbon Certification) scheme.

Australian canola growers must self-assess that they meet ISCC requirements if they elect to trade their canola as ISCC-certified. A representative sample of growers is subject to an independent audit each year to demonstrate the industry's compliance with ISCC. In 2021, 4750 growers traded 3.5 million tonnes of canola as ISCC-certified.



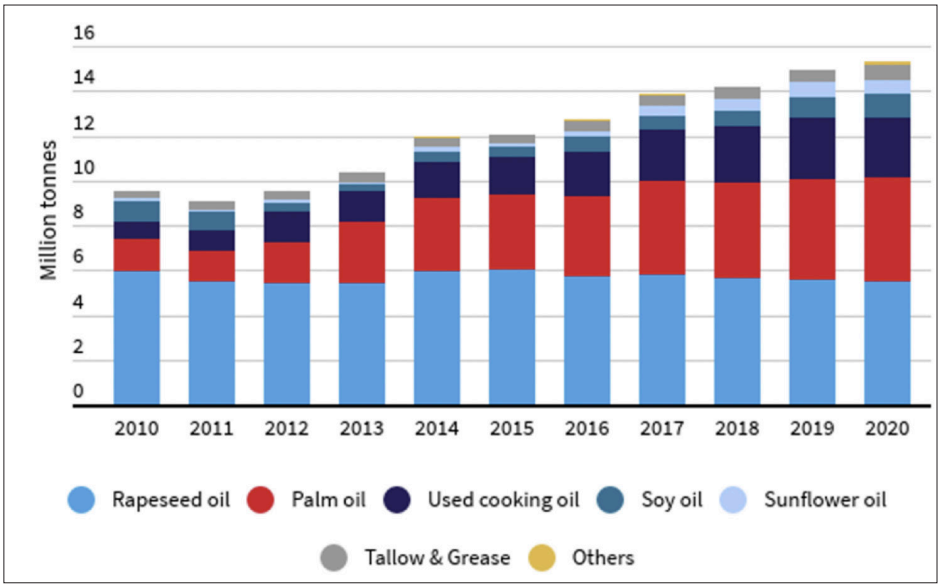




**Figure 1:** Feedstocks used for biodiesel production in the EU. Source: Transport and Environment[3]

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## GREENHOUSE GAS EMISSIONS FROM CANOLA PRODUCTION

The EU RED II requires all countries supplying agricultural feedstocks to the EU to demonstrate compliance with EU standards for the typical greenhouse gas (GHG) emissions generated from growing crops for biofuel production.

Biofuels produced in facilities in operation before 2015, and consumed in the transport sector, must generate at least 50% less emissions than fossil fuels. The EU set tighter emissions standards for newer facilities, with a reduction target of 60% for those commissioned after 2015 and 65% for those starting operations in 2021.

The RED II states that total emissions calculations must include emissions from:

- the crop production process (in-field activities such as cultivation, sowing, fertiliser and pesticide application, as well as harvesting, transport and working in of crop residues),
- the collection, drying and storage of raw materials (including seed cleaning, inoculation and fungicide application),
- waste and leakages (including nitrous oxide emissions from soil and burning of crop residues),
- the production of chemicals or products used in crop production (including fertiliser and herbicides).

The CSIRO has established the GHG emission values generated from canola production to maintain access to the EU biodiesel market[4]. Figure 3 shows the GHG values for Australia and other nations supplying canola feedstocks to the EU. Australia ranks in the lowest 15% of all countries for GHG emissions, generating approximately 460 kg $CO_2$ equivalent ($CO_2$-eq) per tonne of canola seed on a dry matter basis, or 20 g of $CO_2$-eq per megajoule of energy.

Using Australian canola for biodiesel assists European fuel companies in meeting their GHG emission requirements at the point of consumption. Emissions are lower than in most European countries since Australian producers typically practise minimum or no-till, which helps to preserve soil carbon and reduce nitrous oxide emissions. In addition, Australian canola production is rain-fed rather than irrigated, eliminating energy used for irrigation. This places Australian canola at a competitive advantage over most other canola suppliers in the EU biodiesel market.

## THE BENEFITS AND OPPORTUNITIES

Since the introduction of RED I, Australia has exported over 22 million tonnes of canola seed, worth approximately $15.3b to the EU biodiesel market. The EU biodiesel market is highly valued since it generates a premium for Australian producers primarily because Australian canola is certified as sustainable.

The CSIRO GHG emissions report identified opportunities to reduce emissions along the supply chain and enhance the environmental credentials of Australian canola exports. The manufacture of fertiliser contributes the largest share of total emissions (47%) since it consumes natural gas via steam methane reforming (SMR). For example, producing urea, the most used nitrogen fertiliser, generates around 1.8 kg $CO_2$-eq per kg. Imports from the Middle East, Malaysia, Indonesia and China, which comprise about 70% of total fertiliser consumption in Australia, generate an additional 110 g of $CO_2$-eq per kg[6].

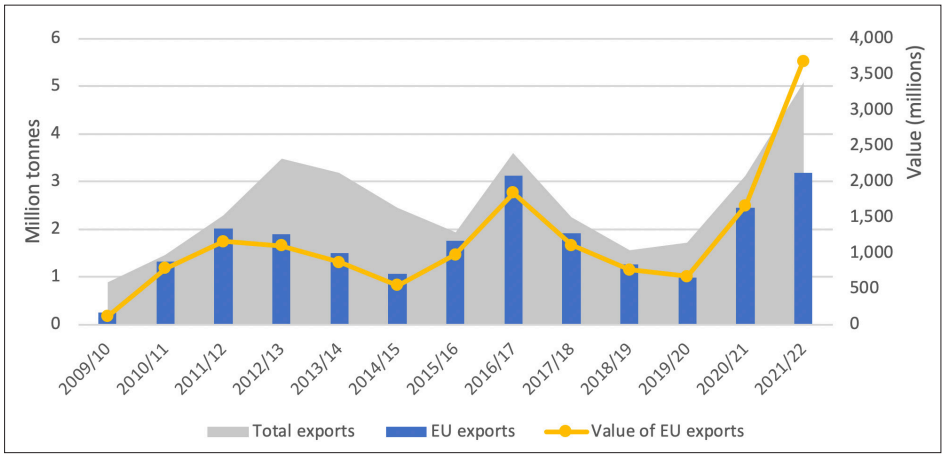


**Figure 2:** Australian exports of canola seed to the EU. Source: ABS

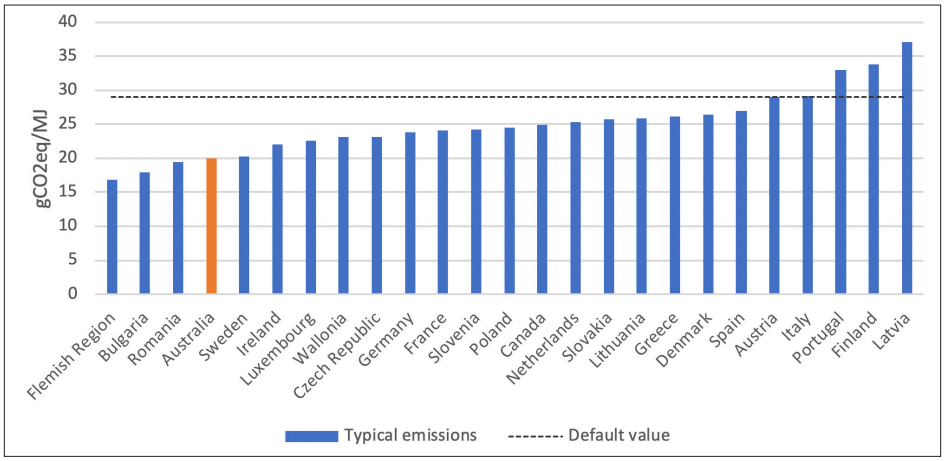


**Figure 3:** Emissions values from canola production. Source: European Commission (2018)[5]

The construction of domestic fertiliser manufacturing plants, such as the $3b Project Haber plant near Geraldton that utilises clean hydrogen and natural gas, will contribute to lowering fertiliser emissions and, therefore, the GHG emissions intensity of Australian-grown canola[7].

Increased adoption of controlled traffic farming (CTF) will also help reduce GHG emissions from canola production. CTF is a method of crop production where machinery travel on permanent tracks in a paddock, separating the crop zone from traffic lanes. CTF reduces soil compaction and the negative impact of compaction on nitrogen use efficiency, water infiltration and yield. It also increases diesel fuel use efficiency in machinery.

## CHALLENGES AND RISKS

Constrained global supply of oilseeds, increased prices and food security concerns in some developing nations have reignited the debate on whether the priority for agricultural crops should be for human consumption over biofuel production.

Around 60% of canola oil consumed in Europe is used for biofuel production, equating to 17,000 tonnes of oil burned in vehicles each day[9]. Despite pressure from some non-government organisations to phase out using food crops in biofuels, the European Parliament has maintained its RED II biofuel mandate[10].

In addition, the evolving policy landscape in Europe for renewable energy and the environment, including electric vehicles and emissions standards, may present future challenges for Australian canola supply to Europe for biodiesel. In June 2022, the EU Parliament legislated to ban the sale of internal combustion engine vehicles across Europe by 2035.

Such policy changes may accelerate the transition to electric vehicles and reduce biodiesel demand. However, the EU biofuel industry expects harder-to-electrify sectors such as long-haul road, maritime and air transport to absorb some biofuel supply[11]. The market for biofuel and benefits to Australian producers is therefore contingent on the EU allowing continued use of food crops such as canola for biodiesel production.

## CONCLUSION

The EU biodiesel market is a significant and valuable export market for Australian canola seed. Australia has a competitive advantage over many other canola-producing nations due to the relatively low GHG emissions intensity of canola production and cultivation of non-GM varieties.

Domestic fertiliser manufacturing and widespread adoption of conservation farming practices such as controlled traffic provide opportunities to reduce emissions further and reinforce market access. However, Australia's longer-term supply of canola seed to the EU is likely to be subject to changes to biofuel mandates due to food security pressures and the ongoing transition to electric vehicles.

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