

Horizons Global Biofuels Special Report

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Decarbonizing the Diesel Cycle in Brazil: Strategies, Policies, and Outlook

- Biodiesel is the core pillar of Brazil's diesel cycle decarbonization, with B20 effectively positioned as the base case outcome under the Fuel of the Future Law.
- Feedstocks are the main constraint, as higher blends intensify competition with SAF, renewable diesel and co-processing routes.
- Policy supports resilience by combining higher biodiesel blending with renewable diesel (PNDV), co-processing alongside alternative uses and complementary incentives.

Decarbonizing the diesel cycle represents one of Brazil's central energy transition challenges, given the dominant role of diesel in transport, logistics, and agricultural activity. According to the National Agency of Petroleum, Natural Gas and Biofuels (ANP), domestic diesel production reached 48.9 million m³ in 2024, accounting for 42% of total fossil fuel production in the transport sector, while demand totaled 67.4 million m³, highlighting Brazil's continued structural reliance on diesel imports. Diesel consumption is concentrated in road freight and logistics, agricultural machinery, with smaller shares in light vehicles, industrial and backup generators. Biodiesel consumption follows diesel demand. In addition, there are niche applications such as B100 captive fleets and B24 in marine fuels. This combination of high demand, import exposure, and limited short-term substitution options makes the diesel cycle a priority target for emissions reduction.

In this context, biodiesel blending is the cornerstone of the country's plan to diminish reliance on diesel imports and generate economic efficiency while decarbonizing the sector. This strategy is supported by a robust, evolving policy framework between the Fuel of the Future Law and the National Program of Biodiesel Usage (PNPB), B20 is positioned as a regulatory outcome, with higher blends subject to technical feasibility tests and final approval by the National Council of Energy Policy (CNPE), after which they should be treated as a base-case demand scenario. At the same time, government statements and long-term planning instruments indicate openness to blending levels beyond B20 over the next decade.

The Fuel of the Future Law further reinforces diesel decarbonization through the creation of the National Green Diesel Program (PNDV), which establishes a framework for the gradual introduction of renewable diesel, including volumetric blending of up to 3%, while preserving fuel quality and supply security.

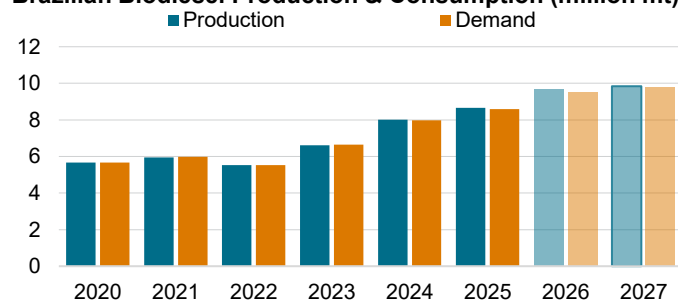
In parallel, Brazil's biodiesel strategy is supported by the country's relative abundance of agricultural feedstocks but also marked by a high reliance on vegetable oils, particularly soybean oil (SBO). While Brazil has one of the world's most competitive oilseed supply chains, this concentration increases exposure to agricultural cycles, price volatility, and competition with other low-carbon fuel pathways. Soybean oil remains the dominant input for biodiesel production, linking biodiesel economics closely to the soybean complex, crush margins, and export dynamics. In the short term, this linkage is being further influenced by geopolitical developments, as the ongoing conflict in the Middle East has disrupted global energy market fundamentals, supported oil prices and added volatility to diesel and biodiesel pricing. These dynamics are expected to affect the diesel cycle in Brazil in the near term, reinforcing the relevance of biodiesel and other low-carbon alternatives as both decarbonization and supply-resilience tools.

Biodiesel Supply and Demand

Between 2024 and 2027, biodiesel production increases from approximately 9.1 million m³ to 11.3 million m³, while domestic demand rises from 9.07 million m³ to 11.14 million m³, reflecting the gradual increase in mandatory blending—from 12–14% in early 2024 to the current 15% in place since Aug. 2025. Biodiesel imports remain prohibited by regulation, reinforcing reliance on domestic supply and regulatory predictability. There is no clarity at this point on whether this might change with higher biodiesel blends.

In this context, if ever allowed, Argentina is the natural marginal supplier, given its favourable logistics, with short Atlantic routes to Brazil's South and Southeast, resulting in

Brazilian Biodiesel Production & Consumption (million mt)



Source: S&P Global Energy.

lower freight costs than other alternative suppliers. In addition, Argentina is known for its export-oriented industry, including the biodiesel market, considering high supply and low national mandates.

Brazil's exports remain marginal (around 1% of output) and act only as a residual balancing mechanism in the S&D balance.

Despite ongoing requests from industry associations and the biodiesel caucus in Congress for an increase in the mandate to B16 or B17, the government has maintained the current blend, citing the need to complete technical feasibility studies, even amid geopolitical tensions in the Middle East and episodes of domestic price volatility.

According to ANP data, Brazil's authorized biodiesel capacity totals 42,583 m³/day, while average production stands at 27,328 m³/day, implying idle capacity of 15,256 m³/day, or 35.8% in 2025. Average utilization is 64.2%, with idle volumes concentrated mainly in the Central-West and South regions. This level of spare capacity provides short-term flexibility to accommodate moderate increases in blending through higher utilization, though effective availability is constrained by feedstock, logistics, and regional imbalances.

Beyond utilization gains, the medium-term supply outlook is shaped by 29 biodiesel projects under construction or expansion, with expected start-up between 2026 and 2028. Mato Grosso concentrates ten projects, followed by Rio Grande do Sul with six. If all authorizations become operational, capacity expansions at existing plants would add about 1.9 million m³ per year, while new plants would contribute about 2.2 million m³ per year, increasing total capacity by about 3.6 million m³ annually and materially improving the system's ability to support B20.

In parallel, alternative uses of biodiesel can strengthen demand and enhance sector resilience. Higher blends in niche applications—such as B24 in marine fuels and B100 in captive fleets, including buses, agricultural machinery, and stationary generators—allow biodiesel to penetrate segments with centralized logistics and controlled engine compatibility. These outlets help diversify demand, absorb temporary surpluses, and reinforce biodiesel's role in reducing emissions in hard-to-electrify segments.

From a policy perspective, B20 is supported by the Fuel of the Future Law and should be treated as the base-case outcome for the next decade. The Plano Clima, which signals a potential move toward B25 by 2035, aims to increase blending even higher.

According to S&P Global, diesel demand is expected to grow by 2% per year between 2026 and 2029, slowing to 1% annually from 2030 to 2035. Under these assumptions, diesel demand reaches approximately 81.1 million m³ per year in 2035, implying biodiesel demand of ~16.2 million m³ at B20 and ~20.2 million m³ at B25. Achieving these levels will require not only full deployment of current projects but also additional capacity expansions, careful policy timing and a schedule for increases in blending and coordination across competing low-carbon fuel pathways and other biodiesel usages.

Feedstocks

Feedstocks are a structural constraint and strategic variable for biodiesel production. Unlike conversion capacity, which can be expanded through investment, feedstock supply is tied to agricultural cycles, competing uses, logistics, and carbon-intensity considerations, making it the key determinant of how far biodiesel blending can scale without generating price volatility or displacement effects across other biofuel pathways.

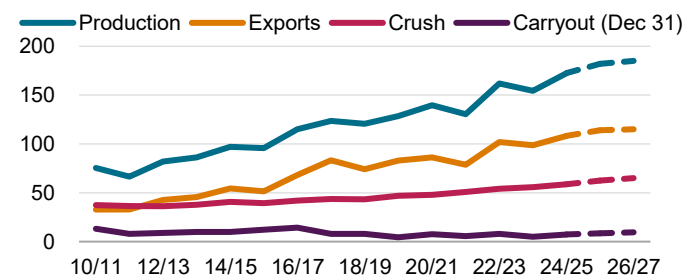
According to ANP data for 2025, Brazilian biodiesel production remains highly concentrated in soybean oil, which accounts for about 73% of total feedstocks, followed by animal fats (~14%). The remaining 13.9%, classified as "other materials," is dominated by cottonseed oil and palm kernel oil (about 4.1% each of total feedstocks), with used cooking oil (3.0%) and corn oil (2.8%) also playing relevant roles. This composition highlights the sector's growing exposure to feedstocks subject to cross-sector competition, particularly as demand expands.

Globally, rising use of vegetable oils for biodiesel, renewable diesel, and SAF has reduced exportable surpluses. In Brazil, the B15 mandate, the highest on record, has already tightened domestic soybean oil availability and limited exports. While geopolitical tensions have supported energy prices, the short-term outlook remains largely driven by domestic agricultural fundamentals.

Brazil's soybean complex short-term outlook

Brazil's 2025/26 soybean production exceeded 180 million tons, a record level that ensured ample supplies for the crushing industry and supported margins. While higher global energy prices linked to the Middle East conflict provided some support to soybean futures, strong domestic supply fundamentals largely offset external impacts, keeping local prices contained. Volatile export premiums reflected this dynamic, but overall availability from the January–April harvest improved feedstock supply conditions for biodiesel production.

Brazil's soybean supply & demand (million mt)



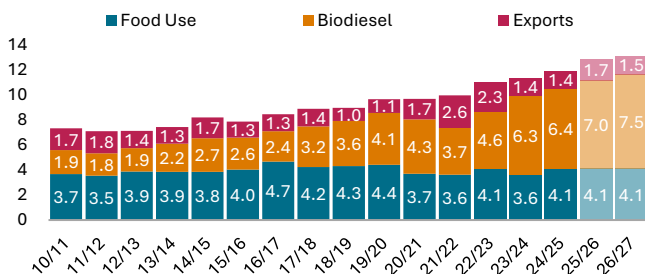
Source: S&P Global Energy.

With the biodiesel blend mandate holding at 15% throughout 2026 and a modest increase in diesel A demand, we expect some support for domestic soybean oil prices and a firm crush pace to meet domestic demand needs. Market participants have also reported a reasonable expansion in crush capacity. S&P Global Energy forecasts Brazil's 2025/26 soybean crush at 62.5

MMt, up 3.8 million from last season, with a small upside if conditions remain favorable in the second half of the year.

S&P Global research data forecasts demand of 7.1 MMt of soybean oil, which would be 0.6 MMt above last season and 55% of total oil demand for biodiesel use in 2025/26. With the strong crush pace expected, we project 1.7 MMt of oil exports, though some can be shifted to the domestic market if needed—overall, domestic prices have traded above export prices.

Brazil soybean oil demand (million mt)



Source: S&P Global Energy.

Looking ahead to the 2026/27 season, we expect soybean area to expand at the slowest pace in nearly two decades, given the increase in fertilizer and fuel costs combined with rising global carryout, which is expected to keep soybean prices constrained and farmers' margins tight.

Still, the soybean supply chain has proven very resilient in Brazil over the last few decades, with competitive costs and prices. In any case, any setback in production is likely to be reflected in lower soybean exports rather than a reduction in crush volumes. In this scenario, soybeans could be expensive for industries, and product prices will be key to keeping crush margins positive.

On the soybean oil front, expected growing biodiesel use is due to the B15 mandate and an increase in diesel A use to limit the soybean oil available for exports. On the soybean meal side, however, the global increase in oilseed crush for biodiesel production has created excessive meal supplies. As a result, meal carryout is expected to increase, posing a risk to prices and crush margins.

Considering the high correlation between soybean oil and biodiesel production, a higher blending outlook will be supported if there is a proper destination for soybean meal and maintenance of the soybean crop complex prices and crush margins.

Competition for low CI feedstocks

Biodiesel supply is already meaningfully exposed to feedstocks facing growing cross-sectoral competition. While used cooking oil (UCO), tallow and corn oil are increasingly favoured by routes that target the hydro processing of esters and fatty acids (HEFA) for sustainable aviation fuel (SAF) and renewable diesel due to their relatively low carbon intensity. Distilled corn oil (DCO) is also sought for refinery co-processing, supported by the expansion of the corn ethanol industry.

Brazil's 2025/26 total domestic demand of corn is forecast at 100.5 MMt, of which 28 MMt is destined for ethanol production, generating around 500,000 metric tons of distiller's corn oil (DCO) to the market. This feedstock is already being used for co-processing diesel and SAF in the country.

In addition, the International Civil Aviation Organization (ICAO), Corsia program, recognized Brazilian second-crop corn as an eligible feedstock for SAF production to meet Corsia's targets. This decision is expected to improve Brazil's access to international markets.

Looking ahead, alternative energy crops such as *macauba*, *carinata*, and *camelina* offer long-term diversification potential but remain at distinct stages of development, with challenges related to agronomic scaling, permitting, crushing logistics, and by-product monetization. As a result, any sustained increase in biodiesel blending—especially beyond B15—will increasingly depend on feedstock availability, government incentives for feedstocks usage and low CI feedstocks being converted to advanced biofuels production.

Prices

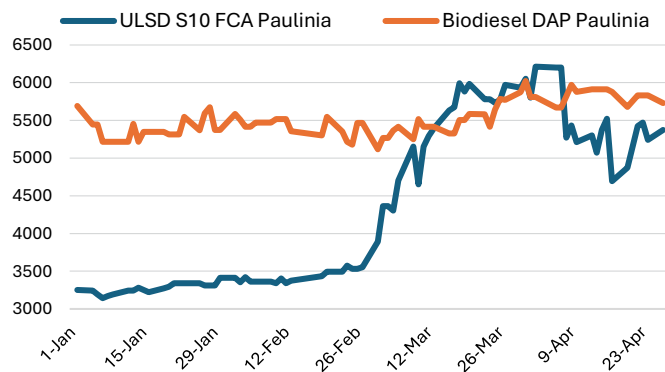
Historically, increases in Brazil's biodiesel blending mandate have been associated with upward pressure on fuel and logistics costs, as domestic biodiesel production costs tend to exceed those of fossil diesel. As a result, higher blends were not traditionally viewed as a tool to mitigate fuel prices, but this changed considering recent geopolitical events.

Prior to the Middle East conflict, the price spread between biodiesel and diesel at the Paulinia hub exceeded R\$2,000/m³, with biodiesel trading at a clear premium. The surge in global oil prices reversed this relationship: diesel prices in Brazil rose by more than 20% compared with pre-war levels, while biodiesel prices in the spot market increased at a slower pace, temporarily even inverting the spread. Although diesel prices have eased more recently amid ceasefire announcements and expectations of improved global supply, market sources report that price inversions persist in certain regions, particularly where diesel imports play a larger role.

Spot prices, however, are not the main price-setting mechanism for biodiesel in Brazil. More than 80% of volumes are traded through bimonthly contracts, a structure inherited from the former auction system, which limits the sector's ability to rapidly adjust prices to short-term market shocks. Contracts negotiated for March–April 2026, prior to the conflict, reflected a bearish biodiesel outlook and widened the gap with spot prices. Subsequent contracts for May–June sought partial correction but continued to face resistance from fuel distributors.

Fundamentally, biodiesel prices will be primarily influenced by diesel demand growth, the cost of key inputs such as soybean oil, methanol, and fertilizers, and potential government measures, including the temporary PIS/Cofins tax exemption for biodiesel. These factors will be central in determining whether higher blending mandates translate into cost pressure or price-stabilizing effects in the domestic fuel market.

Brazil diesel, biodiesel SPOT prices spread in 2026 (Real/cu m)



Note: Both prices exclude ICMS and Pis/Cofins taxes
 Source: S&P Global Energy

Conclusion

Brazil faces a critical structural challenge in securing its energy matrix, particularly within the diesel cycle—the backbone of the country’s logistics. Under the 'Fuel of the Future' Law, increasing biodiesel blends is less a climate mandate and more a strategic move toward energy sovereignty and economic resilience. Reaching the B20 target by 2030 is essential to reducing reliance on imported fossil fuels, stabilizing the domestic market against international volatility, and leveraging Brazil’s vast agricultural competitive advantage.

To ensure this transition strengthens the economy without compromising supply, the focus must remain on scaling industrial capacity and diversifying feedstocks to maintain competitive pricing. By integrating complementary strategies like co-processing and the PNDV program, Brazil can build a multi-layered energy shield. This approach ensures that the evolution of the diesel cycle serves primarily as a driver of industrial growth and national security, while naturally aligning with global efficiency standards.

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