

IEA-Advanced Motor Fuels ANNUAL REPORT 2023

SPAIN



Spain

Drivers and Policies

The main policy instrument aimed at fostering the consumption of advanced motor fuels in Spain is the biofuel quota obligation. Wholesale and retail fuel operators, as well as consumers not supplied by wholesale or retail operators, are obliged to sell/consume a minimum quota of biofuels. Each obligated subject must prove compliance by presenting a number of certificates to a national certification entity, the Ministry for Ecological Transition and Demographic Challenge. Certificates have a value of 1 tonne of oil equivalent (TOE), can be carried over to the following year (up to 30% of the annual obligation), and can be traded. If the biofuel quota obligation is not met, a penalty fee applies (in 2021, the fee was updated to EUR 1,623 per certificate). In case of over-compliance (parties selling or consuming more than they are obliged to), the amounts collected from the penalty fees are redistributed by the certification entity proportionally to the subjects that sold/consumed biofuels at quantities exceeding their quota obligation.

Royal Decree 1085/2015, on the promotion of biofuels, established these mandatory targets for sale or consumption. The 2023 target (in energy content) was 10.5%. In 2019, the double-counting of some biofuels came into play, and in 2020 the National Markets and Competition Commission (CNMC) published a list of feedstocks that, converted to biofuels, qualify as meeting the biofuels quota obligation. The list also specifies whether a feedstock will be single- or double-counted, as well as information requirements regarding the mandatory sustainability criteria that operators must meet.

Royal Decree 1085/2015 was modified in 2021 to introduce new requirements for obligated parties. For 2023, it established a mandatory target of 0.3% for advanced biofuels (according to the definition included in the Directive [EU] 2018/2001 on promotion of the use of energy from renewable sources). The decree also limited the contribution of biofuels produced from used cooking oil and animal fats (categories 1 and 2) to 1.7%.

Ministerial Order ITC/1342/2022 was issued in 2022 to establish the maximum limit for biofuels produced from food and feed crops. For 2023, this limit was set at 3.5%.

In March 2022, the Spanish Government approved the Biogas Roadmap, which identifies the challenges and opportunities for the development of this renewable gas. The Roadmap includes 45 specific measures categorized into five lines of action: regulatory instruments, sectoral instruments, economic instruments, transversal instruments, and promotion of research, development, and innovation (RD&I). For transport, the quota system will be updated to enable biomethane to be counted toward the obligation; the use of biomethane in heavy-duty vehicles will be prioritised by promoting its use in, among others, municipal fleets of buses and trucks.

Also published in 2022 was a call for proposals to allocate 150 million euros from the Recovery, Transformation and Resilience Plan to biogas projects, including plants intended to produce biomethane used for transport.

In 2020, the Spanish Government approved the “Hydrogen Roadmap: a Commitment to Renewable Hydrogen.” The Roadmap is intended to identify the challenges and opportunities associated with full development of renewable hydrogen in Spain. The document provides a series of measures aimed at boosting investment action to take advantage of the European consensus on the role that this energy source should play in the context of green recovery. The Roadmap provides a Vision 2030 and 2050, establishing ambitious country targets in 2030. In particular, regarding transport, the following milestones are projected by 2030:

- A fleet of at least 150 to 200 buses with renewable hydrogen fuel cells.
- At least 5,000 to 7,500 light and heavy hydrogen fuel cell vehicles (FCVs) for the transport of goods.
- A network of at least 100 to 150 hydrogen stations distributed across the country, located no more than 250 km apart.
- Use of hydrogen-powered trains on a continuous basis on at least two commercial medium- and long-distance routes on lines not currently electrified.

- Introduction of handling machinery that uses renewable hydrogen fuel cells and supply points at the top five ports and airports (by volume of goods and passengers).

Advanced Motor Fuels Statistics

Biofuels account for the largest part of alternative transportation fuel in Spain. The largest biofuel contribution is from biodiesel (fatty acid methyl ester [FAME]), the second from hydrotreated vegetable oil (HVO), and the third from bioethanol. Other alternative fuels consumed in Spain are natural gas and liquefied petroleum gas (LPG). Figure 1 shows the share (in terms of energy content) of fuels consumed for road transport and alternative fuels consumption in 2023.

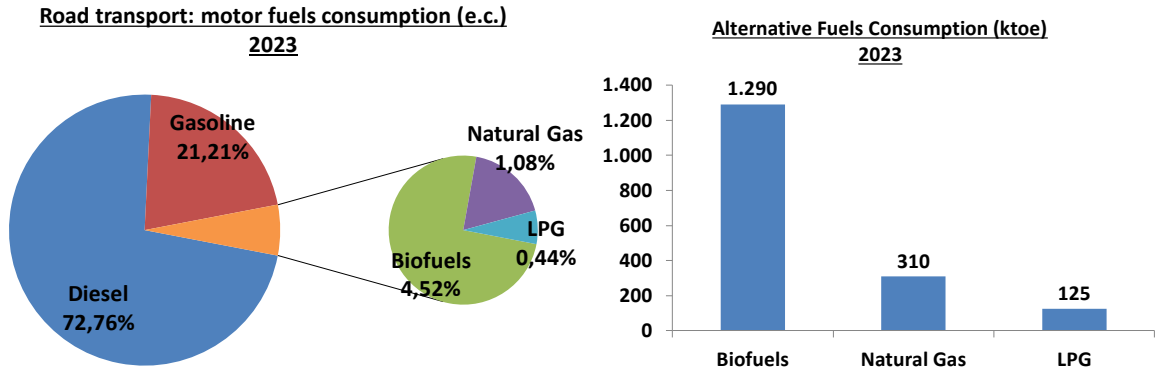


Figure 1. Fuel consumption (share in energy content) in Spain in 2023 (Sources: CORES, Enagás).

In 2023, the Ministry for Ecological Transition and Demographic Challenge published data on biofuels consumption, feedstocks, and greenhouse gas (GHG) emissions reductions until 2022 (information for 2023 was not yet available). Figure 2 shows biofuels consumption from 2011 to 2022, as well as the biofuels share in liquid fuels for road transport.

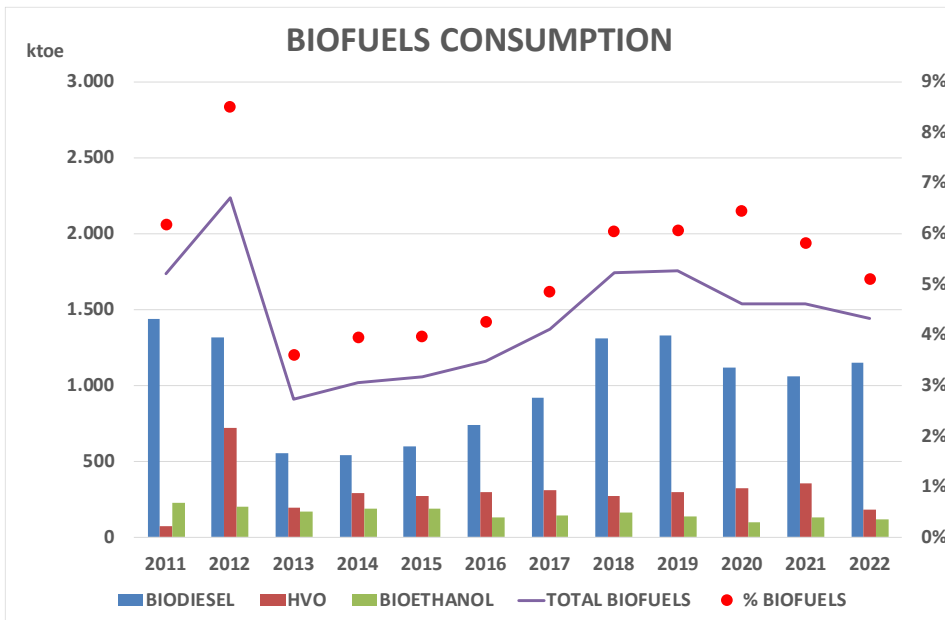


Figure 2. Biofuels consumption (ktoe and share in liquid fuels for road transport) in Spain, 2011–2022 (Source: Ministry for Ecological Transition and Demographic Challenge).

Figure 3 displays GHG emissions reductions attributable to the use of biofuels.

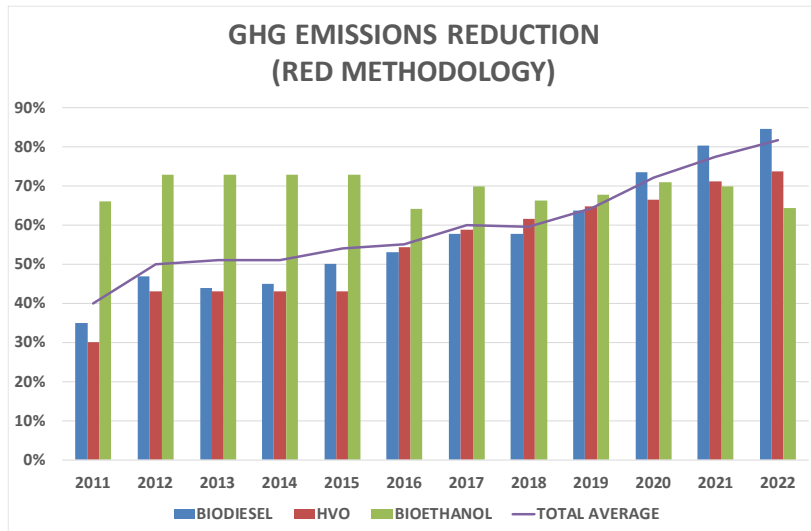
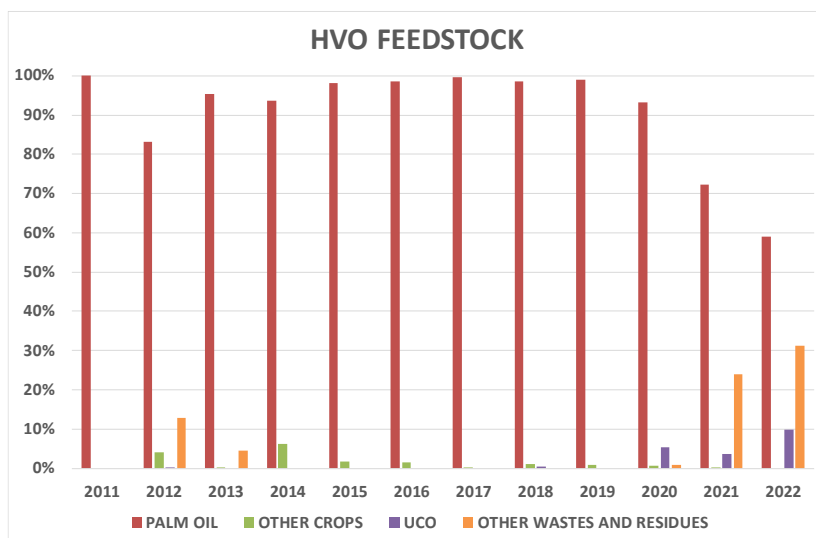
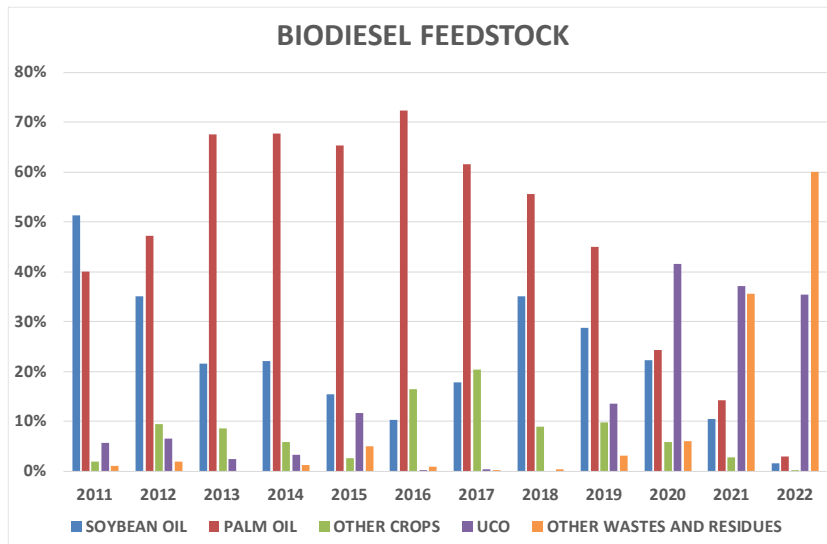


Figure 3. GHG emissions reductions attributable to the use of biofuels in Spain, 2011–2022 (Source: Ministry for Ecological Transition and Demographic Challenge).

Figure 4 shows feedstocks used for biodiesel, HVO, and bioethanol consumed.



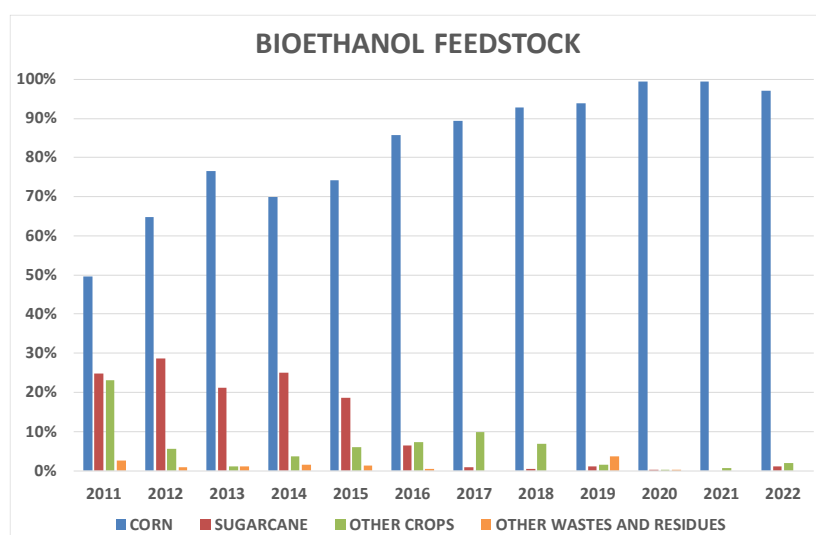


Figure 4. Feedstocks used for biodiesel, HVO, and bioethanol consumed in Spain, 2011–2022 (Source: Ministry for Ecological Transition and Demographic Challenge).

Research and Demonstration Focus

The Spanish Science, Technology and Innovation Strategy is the basic instrument for consolidating and strengthening the nation's science, technology, and innovation system. The strategy, which will be developed via two state plans (2021–2023 and 2024–2027), prioritises strategic national sectors in specific areas, including climate, energy, and mobility. The *2021–2023 State Plan for Scientific and Technical Research and Innovation* defines targets and actions for strategic areas identified in the Strategy. It addresses decarbonization and sustainable transport by means of measures intended to foster the development of renewable fuels, as well as more efficient fuels and vehicles.

The National Action Framework for Alternative Energies in Transport supports RDI by means of specific programs related to creation of clusters for innovation, incentives, cooperation through technology platforms, and support to research centers.

The updated draft integrated *National Energy and Climate Plan 2023–2030* (NECP), submitted in June 2023 to the European Commission, addresses general RDI areas, the development of advanced biofuels among them.

Two National Technology Platforms deal with topics related to advanced motor fuels. Bioplat, the Spanish Biomass Technology Platform, brings together companies, research entities, universities, and other organizations in Spain to encourage and promote sustainable commercial development of biomass technology. Bioplat addresses tasks related to biomass resources, production processes, and final uses (including biofuels for transport). The Spanish Hydrogen Technology Platform (PTE-HPC) is aimed primarily at facilitating and accelerating the development and use in Spain of systems based on hydrogen and fuel cells for different applications, transport among them.

Outlook

Directive (EU) 2018/2001, on the promotion of energy from renewable sources, was amended in 2023. The amended version sets a specific renewable fuels target for the transport sector. Member States must establish an obligation for fuel suppliers to ensure that the amount of renewable fuels/renewable electricity supplied to the transport sector results in a final consumption share of at least 29% renewable energy in the transport sector by 2030 or, alternatively, to a GHG intensity reduction of at least 14.5 % by 2030. The contribution of biofuels produced from food and feed crops is limited to a maximum of 7%. Within that 29%, there is a dedicated combined sub-target for advanced biofuels and biogas (which are produced from feedstocks listed in Part A of Annex IX to the directive) and for renewable fuels of non-biological origin (RFNBO). These fuels must be supplied at a minimum of 5.5% of transport energy in 2030, of which a share of at least 1% must be from RFNBO. A specific methodology for the calculation of such shares (including different multipliers for some technologies) is provided in the directive.

EU regulations on ensuring a level playing field for sustainable air transport (ReFuelEU aviation) and on the use of renewable and low-carbon fuels in maritime transport (FuelEU maritime) were approved in 2023. These regulations aim to increase the use of sustainable fuels by aircraft and ships and, consequently, reduce the GHG emissions from these transport sectors. The ReFuelEU aviation regulation will require aircraft fuel suppliers at EU airports to gradually increase the share of sustainable fuels that they distribute to reach 6% in 2030 and 70% in 2050. The FuelEU maritime regulation will require vessels above 5,000 gross tonnage that call at European ports to reduce the GHG emissions intensity of the energy used on board by means of biofuels, biogas, and RFNBO to reach a 6% GHG reduction in 2030 and an 80% reduction in 2050.

According to the updated draft integrated NECP, in 2030, the share of renewable energy in transport in Spain will be 25% with a GHG emissions reduction of 16.6%, well above the target established in the directive (14.5%). The contribution of biofuels from food and feed crops will be 2.6%, and advanced biofuels and biogas will reach 7.5%, while the combined share with RFNBO will be 11.1%.

The main trends included in the NECP for energy consumption in transport over the next decade are as follows:

- A relevant decrease in final energy consumption resulting from increased efficiency and modal shift policies.
- A very significant decrease in the consumption of oil products and natural gas, as well as a sharp growth in electricity use in vehicles.

The NECP includes specific measures to promote the use of biofuels in transport, the decarbonization of maritime transport, the decarbonization of Spain's aviation sector, and the development of biogas and biomethane. The measures consist of efforts aimed at supporting biofuels production and consumption, mandatory targets, and aid programs for sustainable aviation fuels facilities, among others.

Additional Information Sources

- [Bioplat: Spanish Biomass Technology Platform](#)
- [CNMC: National Markets and Competition Commission](#) (in Spanish)
- [CORES: Corporación de Reservas Estratégicas](#) (Oil Stockholding Agency) (in Spanish),
- [Enagás: Transmission System Operator](#)
- [IDAE: Instituto para la Diversificación y Ahorro de la Energía](#) (Institute for Energy Diversification and Saving) (in Spanish)
- [Ministry for Ecological Transition and Demographic Challenge](#) (in Spanish)
- [PTE-HPC: Spanish Hydrogen Technology Platform](#) (in Spanish)

Major changes

- Amendment of Directive (EU) 2018/2011 on the promotion of energy from renewable sources by Directive (EU) 2023/2413, which sets targets for the share of energy from renewable sources in the transport sector.
- Approval of Regulation (EU) 2023/1805 on the use of renewable and low-carbon fuels in maritime transport (FuelEU maritime), which sets targets for reducing GHG emissions from the energy used on board.
- Approval of Regulation (EU) 2023/2405 on ensuring a level playing field for sustainable air transport (ReFuelEU Aviation), which sets targets for sustainable fuels supplied at EU airports.
- Publication of the updated draft *National Energy and Climate Plan*, which includes shares of renewable energy in transport and GHG emissions reduction to be reached in 2030.

Benefits of participation in AMF

Membership in the AMF TCP provides wider and easier access to information on advanced motor fuels, as well as helpful analyses that can be used to guide national policies and programs.