# IEA-Advanced Motor Fuels ANNUAL REPORT 2022

## Spain

Technology Collaboration Programme
by IEA

# 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 operators of fuels, as well as consumers of fuels not supplied by wholesale or retail operators, are obliged to sell/consume a minimal 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 TOE. They can be carried over to the following year (up to 30% of the annual obligation) and can also be traded. If the biofuel quota obligation is not met, a penalty fee applies (in 2021 the fee was updated to EUR 1,623/certificate). In case of over-compliance (some 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 exceeding their set quota obligation. Royal Decree 1085/2015, on the promotion of biofuels, established these mandatory targets for sale or consumption. The 2022 target (in energy content) was 10%. 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 to meet 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 2022, it established a maximum limit of 7.2% for biofuels produced from food and feed crops as well as a mandatory target of 0.2% for advanced biofuels (according to the definition included in the Directive [EU] 2018/2001 on the 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%.

In March 2022 the Spanish Government approved the Biogas Roadmap, which identifies the challenges and opportunities for the development of this renewable gas. It aims at multiplying by 3.8 biogas production in Spain by 2030, exceeding 10.4 TWh. Regarding feedstock, the focus is on waste (agricultural, agri-food industries, municipal waste, and sewage sludge).

The development of biogas is particularly relevant in the current European context and it will contribute to reduce energy dependency. As for the use in transport, biomethane consumption will also facilitate fulfilling the objective of the National Integrated Energy and Climate Plan (NECP) 2021-2030 (share of renewable energy in transport of 28% and share of advanced biofuels of 3.69% by 2030).

The Biogas Roadmap includes 45 specific measures in five lines of action: regulatory instruments, sectoral instruments, economic instruments, transversal instruments, and promotion of research, development, and innovation. Regarding transport, it is envisioned that the quota system will be updated to enable biomethane to be counted towards the obligation, and 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 grant 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.” It is intended to identify the challenges and opportunities for the full development of renewable hydrogen in Spain, providing a series of measures aimed at boosting investment action, taking advantage of the European consensus on the role that this energy vector 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 envisaged 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 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 using renewable hydrogen fuel cells and supply points at the top five ports and airports by volume of goods and passengers.

The Spanish Alternative Energy Vehicle Incentive Strategy 2014-2020 is the framework for programs intended to promote the purchase of electric, liquefied petroleum gas (LPG), natural gas, and bifuel vehicles.

### *Advanced Motor Fuels Statistics*

Biofuels account for the largest part of alternative transportation fuel in Spain. The main contribution corresponds to biodiesel (FAME), the second most used biofuel is HVO, and the third one is bioethanol. Other alternative fuels consumed in Spain are natural gas and LPG. Figure 1 shows the share (in energy content) of fuels consumed for road transport in 2022.

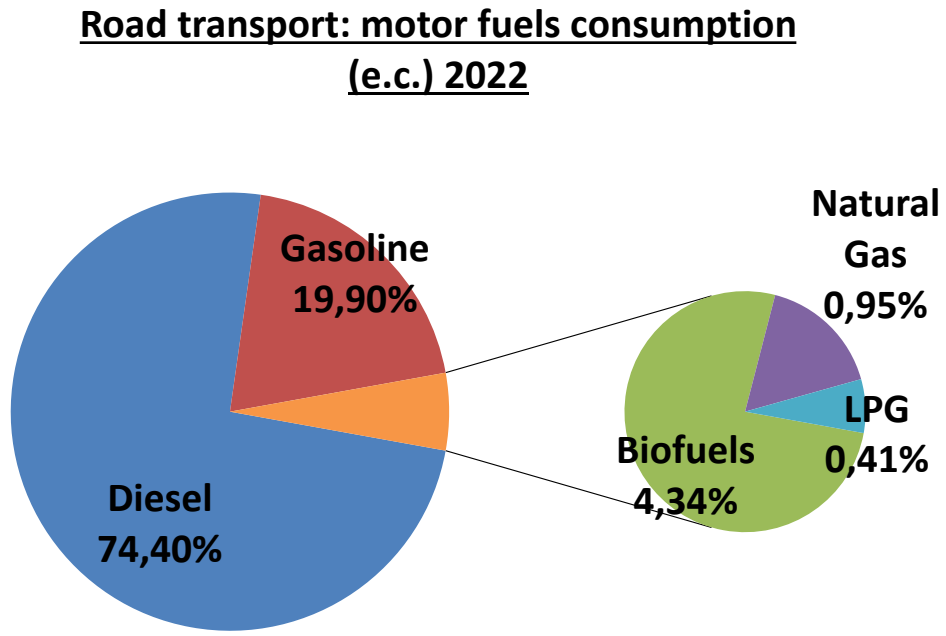


Fig. 1. Fuel Consumption (share in energy content) in Spain in 2022.
*Sources: CORES, GASNAM.*

Figure 2 displays alternative-fuels consumption in 2022.

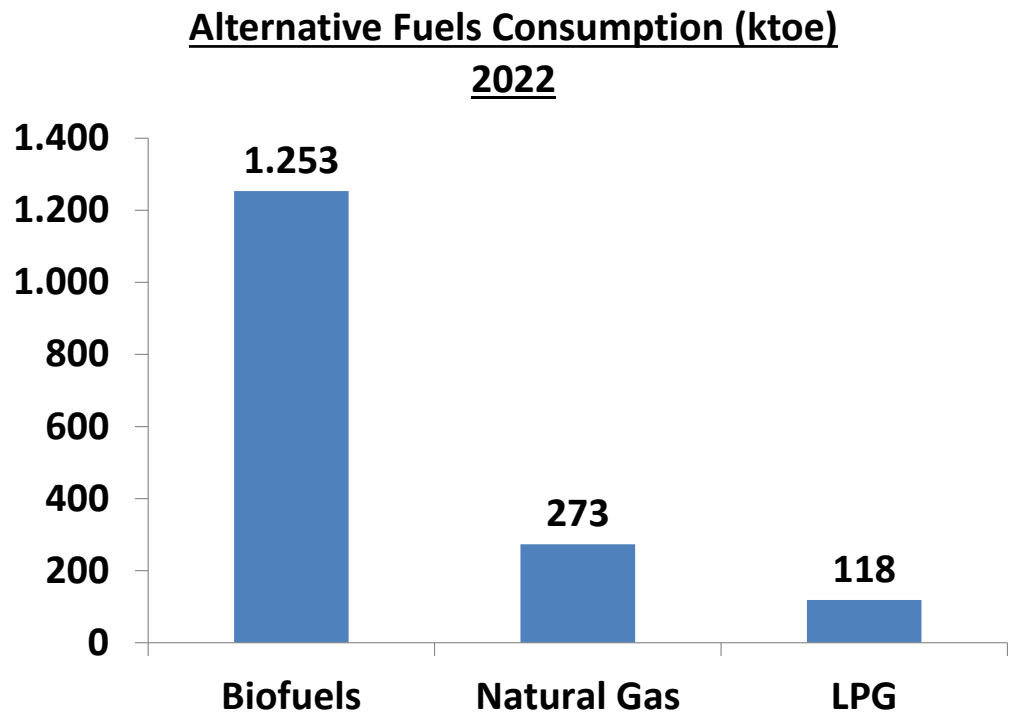


Fig. 2. Alternative Fuel Consumption (ktoe) in Spain, 2022.
*Sources: CORES, GASNAM.*

Table 1 shows the number of public filling stations selling alternative fuels.

Table 1. Filling Stations for Alternative Fuels in Spain

| Alternative Fuel | | Number of Filling Stations |
|---|---|---|
| Biodiesel blends | B20 or lower | 34 |
| | B30 or higher | 3 |
| Bioethanol blends | E25 | 1 |
| | E85 | 4 |
| LPG | | 858 |
| Natural gas | CNG | 132 |
| | LNG | 84 |

*Sources: MITECO (Geoportal).*

## *Research and Demonstration Focus*

The Spanish State Scientific and Technical Research and Innovation Plan 2017–2020 is the main instrument for developing and achieving the objectives set in the Spanish Strategy for Science and Technology and Innovation 2013–2020, as well as those set in the Europe 2020 Strategy. The plan identified eight major challenges for Spain. The energy sector, including transport, is specifically addressed in the following ones: “Safe, efficient, and clean energy,” “Bioeconomy: sustainability of primary and forestry production systems, food safety and quality, marine and maritime research, and bio-products,” and “Sustainable, intelligent, connected, and integrated transport.” The plan includes actions and funding mechanisms aimed at promoting research, development, and innovation (RDI) activities, which are in line with the Strategic Energy Technology Plan (SET Plan). Regarding advanced motor fuels, research and innovation projects within this State Plan shall address the priority activities included in the SET Plan Action 8 for Bioenergy and Renewable Fuels for Sustainable Transport.

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 integrated National Energy and Climate Plan 2021–2030 (NECP), submitted to the European Commission under the Regulation on the governance of the energy union and climate action (EU/2018/1999), 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 develop and promote sustainable commercial development of biomass technology. It addresses tasks related to biomass resources, production processes, and final uses (e.g., biofuels for transport, biogas and biomass for electricity generation and thermal uses, bioproducts). It also carries out activities regarding sustainability, a regulatory framework, and social, environmental, and economic impacts, including rural development, bioeconomy, circular economy, and climate change mitigation. The Spanish Hydrogen Technology Platform (PTE-HPC) aims 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*

The Directive (EU) 2018/2011, on the promotion of energy from renewable sources, sets a specific target for the transport sector. Member States must require fuel suppliers to supply a minimum of 14% of the energy consumed in road and rail transport by 2030 as renewable energy. The contribution of biofuels produced from food and feed crops is limited to a maximum of 7%. Within that 14%%, there is a dedicated sub-target for advanced biofuels (which are produced from feedstocks listed in Part A of Annex IX of the directive). These fuels must be supplied at a minimum of 0.2% of transport energy in 2022, 1% in 2025, and at least 3.5% by 2030. A specific methodology for the calculation of such shares (including different multipliers for some technologies) is provided in the directive.

According to the integrated National Energy and Climate Plan (NECP), in 2030 the share of renewable energy in transport in Spain will be 28%, well above the target established in the directive. The contribution of biofuels from food and feed crops will be 6.8% and advanced biofuels will reach 3.69%. The NECP is currently being updated and these figures will be modified in order to comply with the requirements in the recast Renewable Energy Directive (under development) and in accordance with new legislation on the biofuel quota obligation (Ministerial Order ITC/1342/2022 establishes decreasing limits for biofuels produced from food and feed crops from 2023).

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

- A relevant decrease in final energy consumption due to 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 of electricity use in vehicles.

The NECP includes a specific measure for the promotion of biofuels in transport. It consists of several actions aimed at supporting biofuels production and consumption, inter alia, mandatory targets, aid programs for advanced biofuels facilities, and consumption objectives for aviation biofuels. In this regard, the Law on Climate Change and Energy Transition also contains provisions on the establishment of a quota obligation for sustainable fuels, including aviation fuels.

## *Additional Information Sources*

- Bioplat: Spanish Biomass Technology Platform, https://bioplat.org/
- CNMC: National Markets and Competition Commission (in Spanish), http://www.cnmc.es/
- CORES: Corporación de Reservas Estratégicas (Oil Stockholding Agency) (in Spanish), https://www.cores.es
- GASNAM: Spanish Association of Natural Gas for Mobility (in Spanish), https://gasnam.es/

- Geoportal (MITERD): Filling Stations (in Spanish), https://geoportalgasolineras.es/geoportal-instalaciones/Inicio
- IDAE: Instituto para la Diversificación y Ahorro de la Energía (Institute for Energy Diversification and Saving) (in Spanish), https://www.idae.es/
- MITECO: Ministry for Ecological Transition and Demographic Challenge (in Spanish), www.miteco.gob.es
- PTE-HPC: Spanish Hydrogen Technology Platform (in Spanish), https://www.ptehpc.org/

**Major changes**
Royal Decree 1085/2015 was modified in 2022 to respond to the needs to implement the measures and achieve the ambitious objectives established in the integrated National Energy and Climate Plan 2021–2030, in accordance with its Objective Scenario and with the share of renewable energy in transport for the year 2030 established by the Directive (EU) 2018/2001. New mandatory targets for biofuels (in energy content and including double-counting for some biofuels) were established: 10.5% in 2023, 11% in 2024, 11.5% in 2025, and 12% in 2026. Mandatory targets for advanced biofuels were set: 0.3% in 2023, 0.5% in 2024, 1% in 2025, 1.2% in 2026, and 3.5% in 2030.

Ministerial Order ITC/1342/2022 was issued in 2022 to establish the maximum limit for biofuels produced from food and feed crops: 3.5% in 2023, 3% in 2024, and 2.6% in 2025.

Royal Decree 376/2022 (establishing sustainability requirements for biofuels, bioliquids, and biomass fuels in accordance with Directive (EU) 2018/2001) was published.

**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.