Chapter 3

Our project for the future
Natural gas as a key element

Natural gas is the key to achieving sustainable, safe and efficient energy, both in the present and for the future. Natural gas demand in the Spanish industrial sector currently accounts for 60% of total demand (see ‘Operating context’ chapter), and it plays a key role in the competitiveness of Spanish industry, a role that should be upheld. Moreover, Enagás is committed to the promotion of new uses for natural gas, particularly in the transport sector (maritime, rail and road).

Maritime transport

Enagás participates in projects such as CORE LNGas Hive. In this case, it is the coordinator of the project that includes 42 partners with a budget of 33.3 million euros, with the objective of developing an integrated, safe and efficient logistics chain for the supply of liquefied natural gas (LNG) for fuel in the transport sector, especially in maritime transport, in the Iberian Peninsula: Spain and Portugal. This will promote the use of this alternative fuel not only for supply to ships but also for industrial equipment in port areas.

Enagás is also one of the coordinators of the Infrastructure & Logistics Solutions (Hive2) project, which, with a budget of 14.7 million euros, is aimed at developing supply infrastructure at the Port of Huelva.

In addition, from its position as Vice President of the Maritime section of Gasnam, Enagás is promoting all necessary measures for the promotion and development of the infrastructures required for the use of LNG as a maritime transport fuel.

Rail transport

Enagás is collaborating with Renfe and other companies, supported by the Ministry of Public Works and Transport, to develop a test for the use of LNG in a passenger train on the Spanish railway network, as part of the Driving Vehicles with Alternative Energies Strategy in Spain 2014-2020 and in line with the implementation of Directive 2014/94 on the implementation of an infrastructure for alternative fuels in Europe. This project seeks to analyse the technical, environmental, legal and economic feasibility of railway traction with LNG to assess the possibility of extending this new traction solution to the commercial area in Spain.

Also, a second project will be developed, in collaboration with Renfe, to convert the railway traction of a diesel freight locomotive to LNG (railLNG project). Enagás is also involved with RENFE in the development of intermodal transport of LNG ISO containers for combined transportation by Road-Rail-Sea. In 2019, a third project will commence to convert a freight locomotive operating on the line connecting Huelva and Majarabique, in the province of Seville.

Road transport

The company is participating in the ECO-GATE project, a consortium of natural gas operators and technology and service providers, end users and experts in market knowledge and promotion in Spain, Portugal, France and Germany, whose aim is to construct 23 gas stations (21 L-CNG, 1 Biomethane, 1 H2CNG) in the Atlantic and Mediterranean corridors of the road networks of Spain, France, Germany and Portugal.

Likewise, the company’s Sustainable Mobility Plan includes a range of initiatives aimed at its professionals and its fleet of vehicles, which promote the use of vehicular natural gas and optimize travel, thus reducing environmental impact. These include the replacing operation and maintenance vehicles by vehicles powered by CNG, if there are equivalent vehicles; the delivery of CNG vehicles to managers and the promotion of the purchase of this type of vehicle by their employees in advantageous conditions.

Additionally, the company is promoting the use of natural gas as an alternative fuel to oil in vehicle fleets through the creation of start-ups (Gas2Move and ScaleGas).
Renewable gases

Enagás is committed to developing non-electric renewable energies, such as biomethane and hydrogen as new energy solutions that will play a crucial role in the decarbonisation process. Gas infrastructures are suited to the transport and storage of these renewable gases, meaning that additional infrastructure investments will not be required.

For its part, biomethane-biogas is obtained from the anaerobic decomposition of organic matter present in urban solid waste, wastewater as well as livestock, agricultural and forestry waste. The two options can be used in industry, as fuel for vehicles or injected directly into the pipeline network. Hydrogen, which is obtained from surplus electrical energy from renewable sources, has a great many applications: fuel cells, network injection, vehicular use, and the production of synthetic natural gas.

Enagás is a member of the European Renewable Gas Industry (ERGAR) and of other sector-wide associations such as AEBIG, AEH2, Hydrogen Europe and FGER.

In the last year, Enagás signed different collaboration agreements for the development of biomethane and hydrogen:

- **Enagás y Ferrovial signed a collaboration agreement to explore opportunities to promote the production and distribution of biogas.**
- **Enagás and Repsol signed an agreement to develop technology to produce renewable hydrogen. This is a key project in the Enagás strategy for developing non-electric renewable energies. Both companies will work towards the development of a hydrogen production process mainly using solar energy, reducing the carbon footprint by more than 90% compared to conventional processes used to obtain this gas.**
- **Enagás and Ence signed an agreement for the development of renewable gas using biomass, for the purpose of using up surplus biomass to produce green hydrogen and synthetic natural gas.**
- **Enagás and Biogastur signed an agreement for joint biogas and biomethane projects in the regions of Asturias, Galicia and Andalusia. Through this agreement, Enagás is working towards the development of the biogas and biomethane market through the use of infrastructure linked to its core business and taking advantage of the natural gas network to promote non-electric renewable energies.**
- **Enagás is taking part in the development of a plant to generate green hydrogen using renewable electrical energy in Majorca, for which a PV solar park will also be built.**

For the promotion and enhancement of CNG and LNG for use as land transport fuel, Enagás is also participating as a partner in Gasnam, NGVA and Sedigas, supporting the measures agreed in the sector.
We are also taking part in different pilot initiatives that have already been producing results and causing impact:

As the leader and coordinator of the Renovagas consortium, Enagás completed a pilot plant power-to-gas in 2017, which will enable synthetic methane gas to be produced from renewable sources.

Enagás is participating in the SOLUTHION project, which aims to evaluate the impact of hydrogen injection into the gas pipeline network using different proportions in the mixture.

Enagás and Empresa para la Gestión de Residuos Industriales (Emgrisa) are collaborating on a project to spur development of biomethane through the potential conversion of Emgrisa waste treatment plants, enabling them to produce biomethane using the biogas from waste. A feasibility study has commenced for this purpose at one of the company’s plants.

Enagás is currently a member of different consortiums with other players in the gas and industrial market on innovation projects for the promotion and development of non-electric renewable energies and their future injection into existing gas infrastructures.

(GRI 102-15, GRI 201-2)
Creating value in affiliates

We are improving the management and business plans of our affiliate companies, guaranteeing their long-term sustainability and providing the experience, knowledge and best practices of Enagás in the role of industrial partner.

**Value creation levers**

- **Lever 1**: Ensuring the long-term sustainability of assets.
- **Lever 2**: Improving the management and the business plan of affiliates.
- **Lever 3**: Improving profitability for Enagás.

Enagás contributes with its experience, knowledge and best practices in the role of industrial partner for its affiliates.

- Committed to innovation and providing services to affiliate companies.
- Capacity to develop new projects from affiliates.
- Optimising distribution of dividends to shareholders.
- Promoting the commercial development of infrastructure (revenue).
- Promoting operating efficiency plans (OPEX and CAPEX).
- Optimising the financial structure.
- Preserving the integrity, security and availability of assets.
- Contributing to sustainable social and environmental development.
- Ensuring compliance in affiliates.
Enagás has put in place a programme of corporate entrepreneurship and open innovation for the purpose of supporting and fostering new ideas and innovative business projects which, in accordance with our strategy, will enable us to create value and diversify the business, and to gain an early foothold in disruptive innovation and start-ups that are aligned with the improvement of efficiency, competitiveness and sustainability in the energy sector in the current context of energy transition.

The Enagás Emprende programme searches inside and outside the company for projects related to the business to grow them and turn them into viable companies. It is structured along the following lines:

- Corporate entrepreneurship – developing business projects and ideas based on Enagás technical, economic and market-related skills.
- Venture Capital – investing in and supporting start-ups.
- Open Innovation – developing projects and incorporating technology supported by skills external to Enagás.

Enagás Emprende studies and analyses each proposal on an individual basis and offers acceleration programmes tailored to the needs of each project, which can vary from financial resources, conducting technical pilot testing, co-development and support for commercial development, among others.

Through the support offered by Enagás Emprende, seven in-house corporate entrepreneurship projects have been turned into start-ups:

**Corporate entrepreneurship and open innovation**

![VIRA](image1)

**VIRA**

A start-up offering consultancy services for gas detection and quantification, assisting their customers to comply with environmental laws and regulations.

![eEfficiency](image2)

**eEfficiency**

A start-up with innovative, technically validated technology for environmentally friendly cold energy transport, encouraging large companies requiring cold energy to set up in the vicinity of LNG plants.

![H2Gas](image3)

**H2Gas**

A start-up set up jointly with Redexis Gas for the purpose of building and operating renewable hydrogen production plants for third parties.

![SERCOMGAS](image4)

**SERCOMGAS**

A start-up that invests in small/medium-scale NG/LNG infrastructure (bunkering, service stations, vehicular natural gas, etc.) and design, execution, operation and maintenance for third parties, commercialising its experience and providing logistics services.

![Gas2Move](image5)

**Gas2Move**

A start-up dedicated to environmentally sustainable last-mile logistics in which the entire vehicle fleet is powered by alternative energy sources (natural gas, electricity, hydrogen, etc.).

For further details on the Enagás Emprende Programme, visit the corporate website.
Digitalisation

This digital transformation is, for Enagás, a strategic lever of change, key in ensuring our positioning in an interconnected industry.

Enagás is undergoing a process of digital transformation to allow us to adapt flexibly to the context in which we operate. For this purpose, work is being carried out in the following areas:

- Strengthening and developing the digital skills of the company’s human resources in order to allow new forms of working to be created in the organisation in a way that is more creative, flexible, autonomous, collaborative and coordinated.

- Optimisation of the value chain through the exploitation of advanced data analytics, which will allow us to achieve greater efficiency in our processes (optimisation of operating costs derived from energy consumption, capital costs associated with managing the life cycle of assets, etc.).

- Creation of opportunities for new sources of revenue in the medium term resulting from the good use the opportunities arising from the digital transformation.

This will mean that digitalisation will provide support for the company’s vision of the future, both in the development of non-electric renewable energies (hydrogen and biogas/biomethane), and the adaptation of our infrastructure for its transport.

Technological innovation

Technological innovation at Enagás is focused on two areas:

- Improving the different aspects of the company’s present activities, such as energy efficiency and self-generation of energy, the measuring of gas and analysis of its components, operational safety, materials and equipment. The most significant projects on which work was carried out during the year were: the desalination plant at the Barcelona facility in order to reduce water consumption, the autonomous generation of nitrogen at the Huelva facility and the installation of a heat exchanger at the Cartagena facility to reduce electrical energy consumption (see ‘Climate change and energy efficiency’ chapter).

- The analysis and development of technology that may be supported in the future and to upgrade infrastructure, and/or the company’s know-how, such as production, analysis, certification and transport of synthetic natural gas, biogas, biomethane and hydrogen. The following projects are featured in this area:  
  > The project carried out jointly by Enagás and Repsol, SUN2HY (Luxhor Project), for the development of a photoelectrolyzer for the production of hydrogen.
  > The ECO project, which consists of the development of simultaneous electrolysis of steam and CO₂ for the conversion of surplus renewable electricity into distributable and storable hydrocarbons such as methane.
  > Actions conducted within the framework of the CORE LNGas HIVE project coordinated by Enagás, in order to promote natural gas as an alternative fuel for maritime transport (see ‘Climate change and energy efficiency’ chapter).

The amount invested in technological innovation in 2018 was €3,493,032.

(1) This figure comprises the costs associated with the projects approved by the Investment Committee (amount entered as R&D expenses in the ‘Other operating expenses’ section of the Annual Accounts), procurement of R&D, personnel expenses and the purchase of equipment and instruments.