



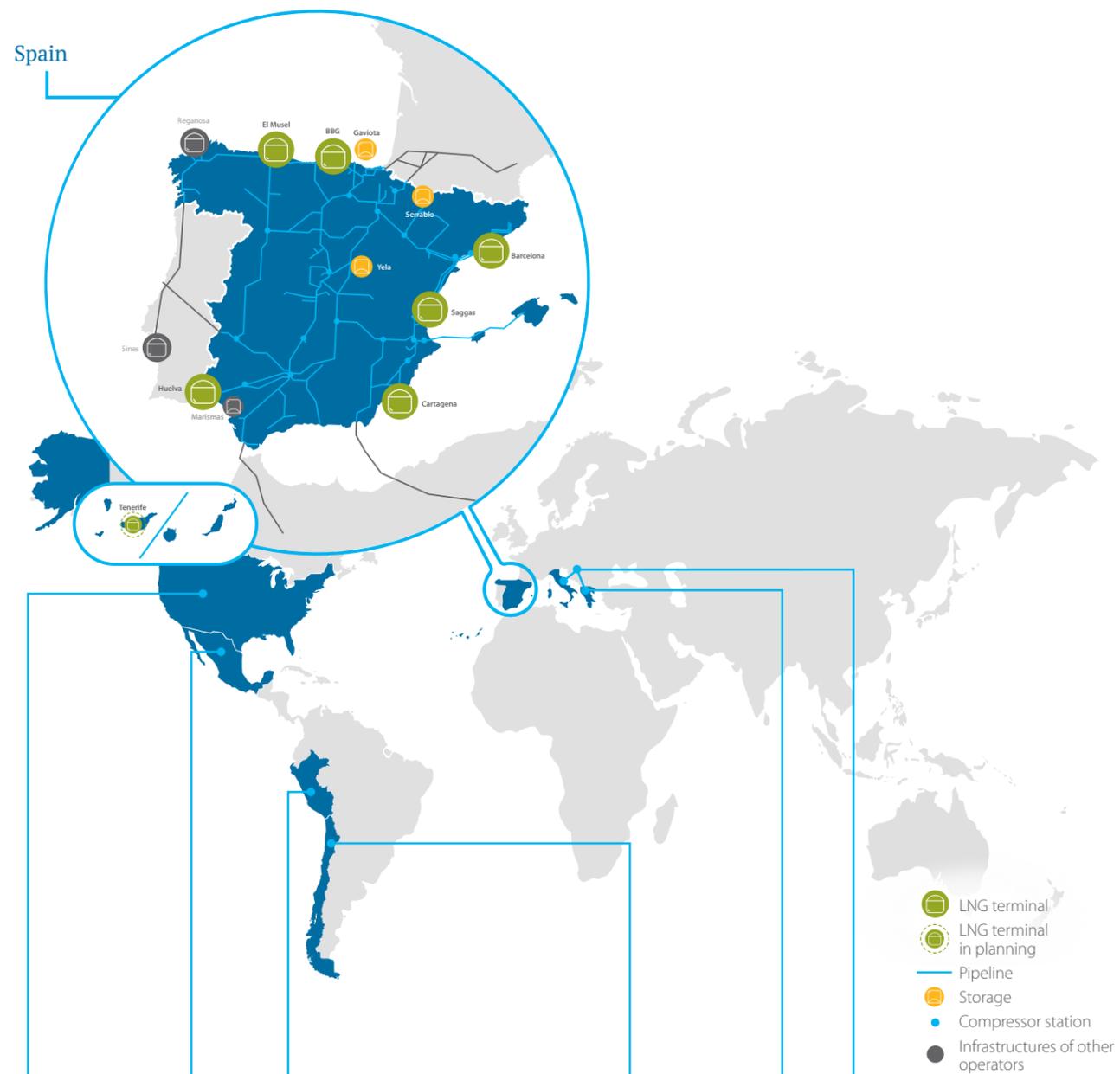
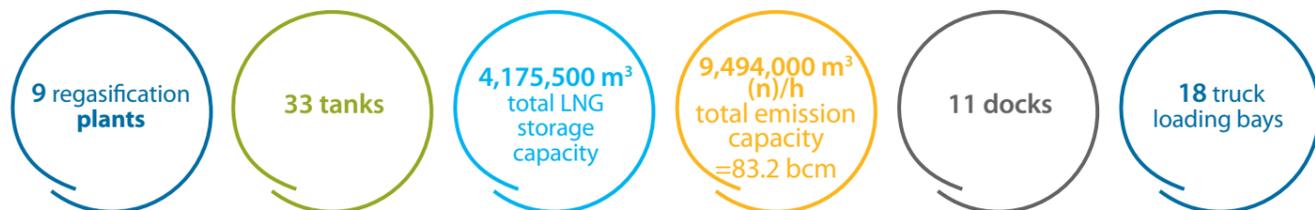
good new energy

LNG  
services  
& capabilities



# Enagás, world leader in LNG terminals

A European TSO with 50 years of experience, Enagás is one of the companies with the most regasification plants in the world. It has gas facilities and projects in Mexico, Chile, Peru, Greece, Albania, Italy and U.S.A. It is the leading transmission company in Spain, operating 11,000 km of high-pressure gas pipelines, six regasification plants and three strategic natural gas storage facilities.



- U.S.A.**  
Tallgrass Energy (12.62%)
- Mexico**  
TLA Altamira LNG Terminal (40%)  
Morelos Gas Pipeline (50%)  
Soto La Marina Compressor Station (50%)
- Peru**  
Transportadora de Gas del Perú (TgP, 28.94%)  
Compañía Operadora de Gas del Amazonas (Coga, 51%)
- Chile**  
GNL Quintero LNG Terminal (45.4%)
- Greece**  
DESFA (11.88%)
- Greece, Albania and Italy**  
Trans Adriatic Pipeline (TAP, 16%) (under construction)

# Moving towards a virtual LNG hub

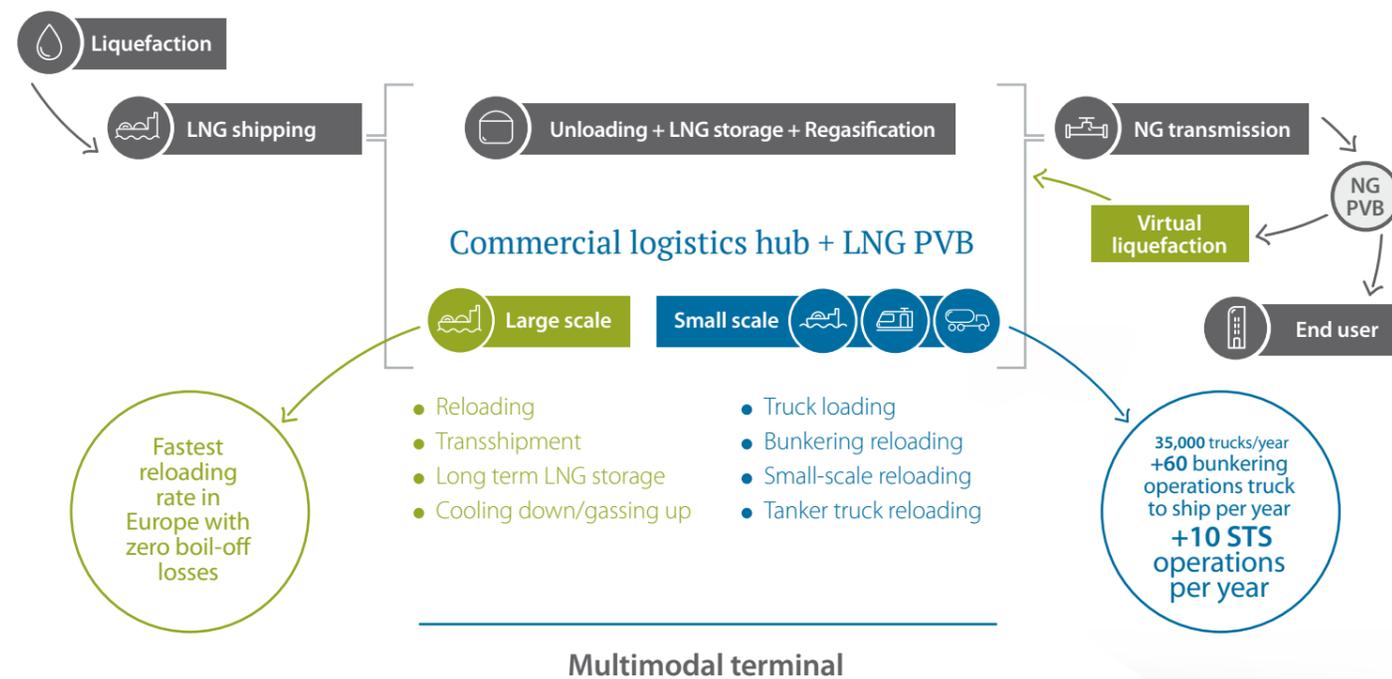
Spain is the country with the most regasification plants in Europe. Thanks to its geographical location, capability and operational flexibility, it is the gateway to Europe for LNG from anywhere in the world.

All Enagás' LNG terminals in Spain are equipped to offer logistics services that bring added value to the LNG value chain, focused on providing the best service to shippers with a multimodal terminal concept where both large scale and small scale services are offered. This is thanks to the continuous work on the improvement of our infrastructures that make them stand out for their versatility and flexibility.

Additionally, thanks to our know-how and expertise we promote the development and design of new scalable solutions adapted to the logistics of new incremental demand.

Enagás has been contributing to the creation of a commercial logistics hub, enhancing productivity, security of supply and market integration in Europe.

This virtual LNG hub (LNG PVB) will meet the logistical requirements deriving from the expansion of the international LNG market (large-scale) and will help drive up demand for natural gas used for transport (small-scale and LNG bunkering).



Our next step is the creation of a virtual LNG hub that will join all the LNG terminals in the Spanish Gas System, making a total storage capacity of 3,316,500 m<sup>3</sup> and a total regasification of 60 bcm in operation.

Due to their constant development, our regasification plants currently contribute a great part of the storage in LNG PVB, making it available for clients use.



# At the cutting edge of technology and efficiency

- Over **4,500 m<sup>3</sup>/h** average reloading rate at all our LNG terminals in Spain
- **Zero boil-off losses** during reloading of vessels in normal operating conditions with the fastest reloading rate in Europe
- **Far lower shrinkage rates** than other transmission companies/competitors in Europe: exhaustive control of metering process and reduction of associated uncertainty

Our track-record operating and maintaining LNG terminals under different demand scenarios has enabled us to maximise plant availability and plant management efficiency when offering both traditional services and carrying out the new logistics activities.

- **Tailor-made service** and **maximum flexibility** when assigning unloading and reloading slots
- Terminals prepared to berth the largest vessels in the world –Q-Max and Q-Flex– with a capacity of up to **266,000 m<sup>3</sup>** of LNG
- **Carbon neutral** terminals since 2017

## A leader in reloading operations

In 2014, Enagás won the European Good Practice Award conferred by the European Foundation for Quality Management (EFQM), which focused on “Creative Customer Solutions”,

for the technical modifications it made to its plants to be able to load methane tankers.



Enagás coordinates the **CORE LNGas hive** project, co-financed by the European Commission, to promote LNG as fuel. This project involves 42 partner entities in Spain and Portugal.

In addition, Enagás also coordinates the **LNGHIVE2: Infrastructure and Logistics Solutions** project which involves 8 partners and includes the development of 6 technical solutions in line with the CORE LNGas hive philosophy.

Over **250** vessel reloading operations (including gassing up and cooling down services)  
More than **600,000** trucks loaded  
**10,500** unload operations

# Our LNG terminals: an international benchmark

## Barcelona 6 tanks

Docks	1 LS 1 SS: 2,000 / 266,000 m <sup>3</sup> LNG
Storage	760,000 m <sup>3</sup> LNG
Regasification	1,950,000 m <sup>3</sup> (n)/h / 17 bcm
LNG truck loading	3 bays, 50 trucks/day
Operational ratios	
- Unloading	12,000 m <sup>3</sup> /h
- Reloading	4,200 m <sup>3</sup> /h
Transshipment	Available

## Huelva 5 tanks

Docks	1 LS: 7,500 / 180,000 m <sup>3</sup> LNG
Storage	619,500 m <sup>3</sup> LNG
Regasification	1,350,000 m <sup>3</sup> (n)/h / 12 bcm
LNG truck loading	3 bays, 50 trucks/day
Operational ratios	
- Unloading	12,000 m <sup>3</sup> /h
- Reloading	3,700 m <sup>3</sup> /h
Transshipment	Available

## Bilbao (50%) 3 tanks

Docks	1 LS: 7,500 / 270,000 m <sup>3</sup> LNG
Storage	450,000 m <sup>3</sup> LNG
Regasification	800,000 m <sup>3</sup> (n)/h / 7 bcm
LNG truck loading	1 bay, 15 trucks/day
Operational ratios	
- Unloading	12,000 m <sup>3</sup> /h
- Reloading	3,000 m <sup>3</sup> /h
Transshipment	Available

## TLA Altamira (Mexico) (40%) 2 tanks

Docks	1 LS: 70,000 / 217,000 m <sup>3</sup> LNG
Storage	300,000 m <sup>3</sup> LNG
Regasification	800,000 m <sup>3</sup> (n)/h / 7 bcm
Operational ratios	
- Unloading	10,000 m <sup>3</sup> /h

## GNL Quintero (Chile) (Majority shareholder) 3 tanks

Docks	1 LS: 120,000 / 265,000 m <sup>3</sup> LNG
Storage	334,000 m <sup>3</sup> LNG
Regasification	625,000 m <sup>3</sup> (n)/h / 5.5 bcm
LNG truck loading	4 bays, 50 trucks/day
Operational ratios	
- Unloading	12,000 m <sup>3</sup> /h
- Reloading	1,270 m <sup>3</sup> /h estimated COD 2020

## Cartagena 5 tanks

Docks	1 LS 1 SS: 4,000 / 266,000 m <sup>3</sup> LNG
Storage	587,000 m <sup>3</sup> LNG
Regasification	1,350,000 m <sup>3</sup> (n)/h / 12 bcm
LNG truck loading	3 bays, 50 trucks/day
Operational ratios	
- Unloading	12,000 m <sup>3</sup> /h
- Reloading	7,222 m <sup>3</sup> /h
Transshipment	Available

## El Musel\* 2 tanks

Docks	1 LS: 65,000 / 266,000 m <sup>3</sup> LNG
Storage	300,000 m <sup>3</sup> LNG
Regasification	800,000 m <sup>3</sup> (n)/h / 7 bcm
LNG truck loading	2 bays, 30 trucks/day
Operational ratios	
- Unloading	12,000 m <sup>3</sup> /h
- Reloading	6,000 m <sup>3</sup> /h
Transshipment	Available

\*Commissioned but mothballed

## Sagunto (72.5%) 4 tanks

Docks	1 LS: 30,000 / 266,000 m <sup>3</sup> LNG
Storage	600,000 m <sup>3</sup> LNG
Regasification	1,000,000 m <sup>3</sup> (n)/h / 8.7 bcm
LNG truck loading	2 bays, 40 trucks/day
Operational ratios	
- Unloading	12,000 m <sup>3</sup> /h
- Reloading	3,000 m <sup>3</sup> /h
Transshipment	Available

## Revithoussa (DESFA, Greece) (11.88%) 3 tanks

Docks	1 LS: 25,000 / 266,000 m <sup>3</sup> LNG
Storage	225,000 m <sup>3</sup> LNG
Regasification	819,000 m <sup>3</sup> (n)/h / 7.2 bcm
LNG truck loading	Under study
Operational ratios	
- Unloading	7,250 m <sup>3</sup> /h
- Reloading	Under study



## Our know-how

- A reference in the **development and operation** of LNG terminals
  - Conceptual development
  - Permitting
  - Engineering
  - Construction
  - Start-up
  - O&M

With the highest requirements of safety and quality

- **Energy efficiency projects** (turboexpander, cold use...)  
→ **Energy savings**

- Extensive **experience in revamping** its facilities
  - For all kind of services and scenarios demand
  - Adaptation to new LNG market trends (transhipment, unloading/reloading)
  - Construction and operation of non-conventional terminals (floating, mid and small scale...)
  - Design of scalable solutions according to new incremental demand

Minimum impact on conventional operation

- Participation in national and international **discussion forums and working groups**

# Sustainability as a key pillar of our strategy

## Sustainability drivers

- Energy **efficiency** and emissions reduction
- People and culture**
- The role of natural gas and renewable gases** in the energy model

Commitment to tackle climate change and efficient use of energy, improving natural gas/LNG “well to wheel” (WTW) and therefore its competitiveness as a sustainable energy:

- ✓ Zero emissions under zero send-out conditions.
- ✓ A 36.4% reduction of CO<sub>2</sub> emissions (2016-2018 vs. 2013-2015) and a 5.6% decrease in our electricity consumption in Spain (2018 vs. 2017).



**One of the best TSOs in Europe**  
2nd position among 22 TSOs, European TSO's benchmarking



**One of the most efficient companies**  
European LNG terminals benchmarking

Thanks to our know-how, we collaborate with our affiliates in the design and development of infrastructures, services and products for small scale and bunkering.





# LNG services & capabilities



good new energy

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