



LNG Hubs: the new role of LNG Terminals

Challenges and opportunities

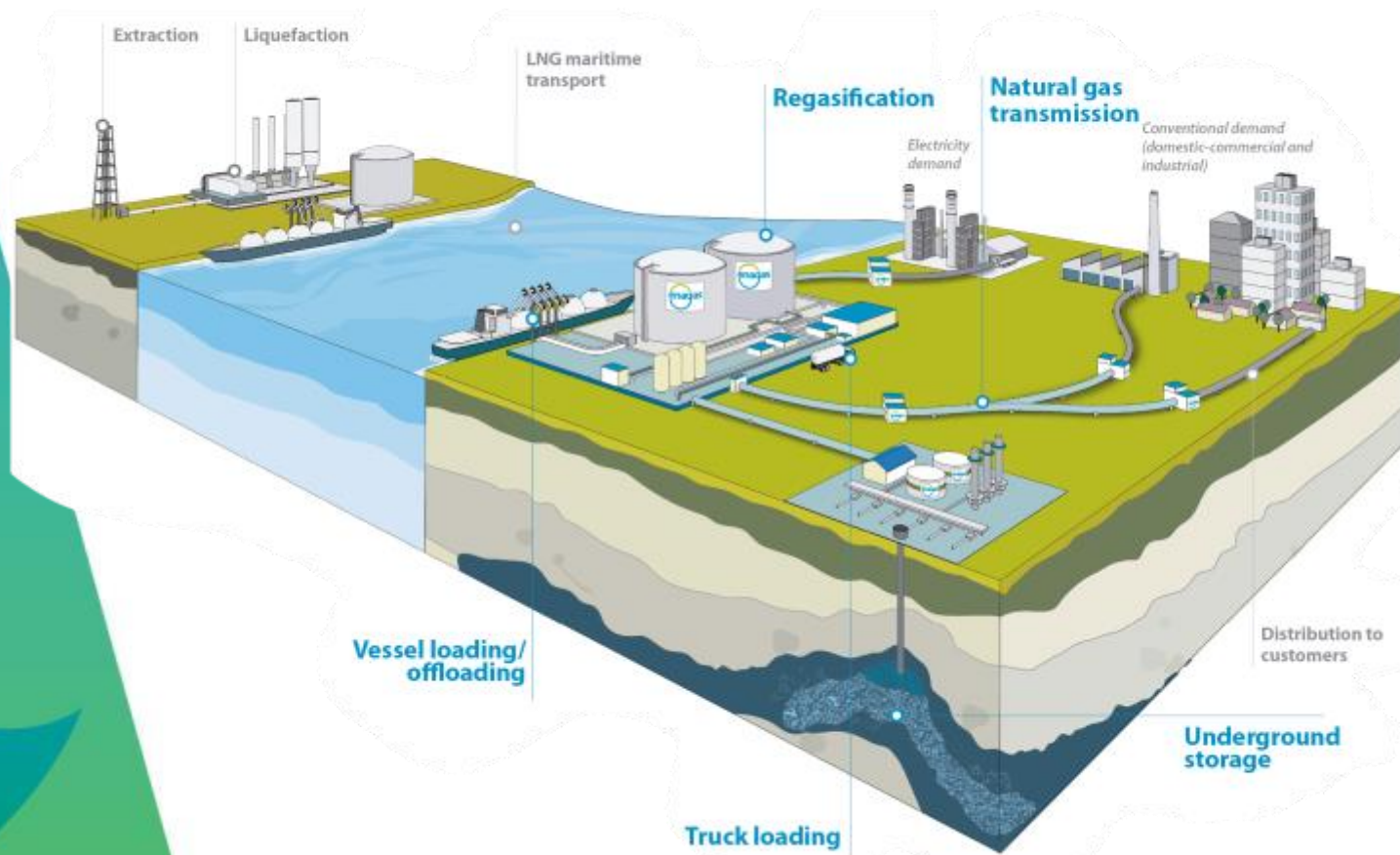
M^a Paz Adán, Commercial & Logistics Director
Enagás

Enagás, 50 years' experience

**Independent
midstream
operator**

Leader in natural gas and LNG infrastructures

Major International player as a result of our technological expertise, gas infrastructure construction skills, highly effective operations and maintenance programs and sound financial structure.

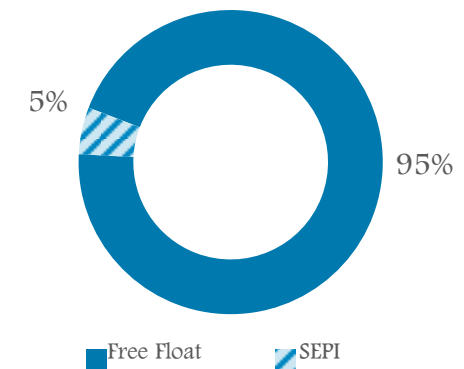


European Union-accredited
independent TSO

Top natural gas transmission company
in Spain

Technical Manager
of Spain's Gas System

Ownership structure



Enagás, Where we are now

Mexico

TLA Altamira LNG Terminal
Soto La Marina Compressor Station
Morelos Gas Pipeline

Peru

Transportadora de Gas del Perú (TgP)
Compañía Operadora de Gas del Amazonas (Coga)

Chile

GNL Quintero LNG Terminal

Spain

11,000 km of gas pipelines
6 LNG terminals (+1 in development)
3 underground storage facilities

Sweden

Swedegas

Greece

Consortium awarded the tender for the acquisition of 66% DESFA

Greece, Albania and Italy

Trans Adriatic Pipeline (TAP)

What we do



Storage



LNG



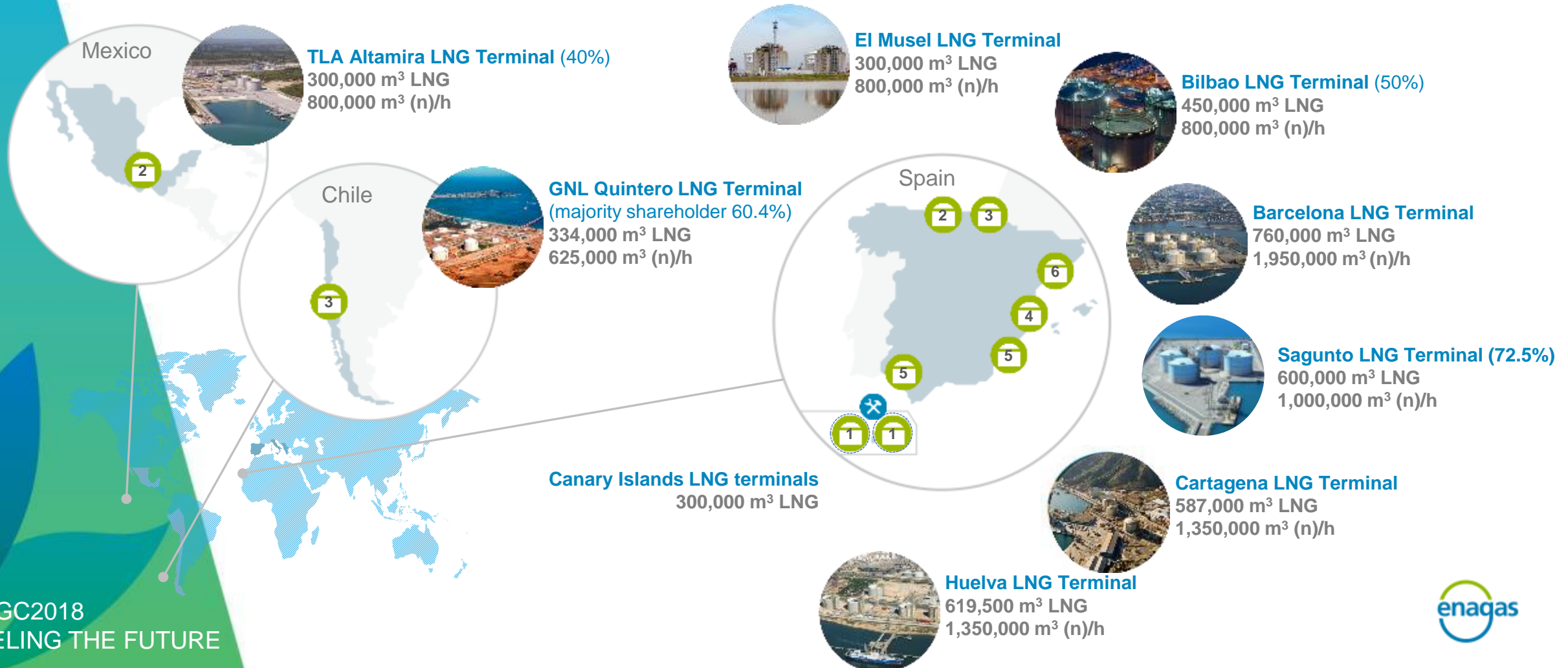
Transmission

Our activities in LNG:

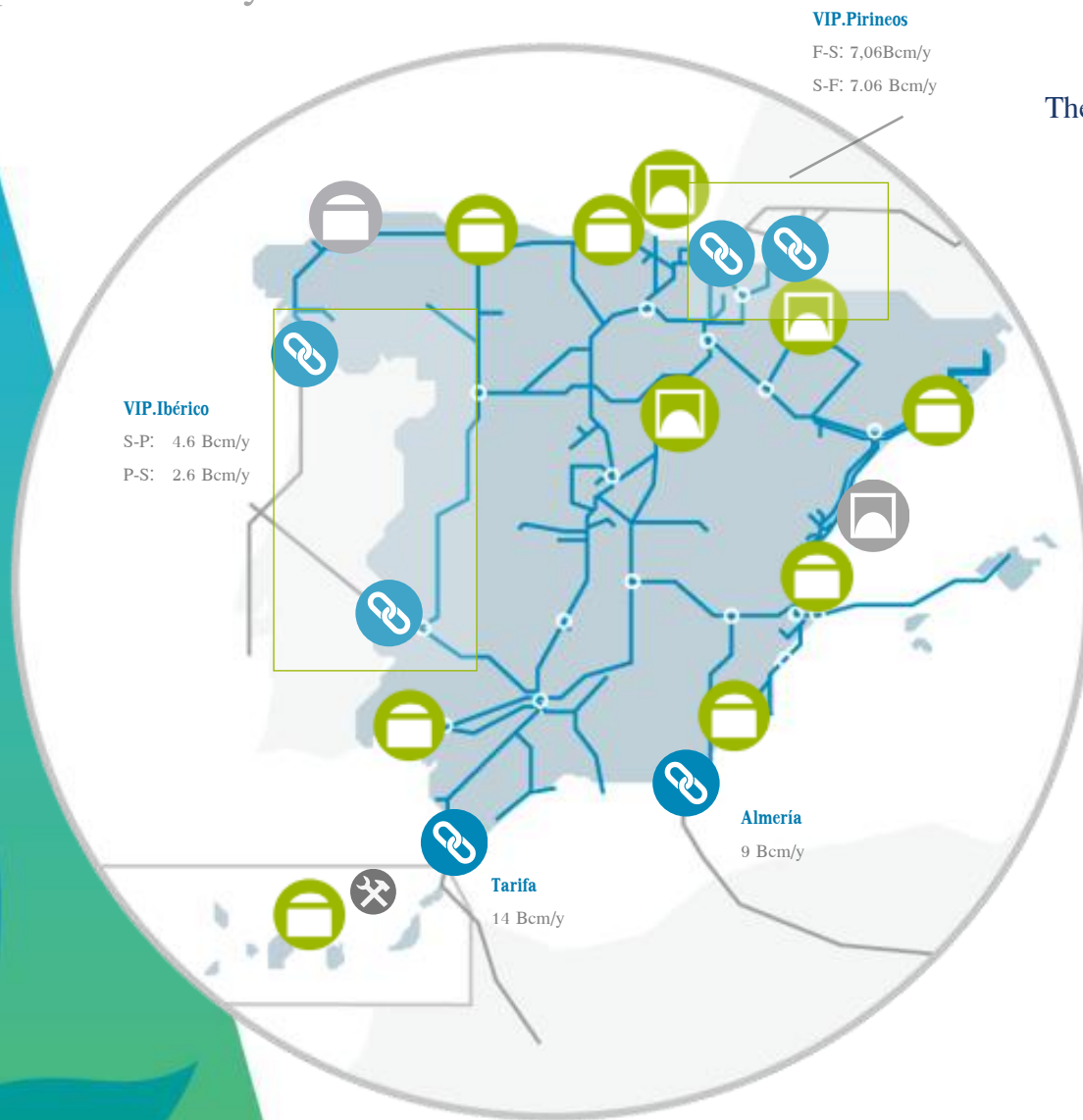
8 LNG Terminals
(+ 2 under development)

Company of the world with more LNG terminals

Enagás has built 13 LNG storage tanks in Spain since 2002



Spanish Gas System



Underground Storage

Transmission

LNG

The **Spanish Gas System** is one of the safest and most competitive.

International connections



- ✓ 2 IC with Portugal
- ✓ 2 IC with France
- ✓ 2 IC with Algeria

32.66 bcm/y
entry capacity

UGS



Diferente types of UGS:

- Depleted field Off-shore.
- Depleted field On-shore
- Aquifer On-shore

32,059 GWh

LNG Terminals

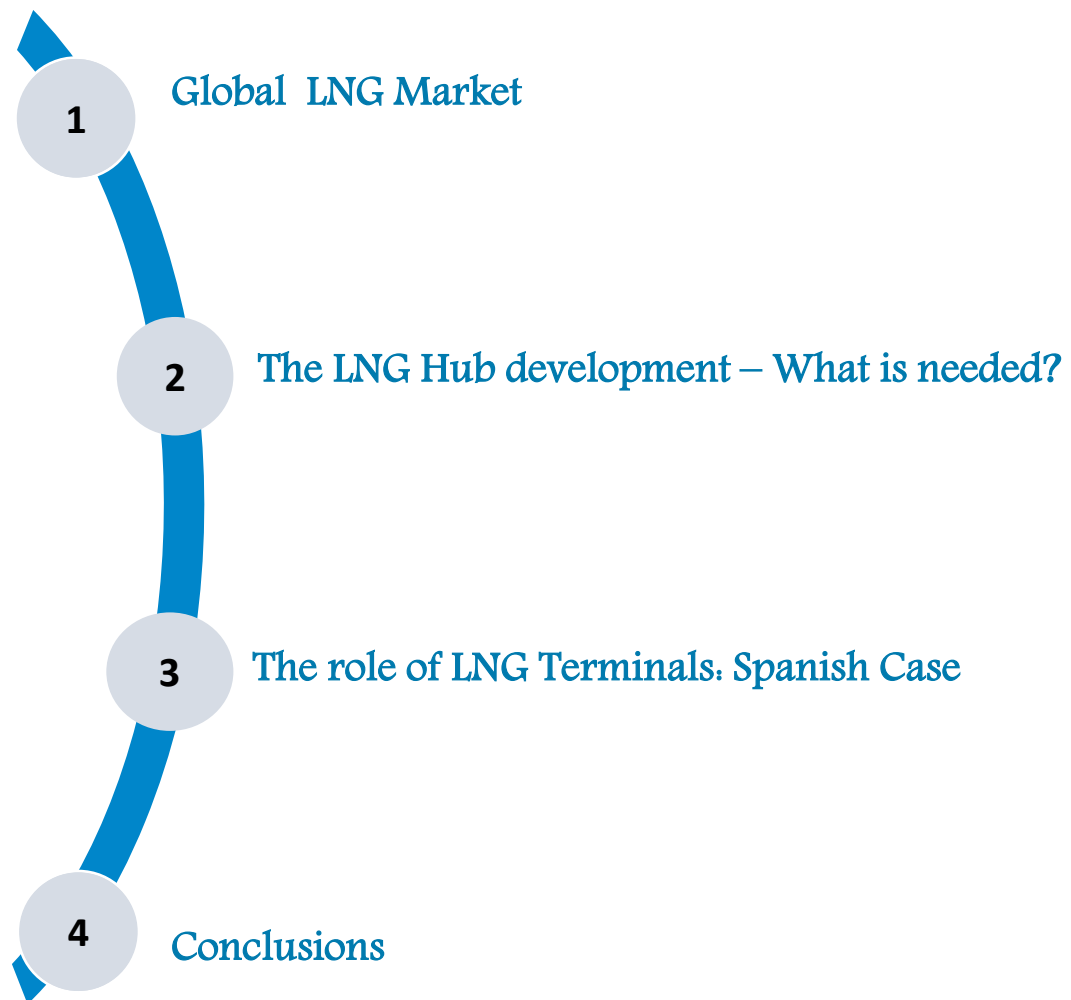


- ✓ 27 LNG tanks
- ✓ 2,138 GWh/day of regasification capacity
- ✓ 3,316,500 m³ of storage capacity

~ 40 %

EU storage capacity

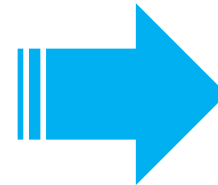
Main Points



New Global LNG scenario



- ☐ Growing LNG spot market
- ☐ New markets and more LNG sources
- ☐ More flexibility in contracts
- ☐ Potential growth of Small Scale demand: Use LNG as a fuel



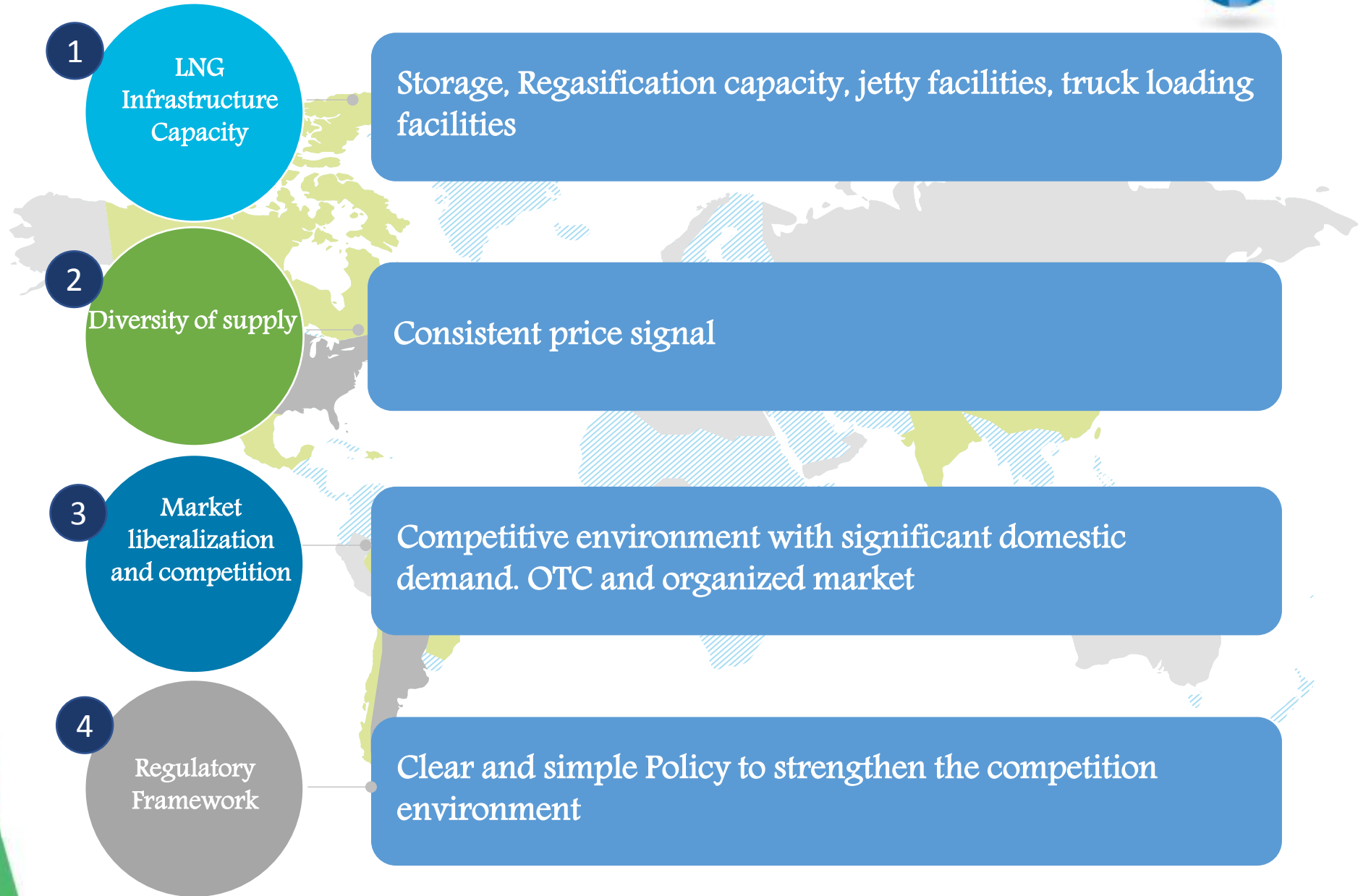
Balanced Market where shippers...

- ✓ long-term contracts or trade in spot markets
- ✓ To cover different demands
- ✓ With flexibility

There is a greater need for....

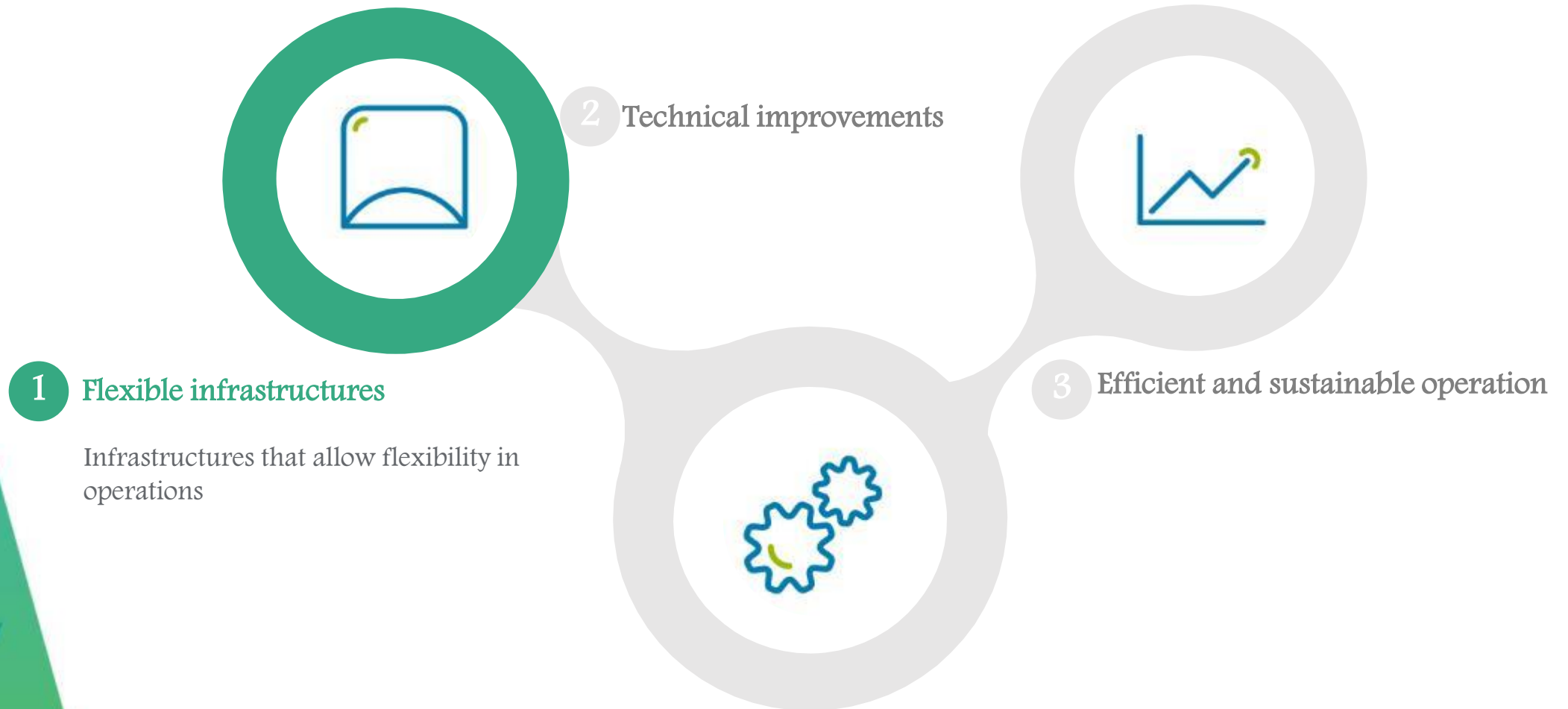
- physical infrastructures with enough capacity
- Increasing flexibility in operation
- More agile procedures

The LNG Hub development – What is needed?



The role of the LNG Terminals

Midstream operators, such as Enagás, have a key role to improve the liquidity in an LNG hub.
We have to act in three main points to consider:



Measures implemented in Enagás

1 Flexible infrastructures



Regasification



Unloading



Storage

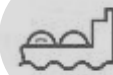
+



Reloadings

Adapting LNG terminals to allow reloadings

Huelva since 1997
Cartagena since 2012
Barcelona since 2014



Small scale + bunkering

Investing in small scale facilities



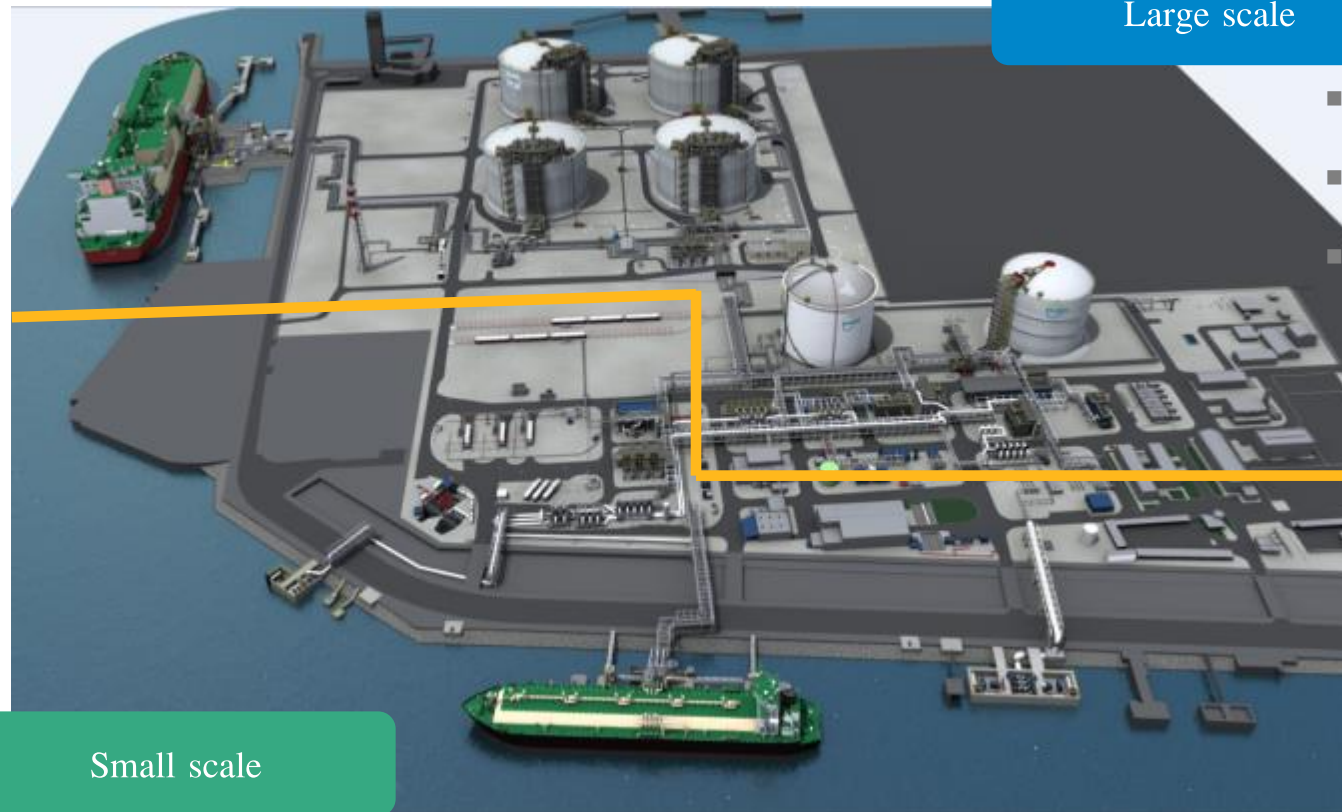
Measures implemented in Enagás

1

Flexible infrastructures

Multimodal LNG Terminal

- New LNG demand
 - New NG uses
- +
- Truck Loading
 - Small Scale Jetty
 - Railroad loading



Large scale

- Logistic flexibility
- Available capacity
- SoS



- Regas/Vaporizers
- Big Scale Jetty
- LNG tanks

Small scale

Large and Small Scale infrastructures coexist

The role of the LNG Terminals

Midstream operator, such as Enagás, has a key role to improve the liquidity in an LNG hub.
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1 Flexible infrastructures



2 Technical improvements

Reloading rate, boil off gas losses rate,
logistic efficiency.



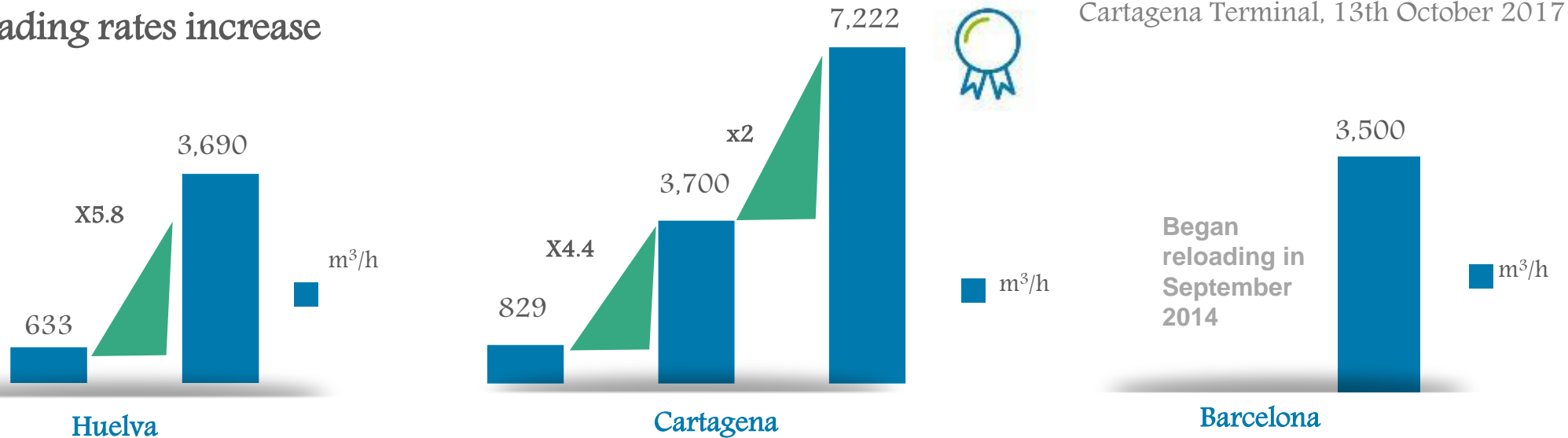
3 Efficient and sustainable operation



Measures implemented

2 Technical improvements

Reloading rates increase

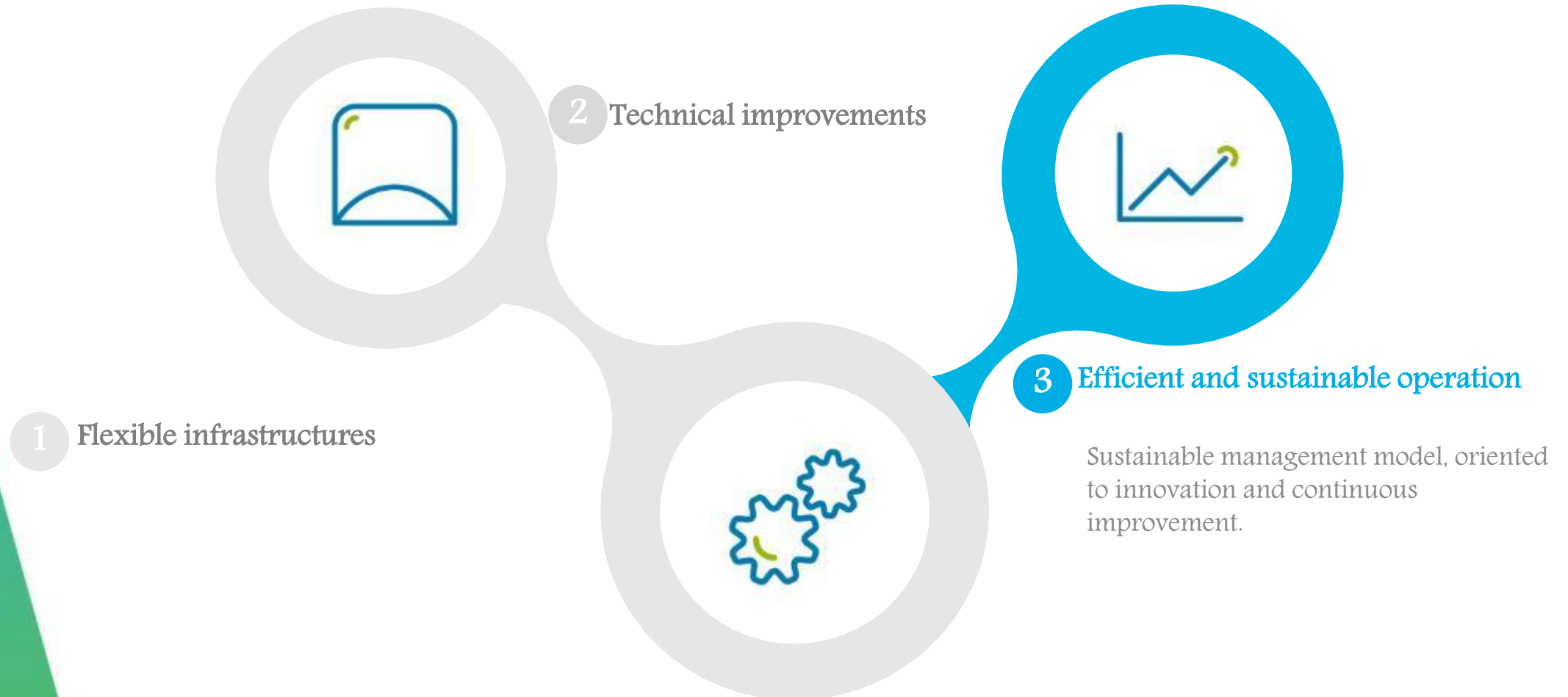


- Reducing shipping costs.
- Allows Enagás to reduce the reloading time by more than 50%.



The role of the LNG Terminals

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Measures implemented

3 Efficient and sustainable operation

The evolution of Enagás' management model



>99%

Availability

-20%

Opex Reduction

-50%

Carbon footprint
reduction since 2014

-27% vs. 2016

Natural gas consumption
savings

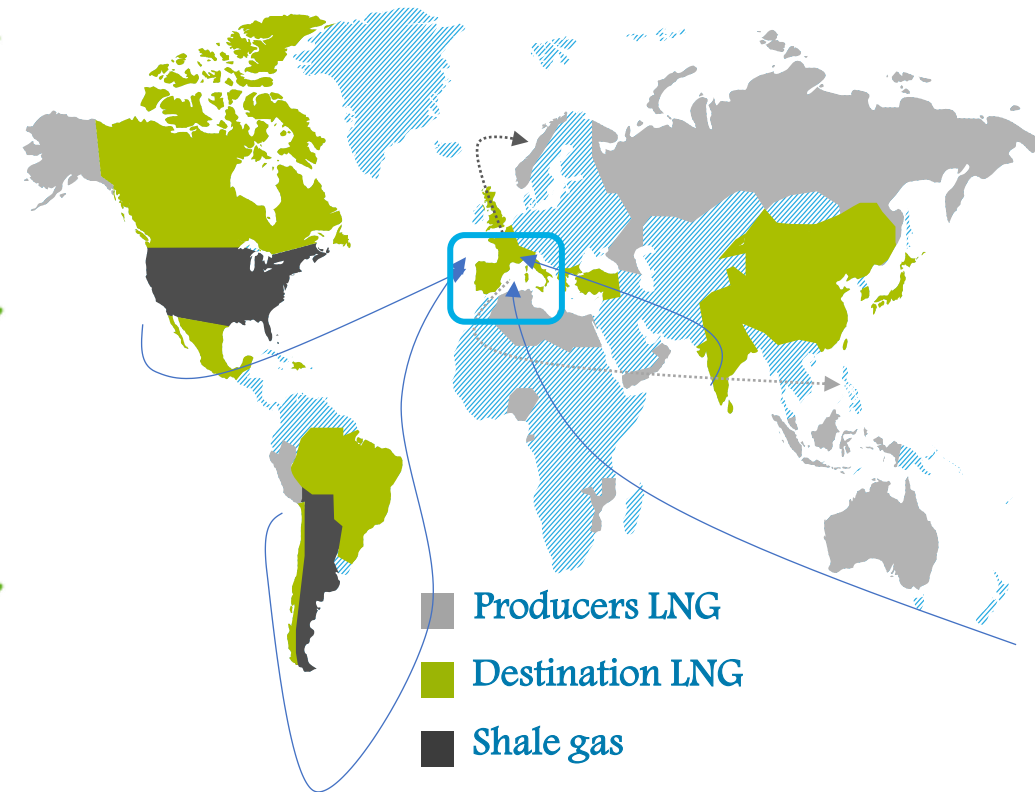
11%

Self-generation
vs. electricity
consumption

Conclusions

- 1** LNG Infrastructure Capacity
Spain is the 3rd country in terms of regasification capacity. The 1st in Europe ✓
- 2** Diversity of supply
More than 10 different sources ✓
- 3** Market liberalization and competition
More than 150 shippers
>68 very active shippers
The most liquid terminals in EU ✓
- 4** Regulatory Framework
New Regulation is coming to reinforce the competition, the market and the services ✓

Strategic location of Spanish LNG Terminals ✓



“Iberian Peninsula is ready to be consolidated as a **reference LNG Hub at a global level”**



Thanks for your attention

“Iberian Peninsula is ready to be consolidated as a **reference LNG Hub at a global level”**