



Enel Challenge – one shot

Gas markets overview

Speakers:

Ludovica Gasparini – Head of International Gas Trading

Antonio Giansanti – European gas hubs trader

Lucia Pastorello – European gas hubs trader

Giovanni Venticinque – Structuring trader

Agenda

01

Introduction

- Enel strategy
- Being Enel
- Global Wholesale & Trading

02

Gas Fundamentals

- Demand
- Supply & LNG
- Balance & Storage

03

Trading

04

Q&A



Introduction



A person with long hair, wearing a plaid shirt, is seen from behind, paddling a wooden canoe on a calm lake. The sun is low on the horizon, creating a bright reflection on the water and a lens flare effect. The background shows a forested shoreline and mountains under a hazy sky.

enel

**Shape the Future
of Energy with Us.**

We are a leader in the new energy sector



By number of customers. Publicly owned operators not included
 By installed capacity.
 Includes customers of free and regulated power and gas markets
 I numeri si riferiscono al 1H 2023

Enel global Business Line



**ENEL GRIDS
& INNOVABILITY**



**ENEL GREEN POWER
& THERMAL
GENERATION**



**ENEL X
GLOBAL RETAIL**



**ENERGY
& COMMODITY
MANAGEMENT**



Enel strategic plan 2024-2026

Enel Group investments



18,6

**billions of euros
for Grids**

over half of our investments
for more digital, resilient,
efficient network infrastructure

12,1

**billions of euros
for Renewable**

to generate ca.13.4 GW of new
renewable capacity, achieve an
overall capacity of ca. 73 GW
and reach Zero Emissions
capacity 86% by 2026

3,0

**billions of euros
for Customer**

improve and innovate
electrification services for our
customers to be protagonists of
decarbonization goals

Sustainable future



Sustainability is at the center of our business model focused on the production of energy from renewable sources, infrastructure digitization and electrification of consumption.





We work in an **inclusive, safe and sustainable environment**, open to change. We promote **gender equality** and value the **diversity and uniqueness** of individuals by exploring **talent** and nurturing their **potential**. We offer opportunities for **growth and professional development** to lead the challenges of today's world and shape together the **future of energy**.

Through specific initiatives and programs, Enel is committed to improving the **well-being of employees** and the satisfaction of their **personal and professional needs**, promoting inclusion and enhancing **skills** and talents.

KEY SOFT SKILLS

Are you with us?

TEAM
WORKING

CUSTOMER
CENTRICITY

DECISIVENESS
&
DELIVERY

COOPERATION
&
INCLUSION

PERSONAL
AGILITY
&
LEADERSHIP

CONTINUOUS
LEARNING

Stay tuned..



Enel Group



@EnelGroupIT



Enel Group



enelvideo



Enel Italia



@enelitalia

Join Us



https://jobs.enel.com/it_IT/SpontaneousApplication

Enel global Business Line



**ENEL GRIDS
& INNOVABILITY**



**ENEL GREEN POWER
& THERMAL
GENERATION**



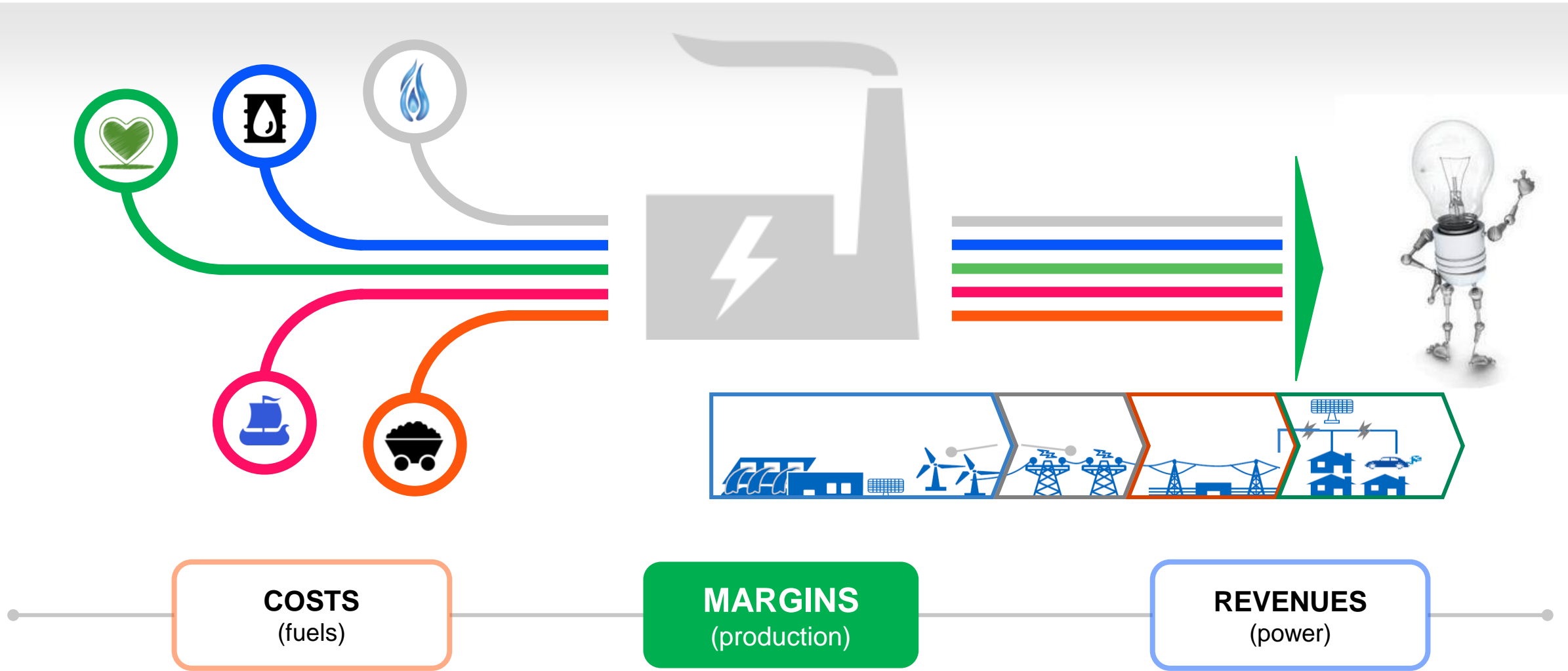
**ENEL X
GLOBAL RETAIL**



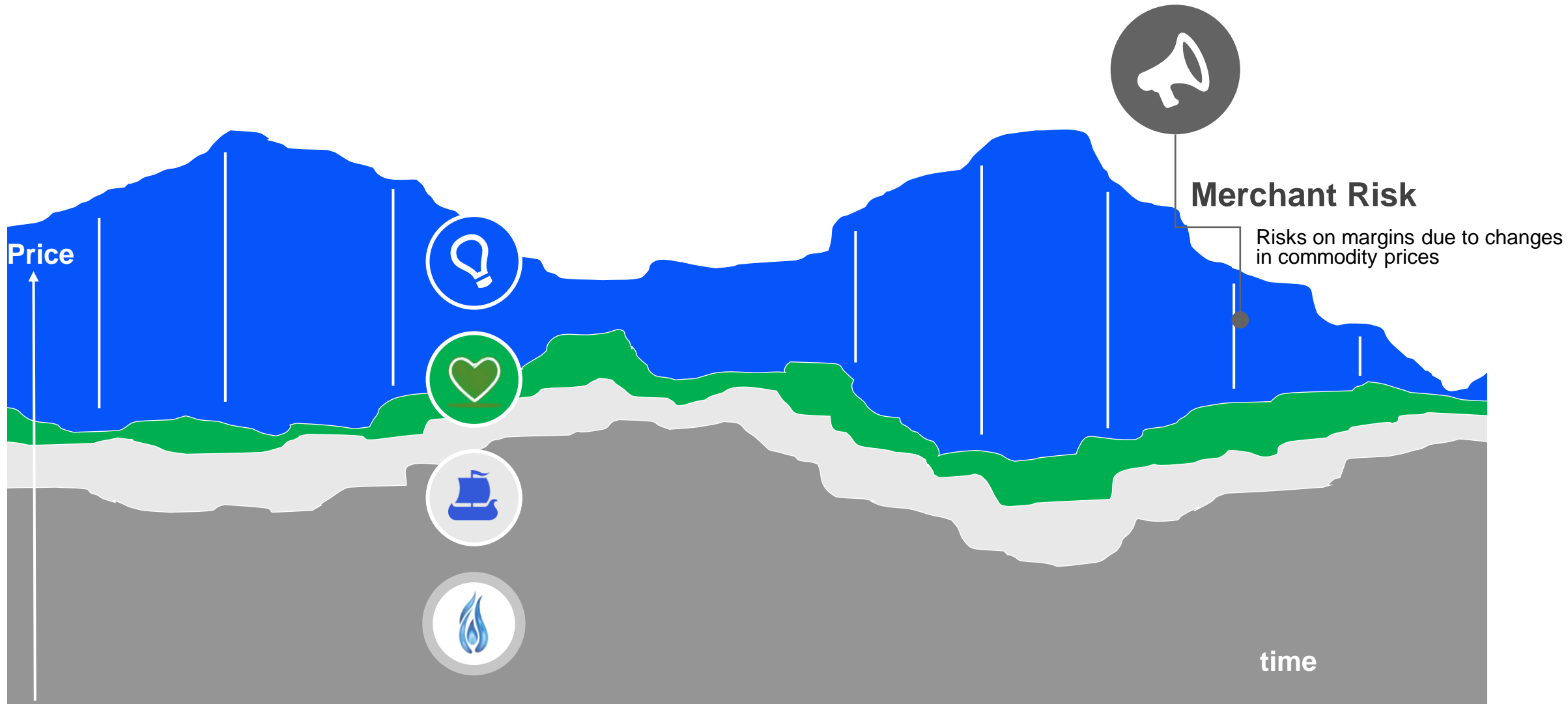
**ENERGY
& COMMODITY
MANAGEMENT -
PRICING OFFICER**



Starting point: the merchant risk (1/2)



Starting point: the merchant risk (2/2)



Global Energy and Commodity Management



Mission & Responsibility



Physical sourcing of fuels

Manage physical needs, both minimizing costs and assuring the optimal availability to the plants



Retail

Provide guidance for pricing of commercial and trading products and to forecast clients consumption and behavior

Maximization of Enel gross margin and optimization hedging strategy and commodity risk exposure

WHAT?

**WHO?
HOW?**



Price Risk Management Hedging strategies

Analyze price exposure of the portfolio, reduce price risks, maximize margins (up to two three years)



Access to all wholesale energy markets

Energy wholesale markets developed to negotiate on commodity derivatives, for forward deliveries, up to a few years ahead

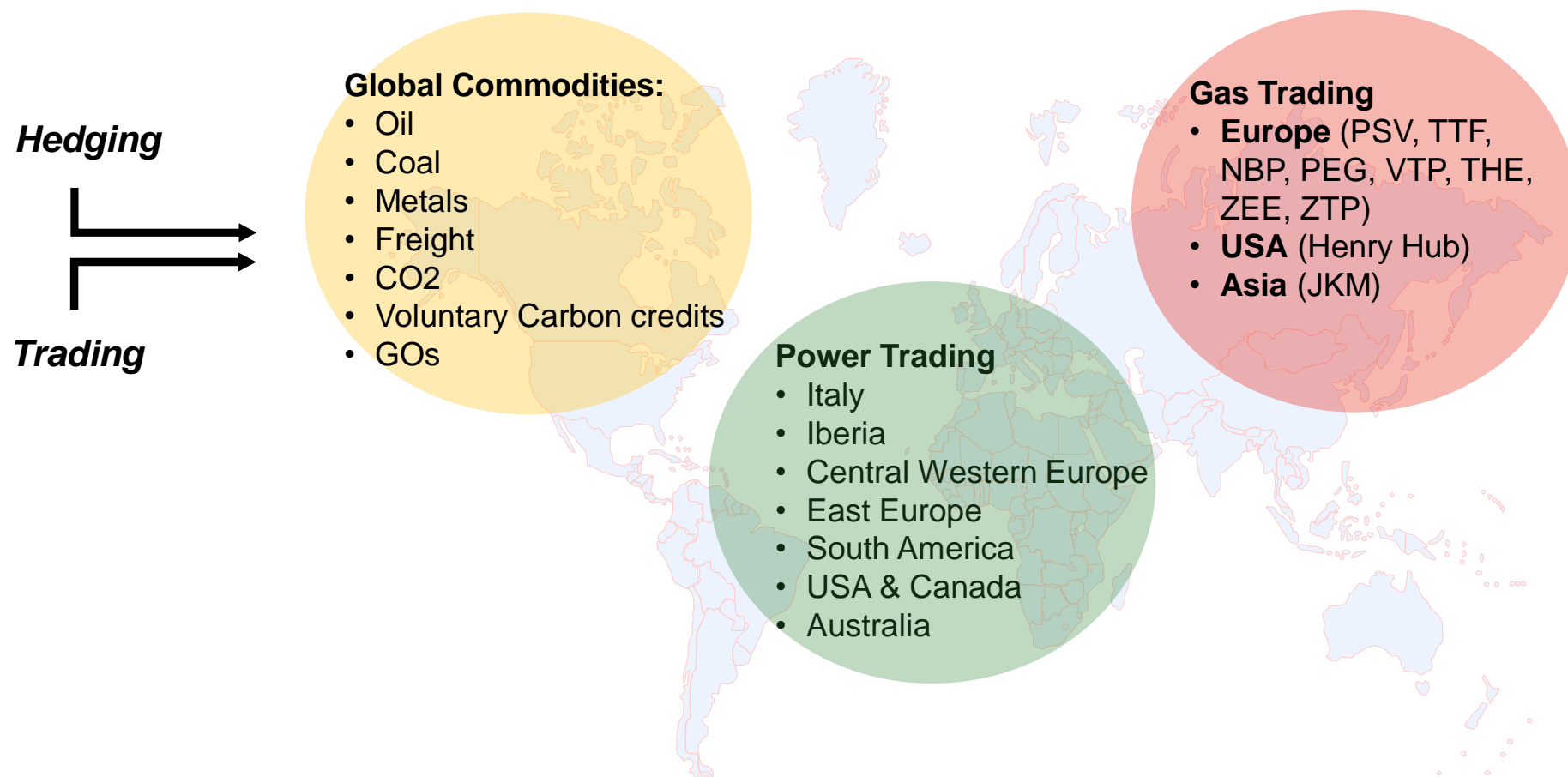


Trading

Extract maximum value from the volatility of forward markets

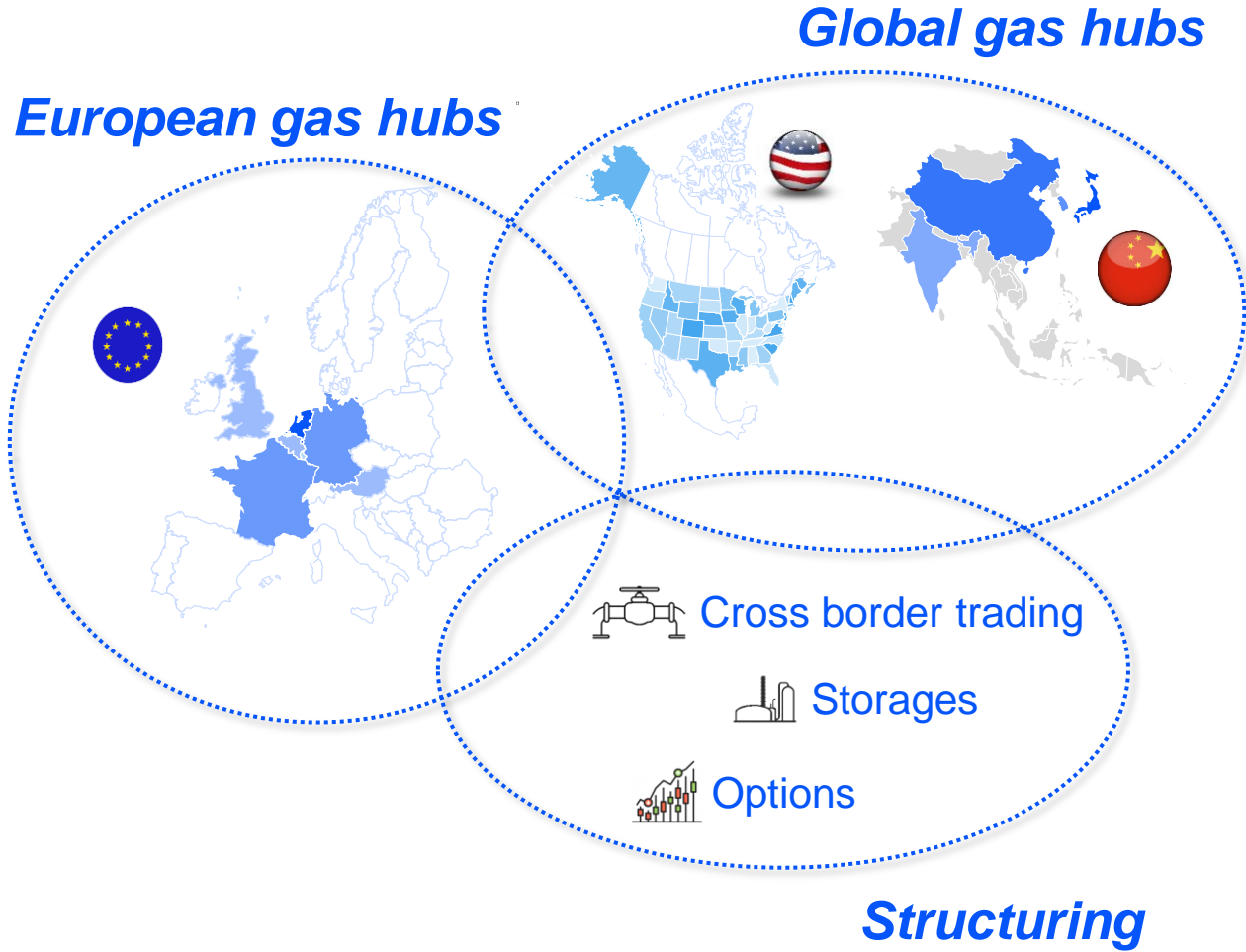
Global Wholesale & Trading

Global Energy Commodity Markets



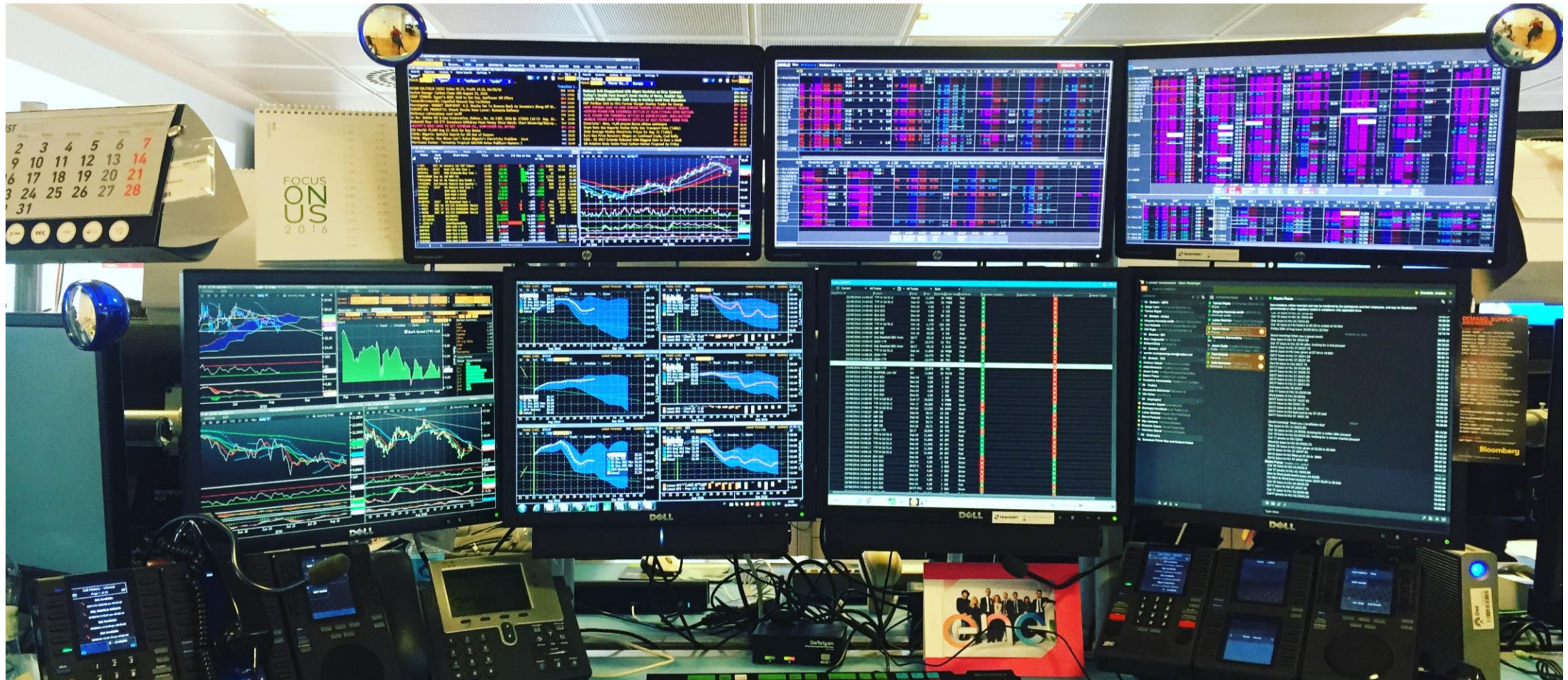
Active on all main global energy commodity markets, from plain vanilla to structured and sophisticated products, to extract value from the volatility

International Gas team



Global Wholesale & Trading

<https://www.youtube.com/watch?v=Dg1uDSunkqo>





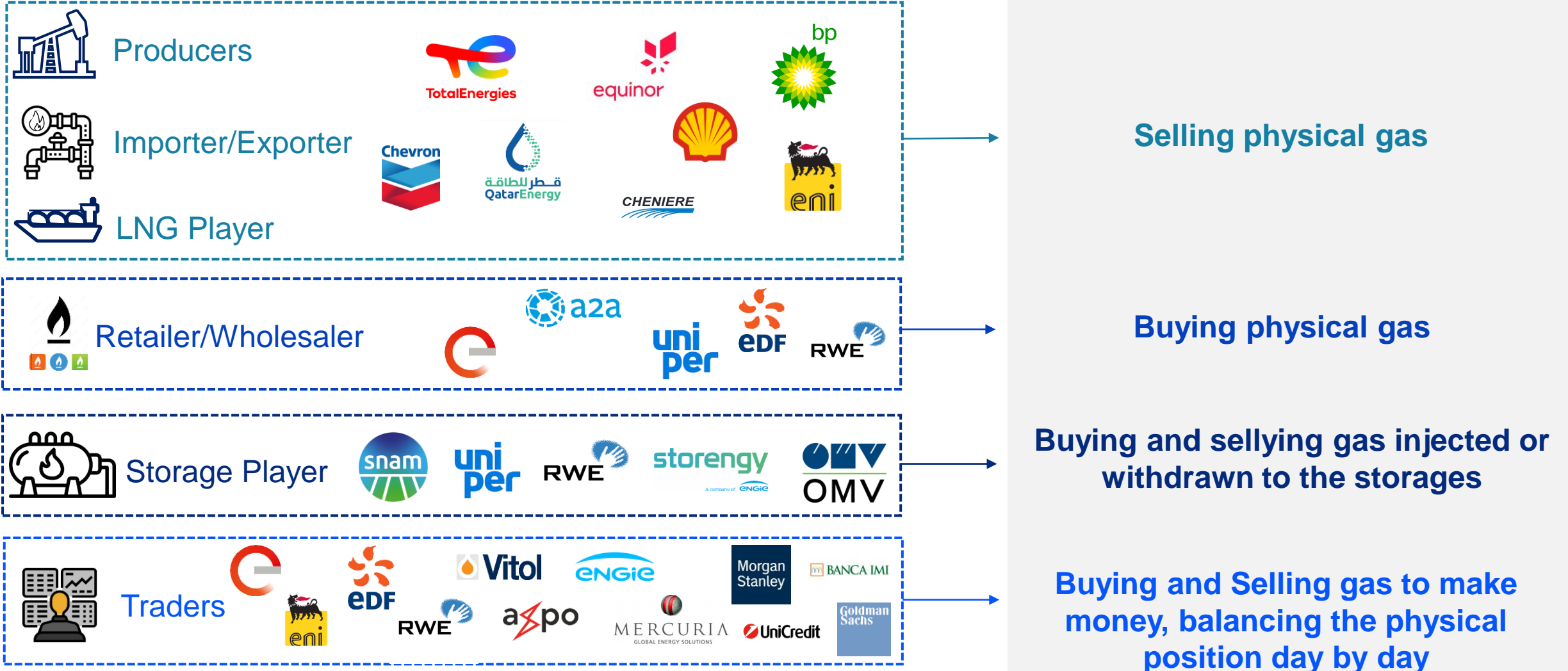
Gas Fundamentals

How the gas market works



Who?

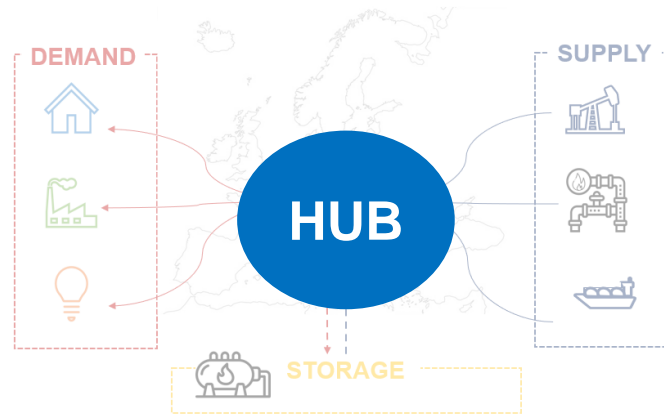
Why?



How the gas market works

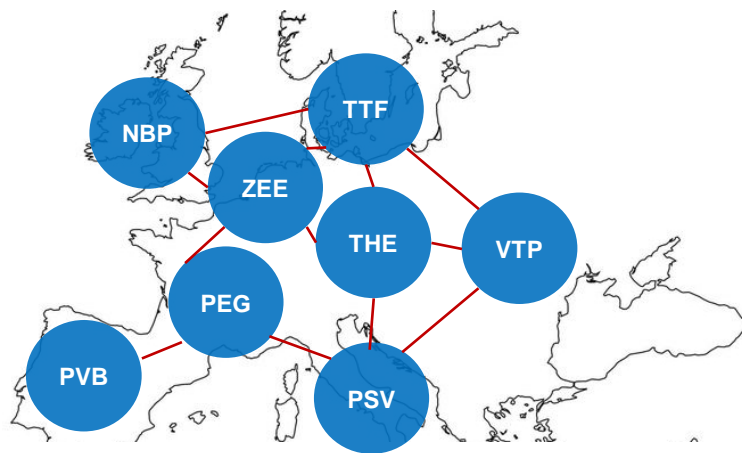


Where?



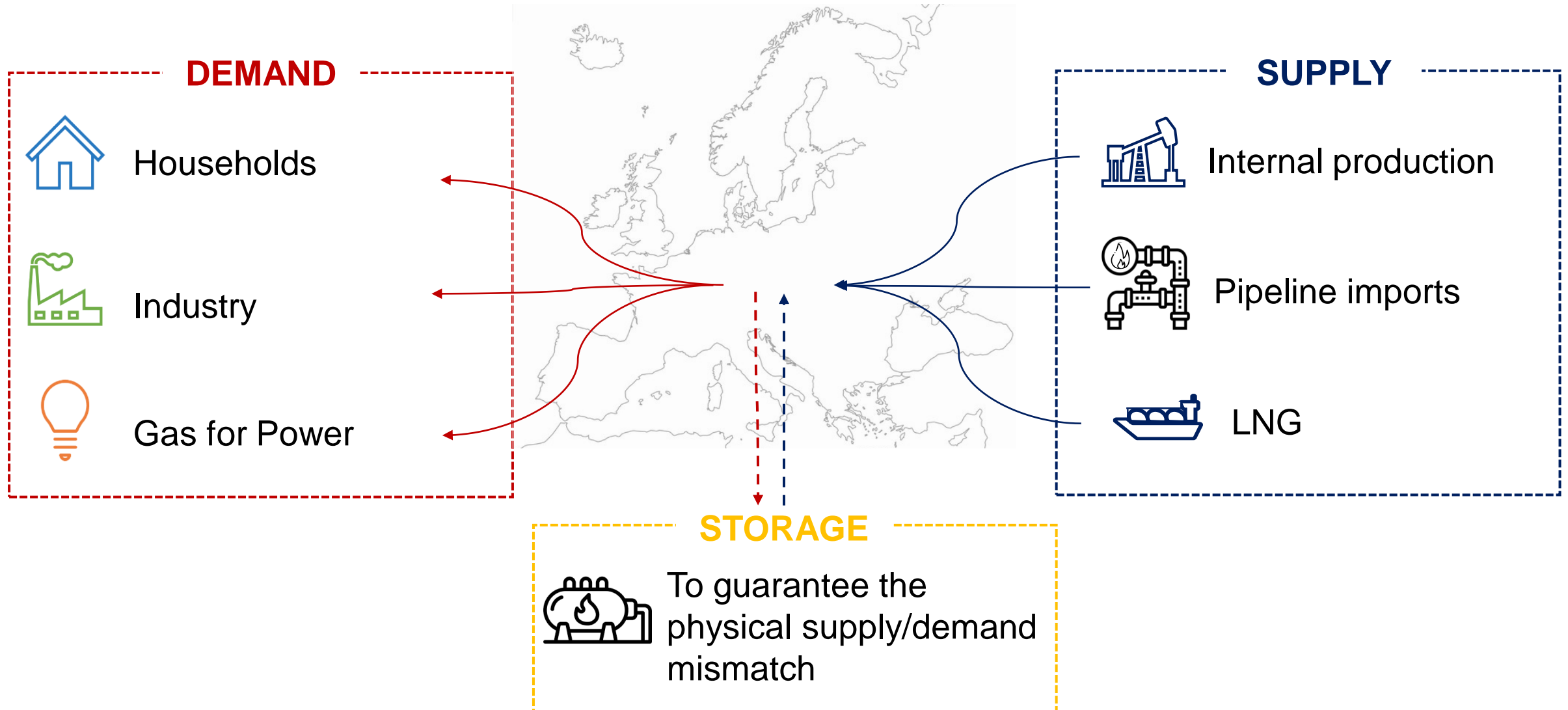
Virtual Hub

- Market players buy/sell gas standard products, wherever the physical gas comes from.
- Each HUB has at least one TSO (*transmission system operator*).
- TSO guarantees physical gas supply/demand balance: Everyday the spot products (*Within Day and Day Ahead*) bought have to match the sold ones (balancing system).



Each Country has his Virtual Trading Point

How the gas market works





Demand



Demand



LDZ
Local Distribution Zone

Households needs

Heating demand

Seasonality

Higher during
November - March

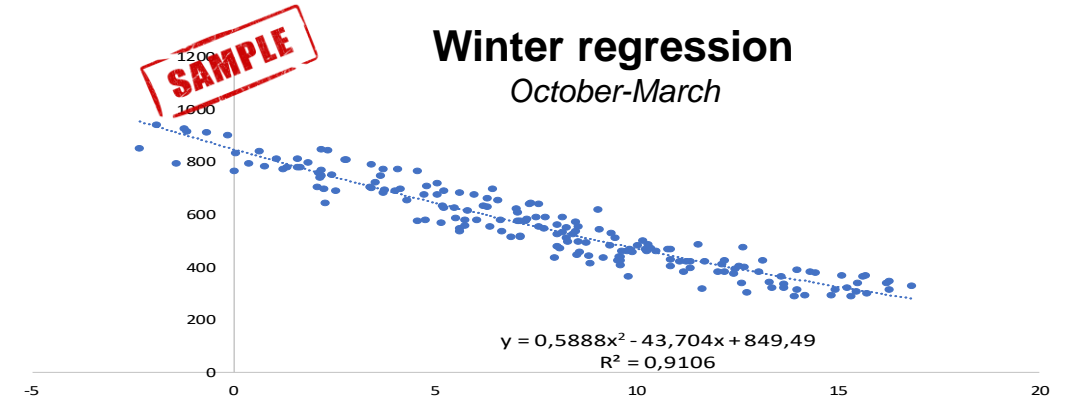
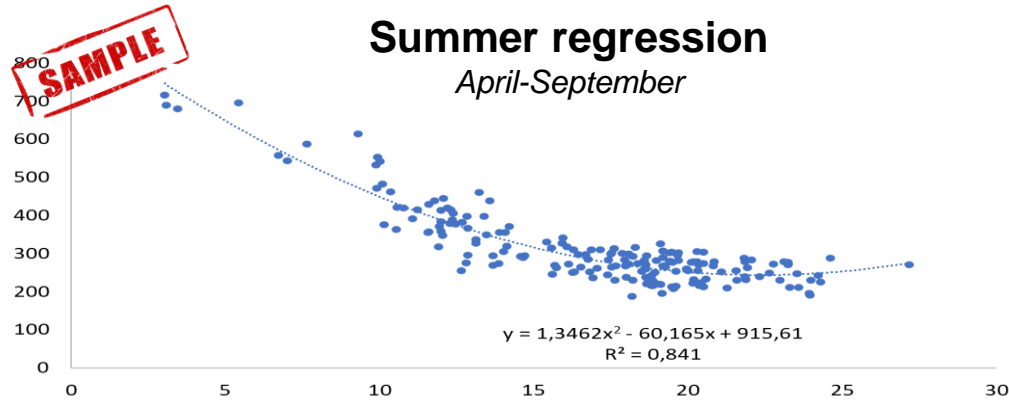
**Temperature
correlation**

Negative correlation
with temperatures

Energy efficiency

Higher energy efficiency
– lower demand

**Climate
changes effect**



Demand



INDUSTRIAL

Correlated with GDP and Macro economics outlook

Highly price - sensitive

More stable than the LDZ demand

Subject to the industry production efficiency



Gas for Power

Positive correlation with power consumption

Cooling/heating demand depending on the Country

Negative correlation with Renewable Energy Supply

 Hydro
  Wind
  Solar

Affected by other fuels prices


 CO₂


Coal Phase-Out

Higher gas for power demand

Demand

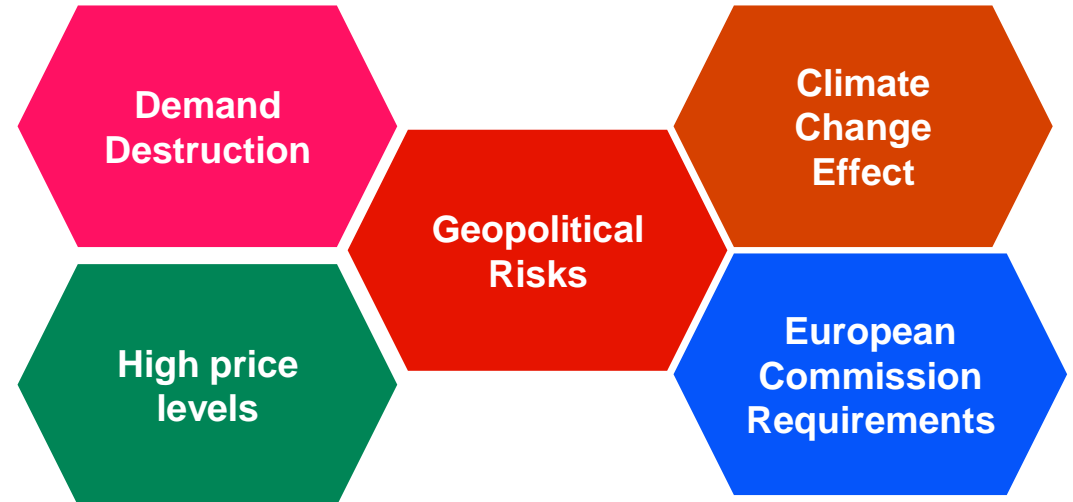


TOTAL

During the summer period (Apr-Sept) LDZ demand is 45% of total demand.

During the winter period (Oct-Mar) the LDZ demand is 65% of total demand.

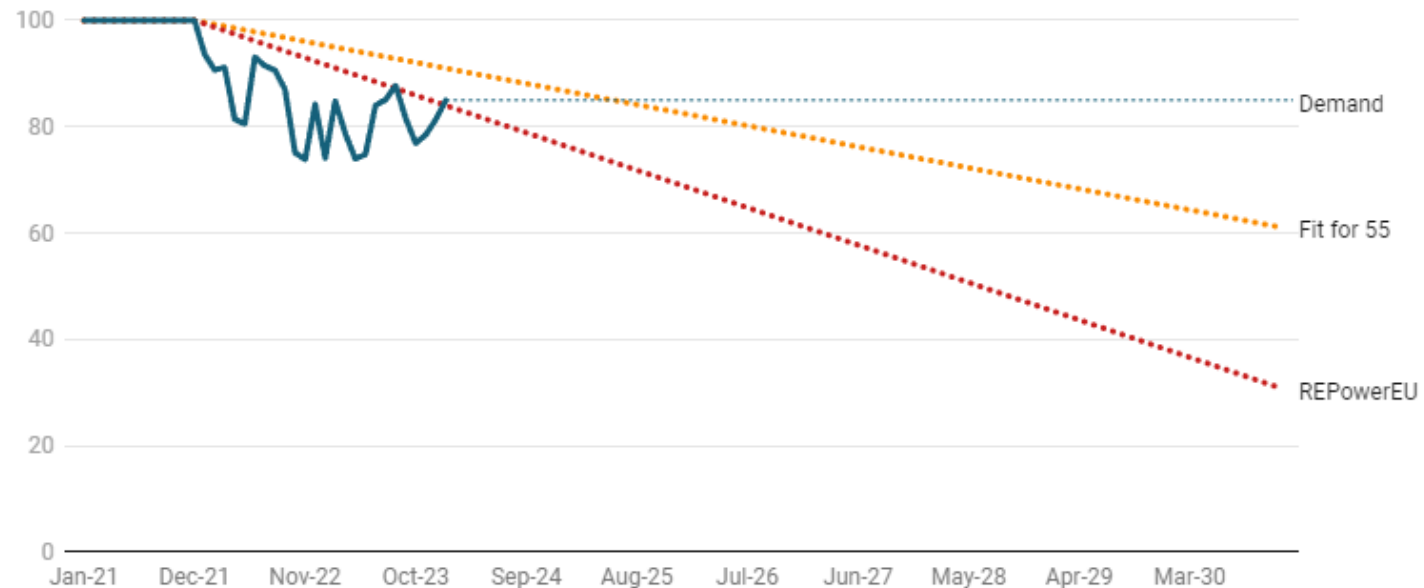
During 2023 total demand decreased by -17% vs 2021.



EU demand targets



EU natural gas demand and policy targets, indexed monthly to 2021



Fit for 55
Reducing
greenhouse
gas
emissions

**- 55% 2030 vs
1990**

REPowerEU
Following
Russia's
invasion of
Ukraine

**Ambitious target
on gas demand**

A linear reduction is assumed between 2021 and 2030 for policy targets, applied on an annual basis (eg all months in 2025 are x % lower than demand in 2021). Actual demand is calculated as a proportion of 2021 demand on a monthly basis (eg April 2023 is compared to April 2021).

Source: Bruegel • [Get the data](#) • Created with [Datawrapper](#)



Supply & LNG

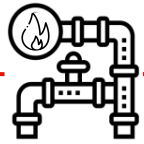
How the gas market works

- *The sources of supply*



National Production

Consists of domestic production in European countries. The largest producer was the Netherlands before the final closure of Groningen



Import via pipeline



Until the war with Ukraine, **Russia** was the EU's largest gas supplier. Starting from March 2022, the flows have almost disappeared.



Norway is the main European partner. Supplies vary based on the maintenance cycles of the systems.



Supply from Africa (**Algeria**) and **Azerbaijan** increased in response to the Russian cut.



LNG

- Liquefied gas transported by ships and then returned to the gaseous state at the port of destination.
- Main exporters in EU: USA and QATAR.
- Subject to global competition.
- Increased in recent years to allow the replacement of Russian gas and thanks to the increase in the EU's regasification capacity via FSRU (Floating Storage Regasification Units).

Total Supply

What has changed compared to 2021?

Total gas offer reduced by -20%.

Russian gas reduced by -94%.

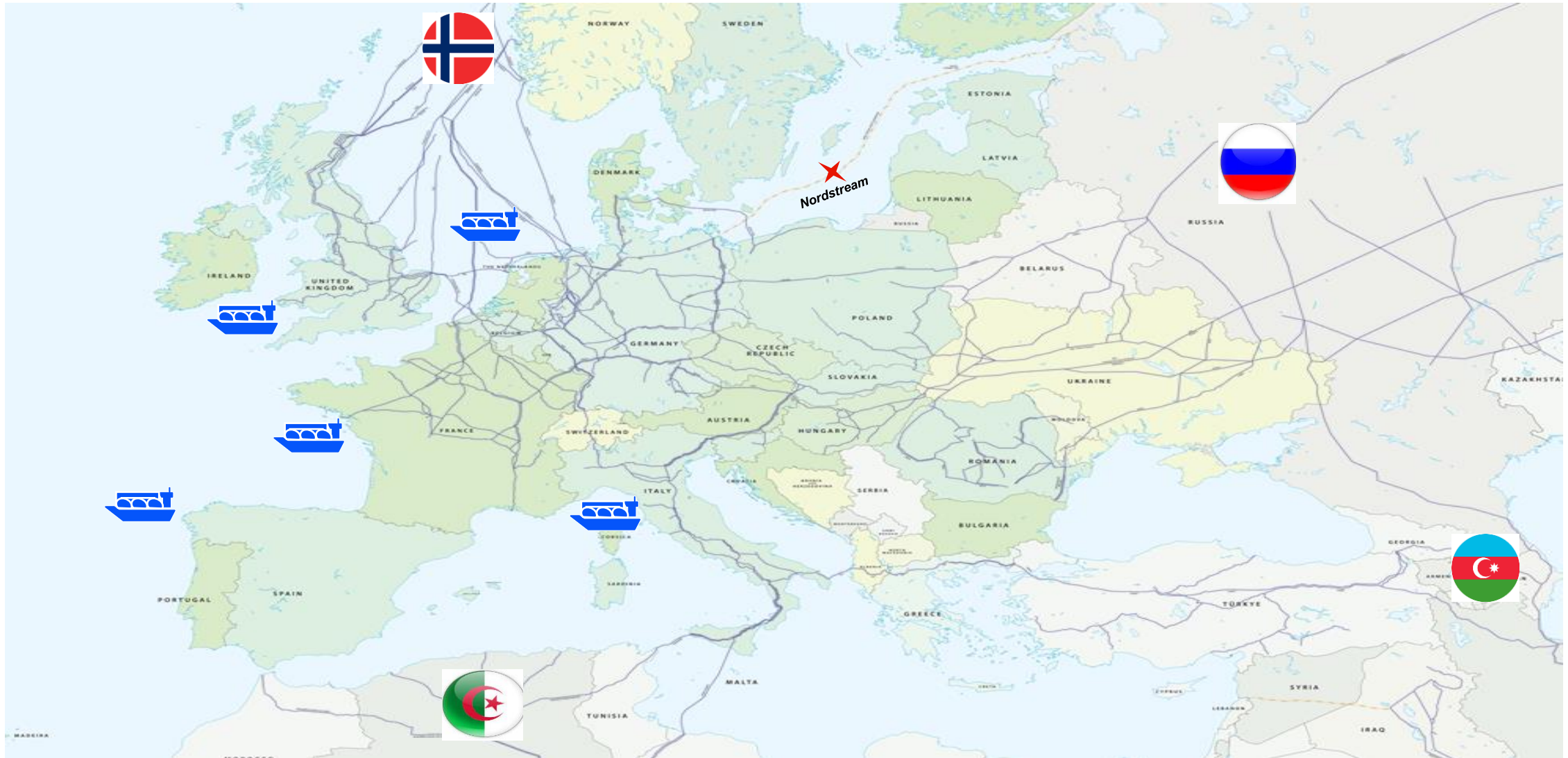
LNG increased by +74%.

How the gas market works

- *Import via pipeline*



Source: Entso-g



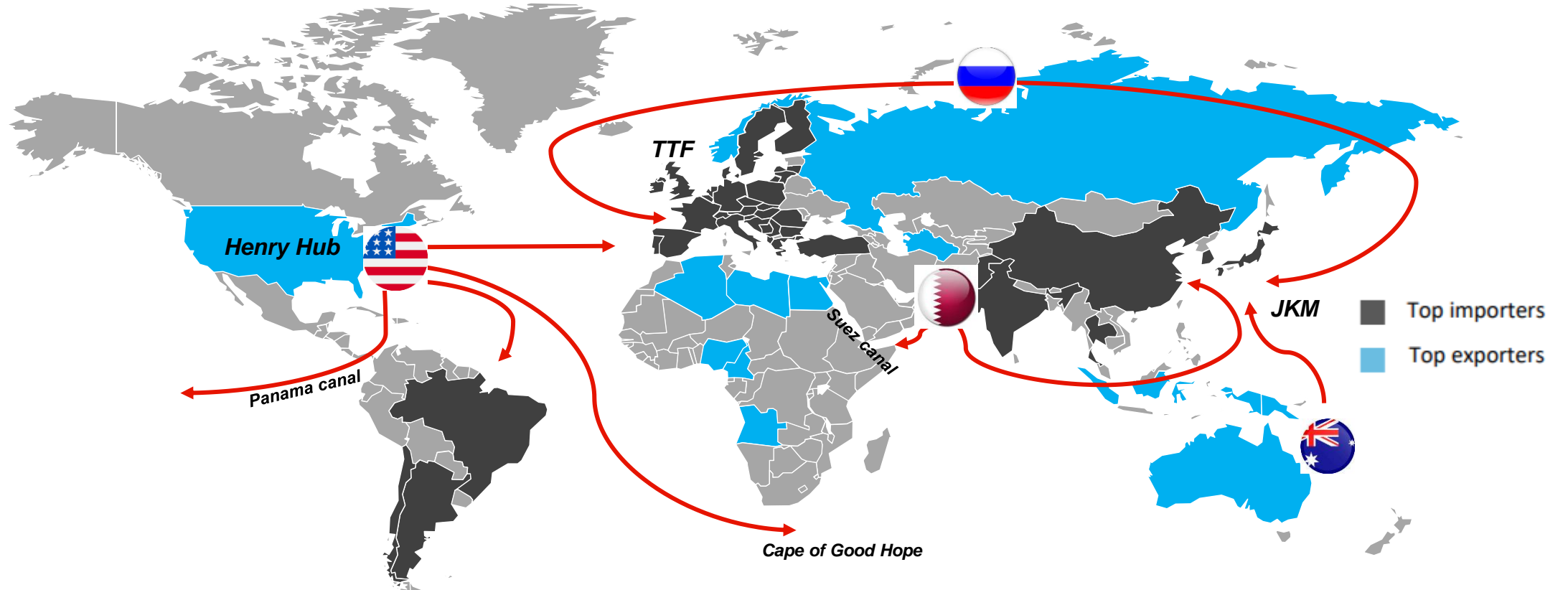
How the LNG market works

- Dunkirk LNG Terminal Video



Video Link: <https://www.youtube.com/watch?v=GFueeTzdKUs>

How the LNG market works



Its liquefied state allows it to be transported even for very long distances, transforming the market from local to global

How the LNG market works

- *The Shipping cost*



Freight Cost: coincides with the daily cost to rent a ship. It may vary depending on the size of the ship and its cruising speed

Boil-Off: it is the natural tendency of gas to return to its original gaseous state during transportation

Channel change rates : Panama and Suez constitute two of the main channels through which LNG tankers must transit to reach the port of destination

It varies depending on the number of days needed to reach the destination

Sunk cost: the quantity of regasified gas is less than the gas liquefied at origin

Cost also depends on transit and weather conditions

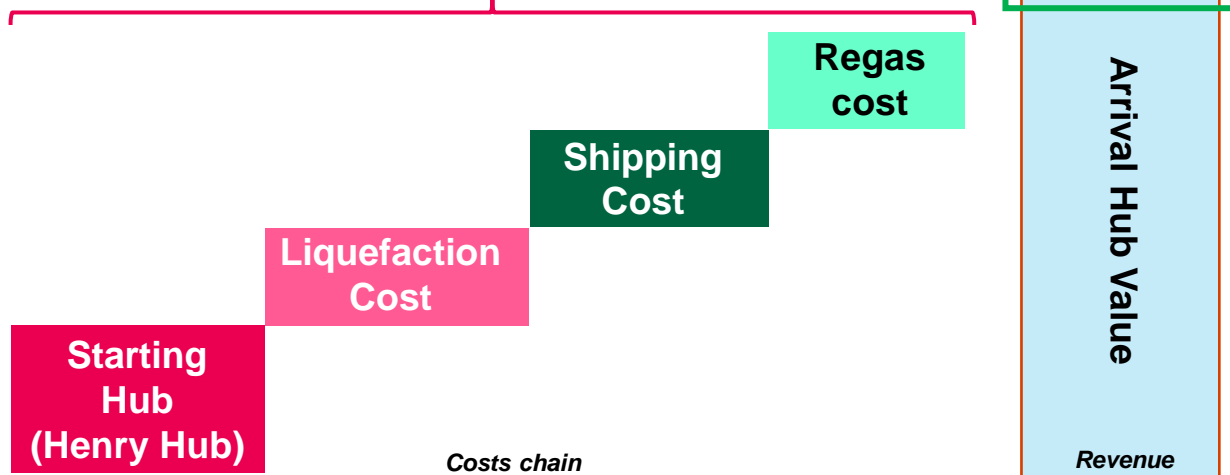
The total Shipping cost is the transport cost that the buyer of the LNG contract must bear to bring the gas from the delivery point, once liquefied, to the regasification terminal

LNG Economics

- The Payoff of an LNG Contract



The logistics chain of an LNG ship has Revenues and Costs:



The *final value (Netback or Profit π)* of an LNG contract can be expressed as follows:

$$\pi_t = R_t - O_t - S_t - r$$

Where:

R_t : Price of gas at the resale hub

O_t : Price of already liquefied gas at the purchasing hub

S_t : Shipping costs

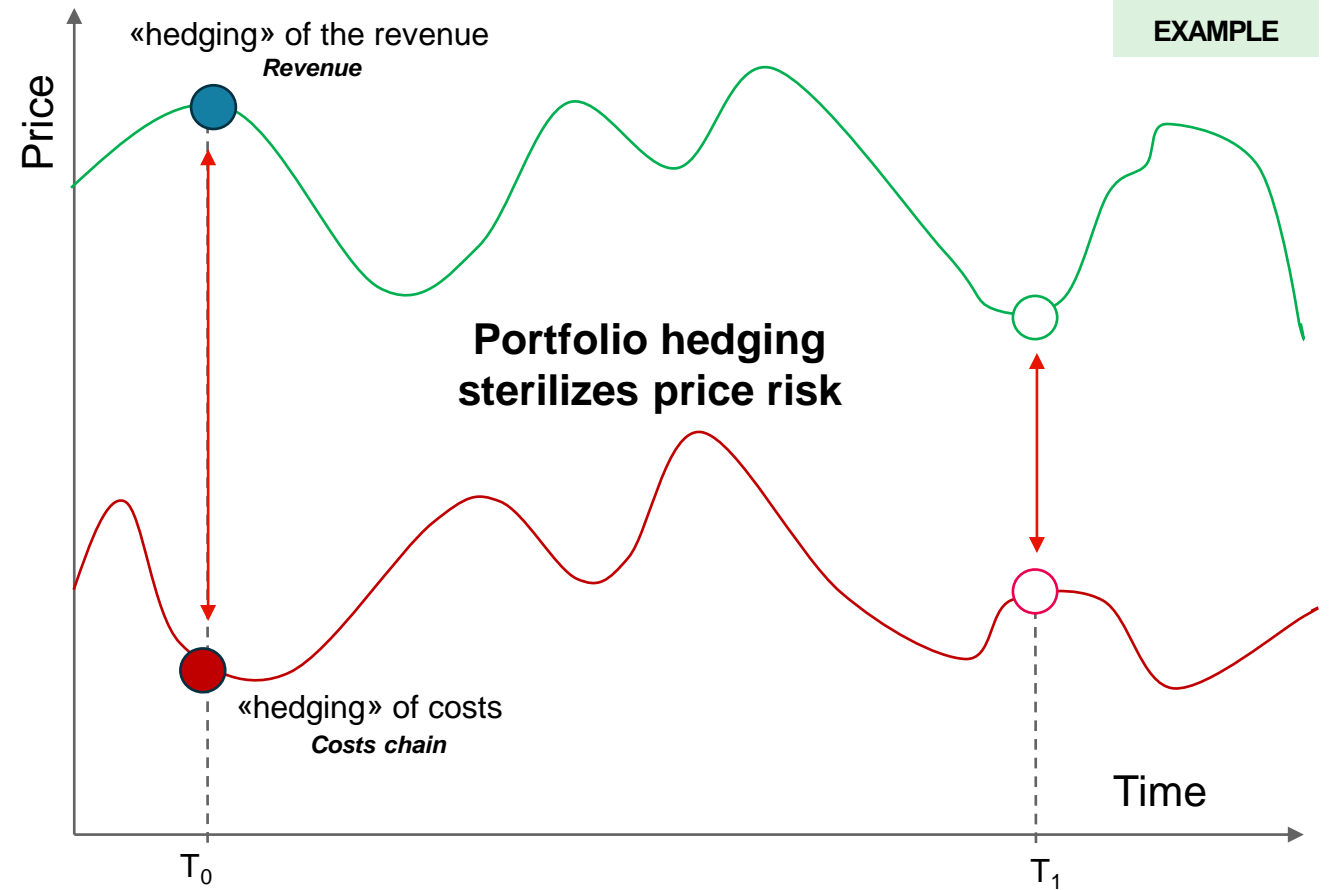
r : Regasification costs

LNG Economics

Portfolio hedging of an LNG vessel



- In the futures market, operators can manage their assets in **advance of delivery** and **lock in the margin** of an LNG contract;
- The interest of operators is both in selling (revenue hedging) and in buying (cost hedging), **to cover the future price risk with respect to the moment of physical delivery of the gas**, based on system voltage forecasts;



Physical delivery of the ship:

Closure of coverage and exchange of economics of the operation

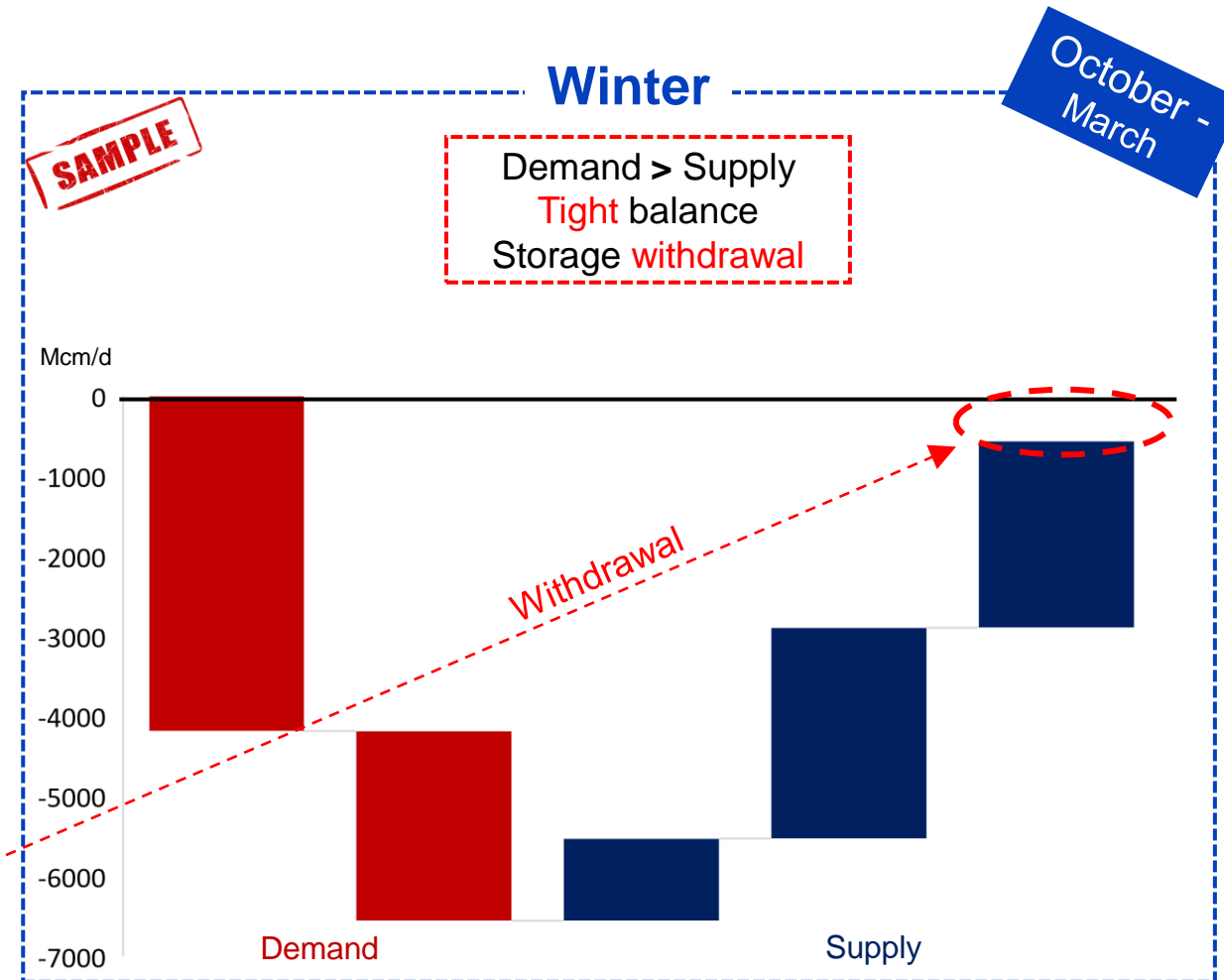
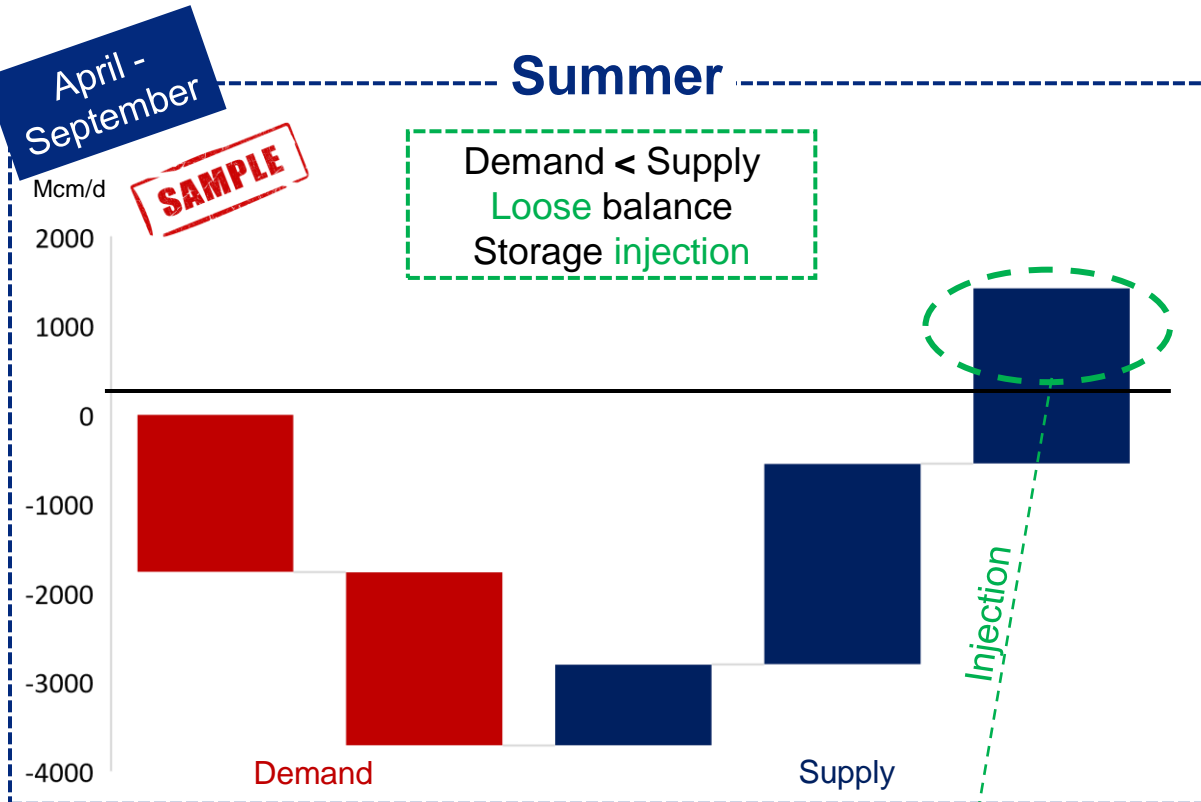


Balance & Storage

How the gas market works



Tightness = Supply - Demand



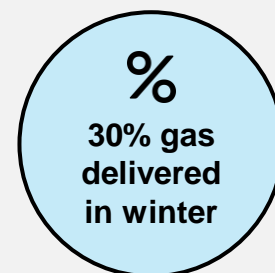
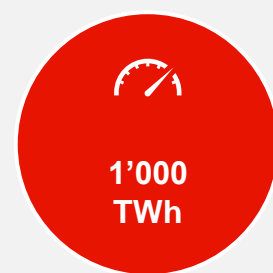
Storage

Some words ...



Source: GIE

FONTI: European Commission, March 2022



**Annual auctions
(October to February)**



Fixed reserve price

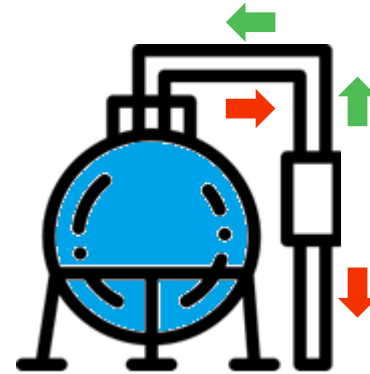
The storage

Use of facilities, terminology and technical hints



Working Gas Volume

The maximum volume of gas that can be contained by a facility. It is not constant but depends on the storage cycle



Injection

Daily rate at which gas can be injected into the storage site

Withdrawal

Daily rate at which gas can be extracted from the storage site

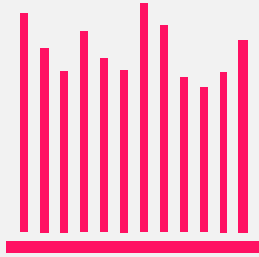
type of site

geological properties

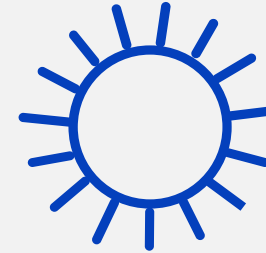
volume of gas

internal reservoir pressure

Market principles benefiting gas storages



**Seasonal and daily
volatility**



**Supply security enhancement
as supply backup in case of
emergency ... insurance policy**



Peak shaving during winter

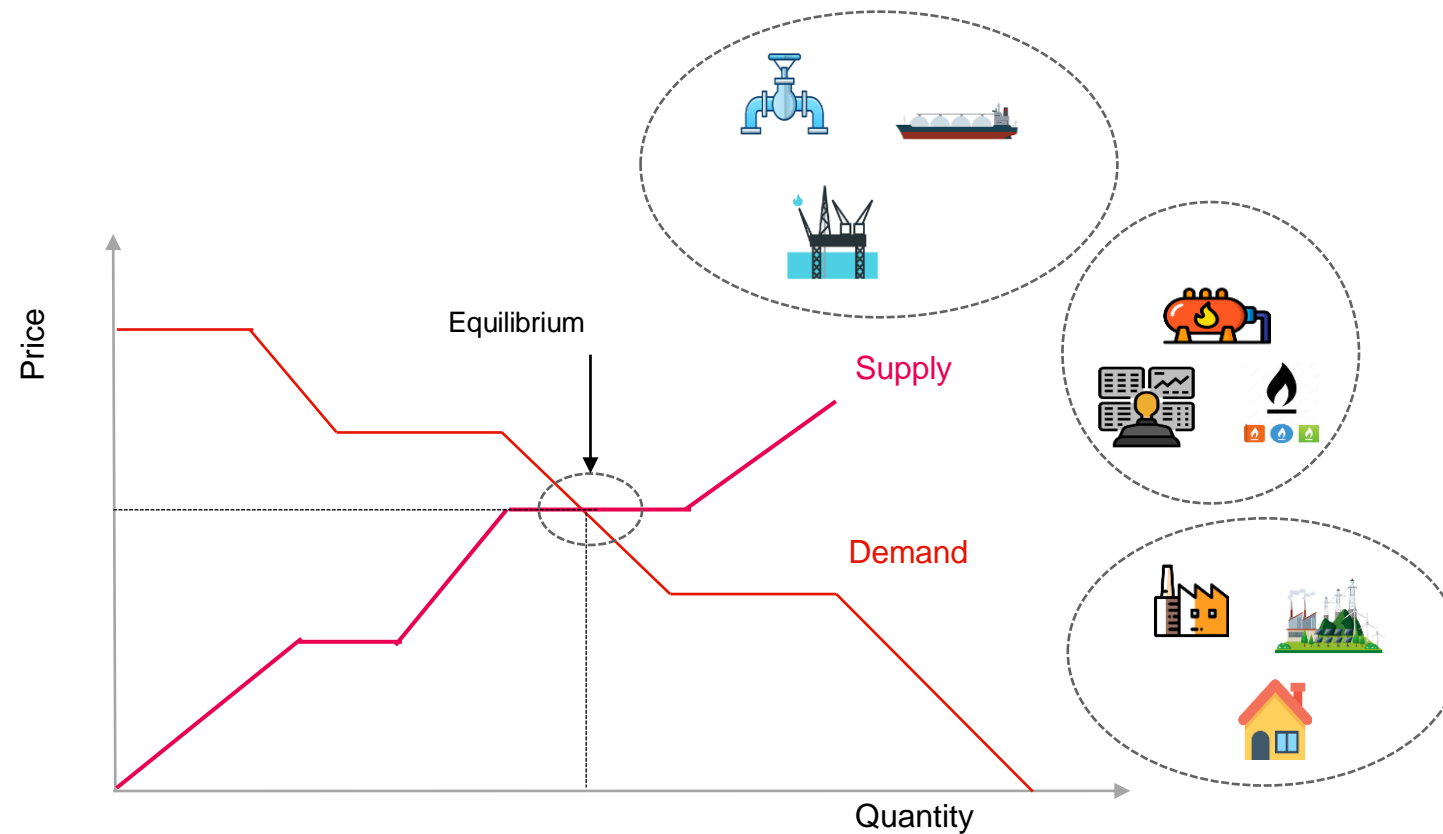


Trading

enel

Price dynamics

How is the market price generated?

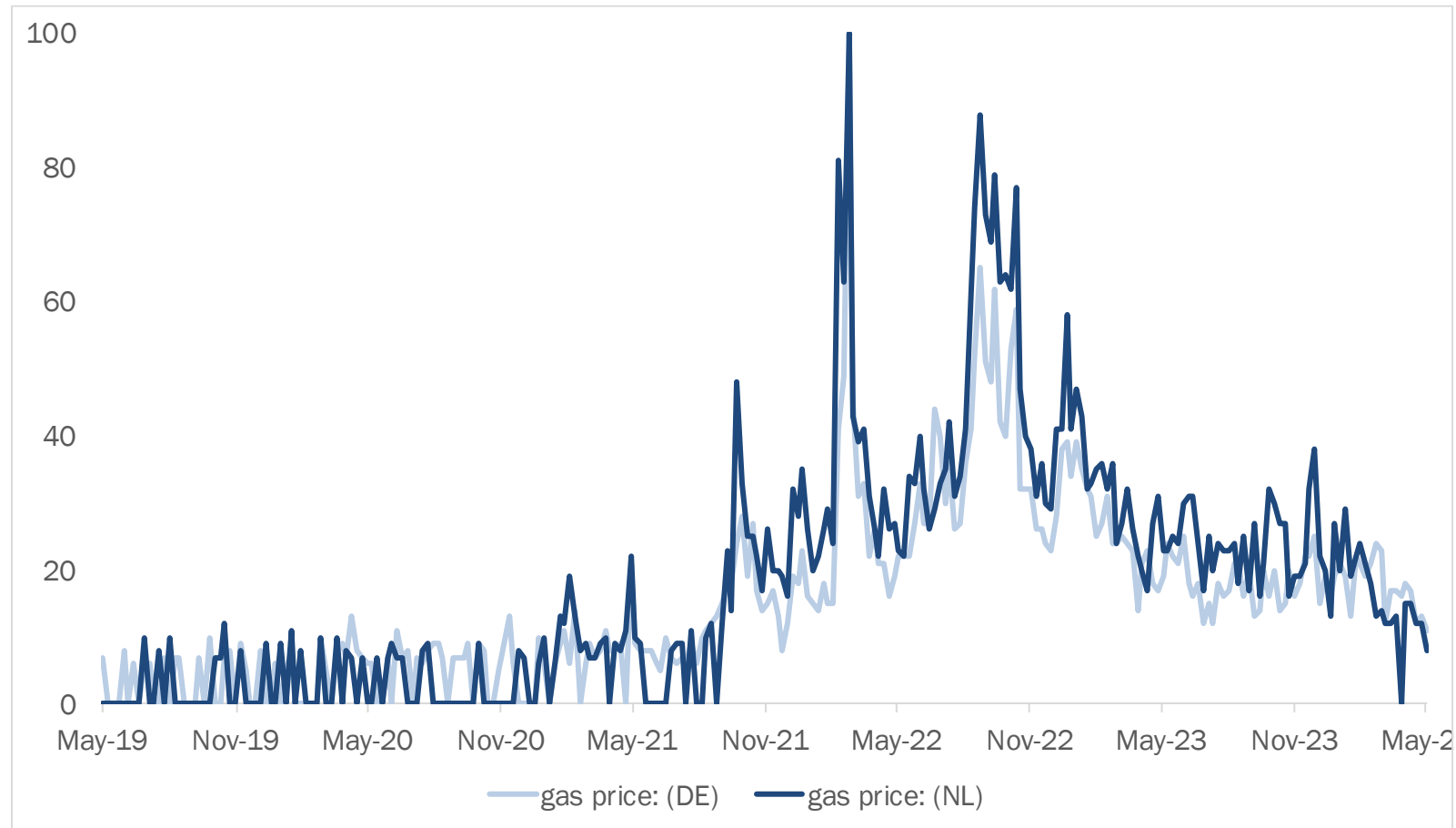


The interaction between supply and demand leads to the formation of a price each day at which gas is physically traded

Do gas prices reflect fundamentals?



Interest in the Google search term "gas price" *index (100 = maximum)*



Source: Google Trends

German state in dilemma over gas storage holdings

Market: Natural gas | 12/01/23

The German government faces a dilemma over what to do with the gas that it bought unhedged and stored underground last summer, with far-reaching consequences for the wholesale gas market.

THE made a net loss of more than €9.3bn from carrying out the country's mandatory gas filling rules as of the end of last year. It may have spent about €7.8bn to buy 50TWh of gas, based on the average *Argus* Germany VTP everyday price of €155.09/MWh from 4 June-31 October and assuming flat deliveries to storage.

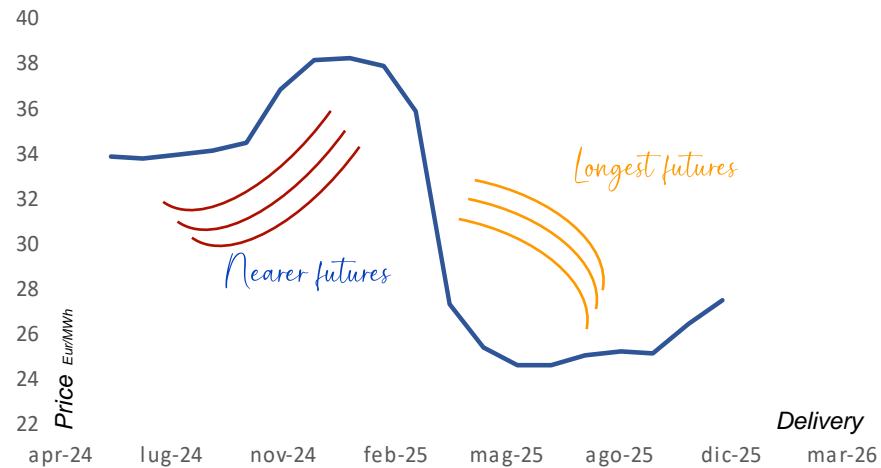
The government earned only \$146mn through withdrawals in October-December, during which time combined gross withdrawals at the five sites filled by THE were 2.51TWh.

Based on the German everyday price on 1-12 January and forward contracts delivering over the rest of the first quarter as of the close of 11 January, if THE sold all the remaining gas on the spot market, it would earn €3.3bn. This would be a theoretical loss of more than €4.4bn, considering the estimated cost of purchasing the gas.

The forward curve

Today's gas price vs. future expectations

The term structure

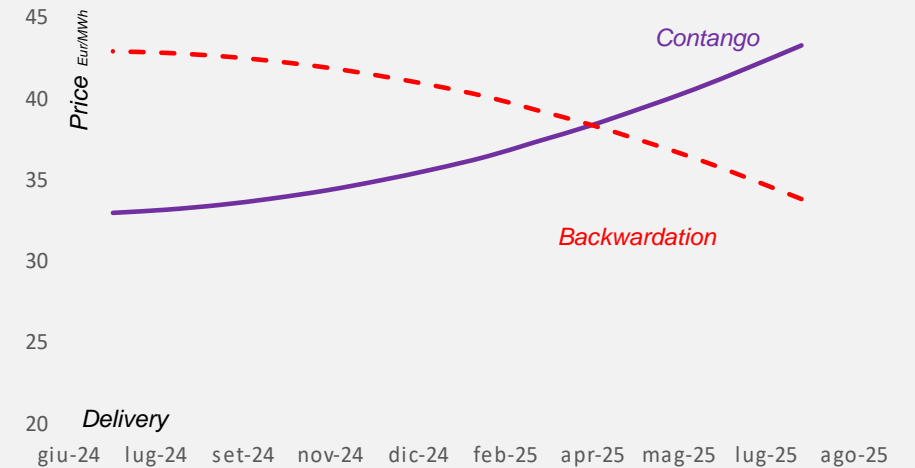


- The **forward curve** represents the expectation today's day-ahead price traders have for the coming months, quarters or years;
- The observation of forward curves taken at different periods and the comparison of their slope allows us to capture the development of the supply and demand balance.



Contango vs Backwardation

What are they and what do they express?

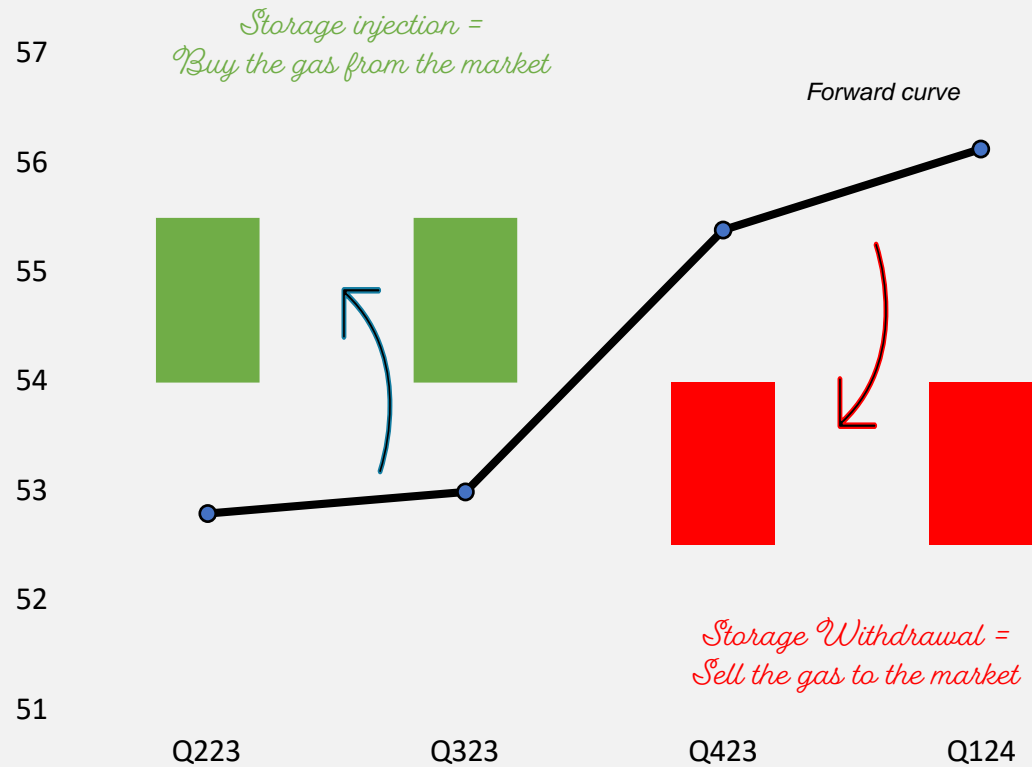


Contango represents a market in which spot prices are lower than future prices. The causes may be:

- **Availability and cost of storage and carry cost**
- **Investor's expectations regarding the future**

The reverse situation is called **backwardation**.

So, what does a trader do?



Owning the asset and being able to decide autonomously on its injection/withdrawal profile, the trader will opt for the following actions:

- **buy** the gas from the market for **injection** into storage in the cheapest months
- **withdrawal from** storage and **sell** gas to the market in the most expensive months



EU intervention and margin calls came to threaten Europe's energy firms

ICE warns it may pull gas market from EU over Brussels price cap

Exchange operator cautions the rapid imposition of a cap would allow no time to test risk management systems

Source: *Financial Times*

German Energy Giant Uniper Gets \$11 Billion for Margin Calls (3)

- Energy rally forced Uniper to post more funds to keep trading
- It's the second time the utility has needed to boost liquidity

Source: *Bloomberg*

Europe's energy crisis could escalate if governments don't cover \$1.5 trillion in margin calls, Norwegian energy firm says

[Phil Rosen](#) Sep 6, 2022, 3:33 PM CEST

Source: *Bloomberg*

[Share](#) | [Save](#)



Q&A

enel



Thank you