



REPSOL



IMO 2020

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AGENDA

- IMO
- Market Outlook
- Impact for Repsol



IMO HAS LED THE REDUCTION OF SULPHUR FOR MARINE BUNKERS

2010

ECA maximum
Sulphur 1%

2012

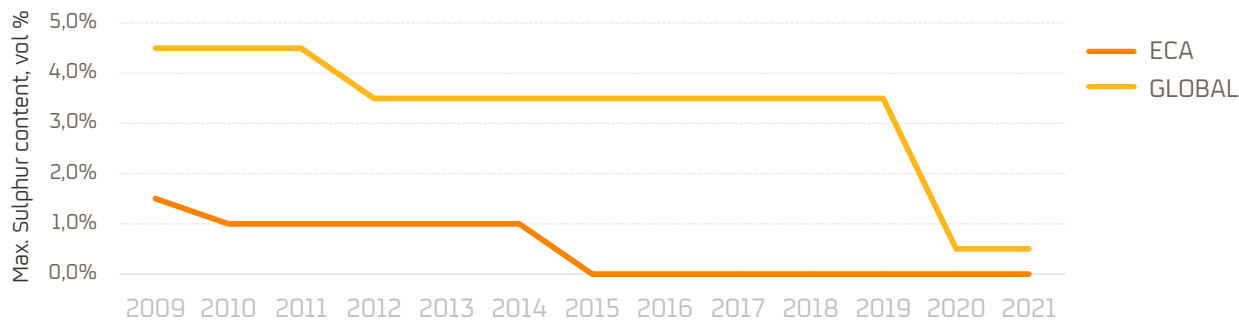
Global maximum
Sulphur 3.50%

2015

ECA maximum
Sulphur 0.1%

2020

Global maximum
Sulphur 0.50%



Market Outlook

> Global Bunker Demand

01

> Prices Outlook

02

> Impacts In Refining

03

Market Outlook

Alternatives for the shipping industry

Global Bunker Demand

THE SHIPPING INDUSTRY HAS FOUR MAIN OPTIONS FOR BUNKER SUPPLY

VLSFO	Marine Gasoil	HSFO [scrubbers]	LNG
<ul style="list-style-type: none">• Higher price.• Quality concerns.• Availability?	<ul style="list-style-type: none">• Highest price.• Increased use of lubricants	<ul style="list-style-type: none">• High investment.• Uncertainty of payback.• Installation limited.	<ul style="list-style-type: none">• Very high investment.• New Infraestructure needed.

Is non-compliance a feasible option?

Market Outlook

Compliance: an option or a must?

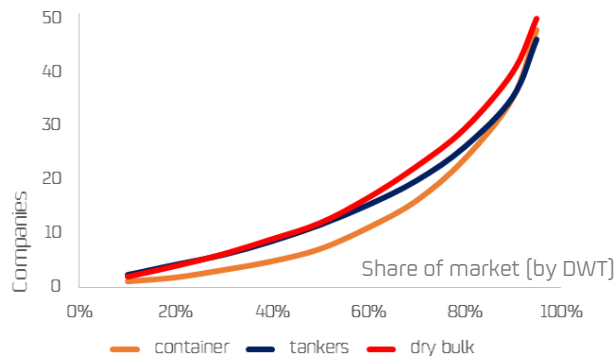
Global Bunker Demand

HIGH COMPLIANCE

SCENARIO (85-90%) IS AGREED BY ANALYSTS, PORT SURVEYORS AND SHIPPING INDUSTRY

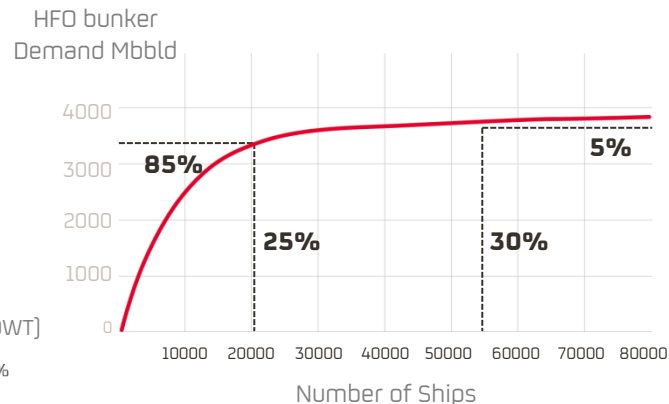
- High concentration of demand
- Port Authorities and Surveyors on the way to ensure compliance
- Banks and insurances won't support non compliance vessels

Containers, Dry bulk and Tankers represent 80 % of total demand. The Largest Companies in these markets consume almost 90% of HFO.



Source: Clarksons and Repsol

High percentage of Bunker demand concentrated in a limited number of large ships which are likely to comply.



Source: S&P Global Platts ®

Market Outlook

Global Bunker Demand

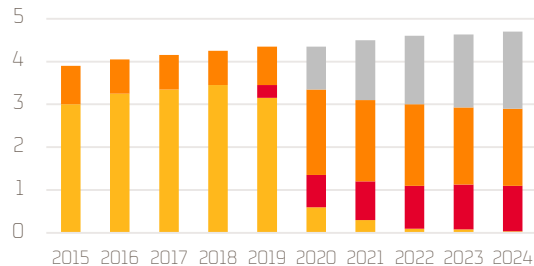
Global Bunker Demand

IMO 2020 WILL BRING FUNDAMENTAL CHANGES TO GLOBAL BUNKER MARKETS

EXPECTED SHIFTS IN DEMAND

- **HSFO** will decline from **3,5Mbpd** to a range of **0,6-1Mbpd**
- **MGO** will increase between **1-1,4 Mbpd**
- **VLSFO** will replace **at least half of the HSFO volume** consumed for Bunker in 2019

GLOBAL BUNKER DEMAND (Mbpd)

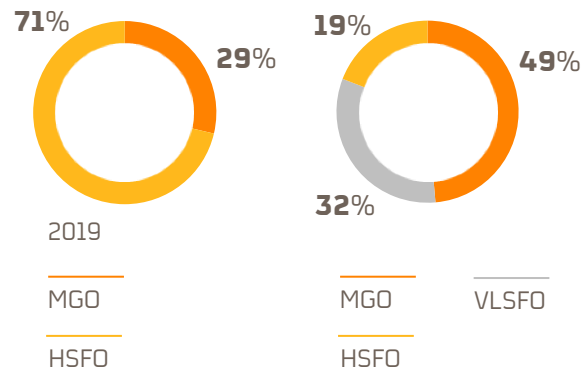


Source: IEA

MGO
Unscrubbed
HSFO

VLSFO
Scrubbed
HSFO

ANALYSTS VIEW OF GLOBAL BUNKER DEMAND IN 2019/2020



Market Outlook

HSFO Alternative uses in 2020 and beyond

Global Bunker Demand



Bunker
[Scrubbers]

HSFO demand
vessels with
scrubbing systems



Refineries
Feed

Residue streams
Coker units in
refineries



Bitumen

Residue streams
Bitumen units in
refineries



Others

Power
generation, etc



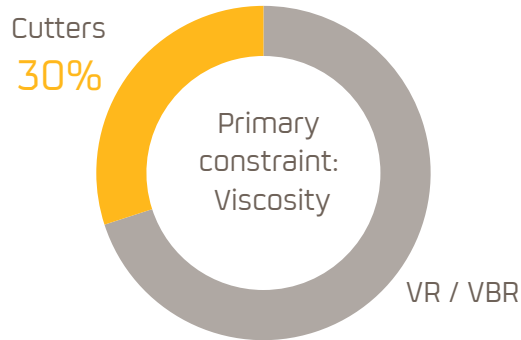
Market Outlook

A new product: VLSFO

Global Bunker Demand

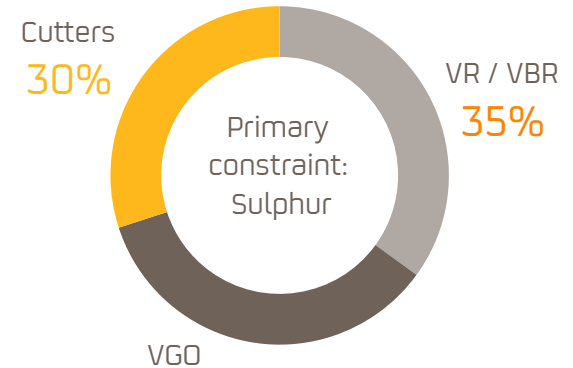
BUNKER FUEL WILL HAVE A VERY DIFFERENT COMPOSITION AFTER 2020

Illustrative Bunker Blend pre-2020



- Fuel Oil is typically made with 70 % Residue and 30 % Cutter (LCO, Kerosene, Gasoil, FCC products...)
- Before IMO 2020, viscosity was the primary constraint. Sulphur will become the key post-2020
- VGO, HC bottoms and other streams might be used as VLSFO components, compromising the quality of the product

Illustrative Bunker Blend post-2020



Market Outlook

VLSFO: From a residue to a Branded Product

- 1 | **VLSFO quality** (stability and compatibility) will be the key of IMO 2020
- 2 | **Two categories inside VLSFO:** Refinery product and Blended product
- 3 | **Consuming MGO / Refinery VLSFO** will be safer from a ship owner's perspective
- 4 | **VLSFO** will not be a commodity, but a branded product

Global Bunker Demand

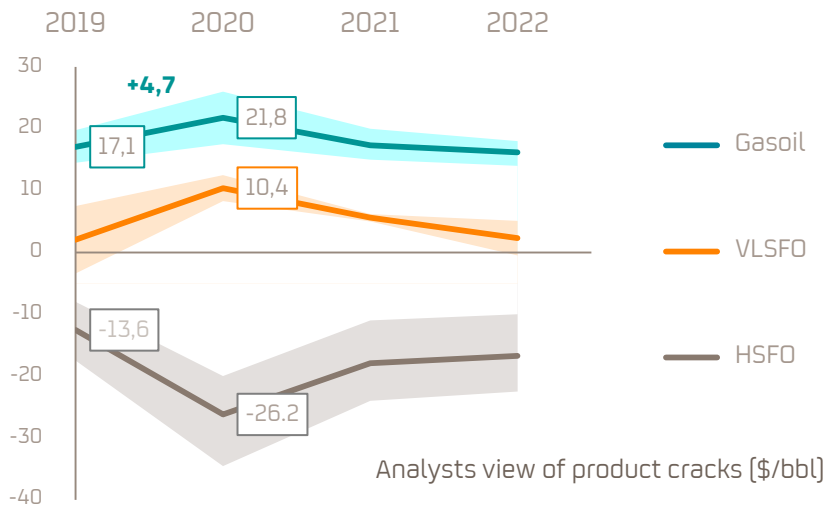


Market Outlook

Analysts Outlook

Prices Outlook

Boost in Middle Distillates and Fuel Oil sinking



Analysts view of product cracks (\$/bbl)

- Gasoil cracks expected to be above \$20/bbl
- GO – HSFO differential to widen to \$45-50/bbl
- VLSFO price is expected to be related to GO, with a discount
- HI5 (VLSFO – HSFO) for Calendar 20 has already traded, at a range of \$160–190/t

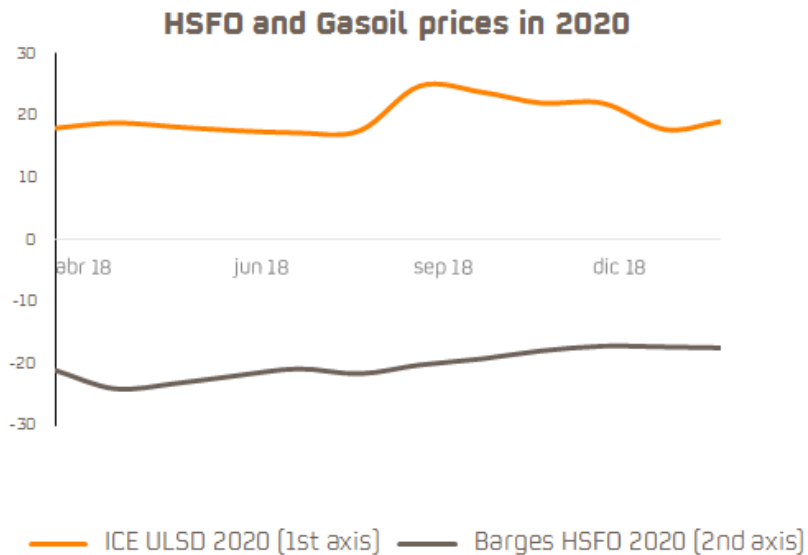
Source: Repsol based on main analysts views

Market Outlook

Swaps Markets

Prices Outlook

Forward Markets had been trading the Gasoil and HSFO cracks.



- Gasoil Cracks had been trading around \$20/bbl.
- HSFO cracks had been trading towards a lower discount against Brent
- Swaps diferentials between Gasoil and HSFO are around \$40/bbl

Market Outlook

Crude Prices

IMO 2020 will impact global crude demand patterns, crude trade flows, price differentials, relative product prices and refining margins

IMO 2020 Impact

1. Sulphur Implications

Other effects

2.1 Light Crude: US Exports | 2.2 Geopolitical Scenario

Prices Outlook



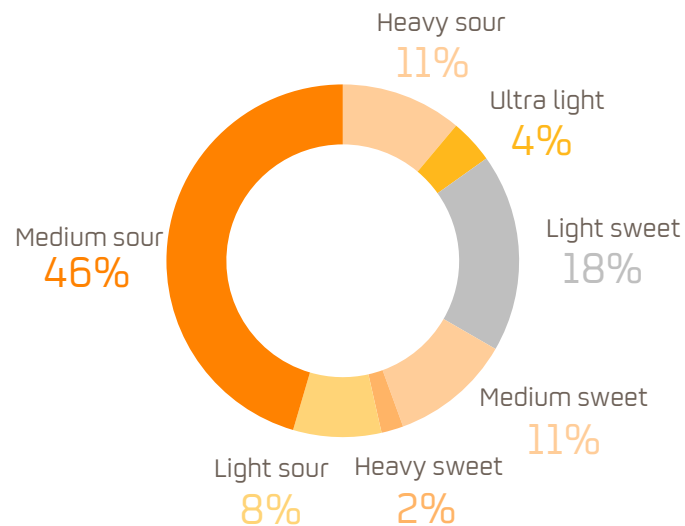
Market Outlook

Crude Prices: IMO effect

IMO 2020 will have a different impact depending on crude qualities. As a general rule, sweet crudes will benefit the most, while heavy sour will suffer

	Example crudes	IMO 2020 Impact
Light Sweet	BONNY LIGHT	↑
Light / Medium Sour	URAL / FORTIES	↓
Medium / Heavy Sweet	DJENO	↑
Heavy Sour	MAYA	↓

Prices Outlook



Market Outlook

Uncertainty regarding Geopolitical Situation

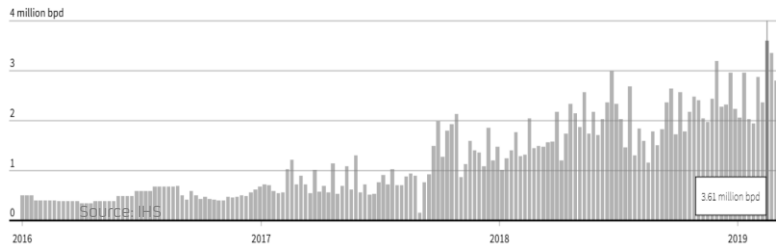
U.S. crude exports are expected to average close to 2.7 million bbl/d in 2019



- US shale oil biggest game changer
- USGC export capacity to 5 Mbbl/d
- Crude average 50 API. Low FO production

U.S. crude exports surge to record

U.S. crude exports have climbed to a record since Washington lifted a ban in late 2015



Prices Outlook

IRAN



US sanctions on Iran and expiration of waivers

VENEZUELA



Political issues in Venezuela and US sanctions

CANADA



Logistic issues and production cuts in Alberta's oil sands



OPEC+ (mainly Saudi Arabia) 2019 production cuts





Market Outlook

Impact on Crude prices

Overall, medium heavy sweet crudes will experience the highest price increase post-2020.

Heavy sour grades will experience a decrease in price due to HSFO crack.

Prices Outlook

	Example crudes	Overall Impact
Light Sweet	BONNY LIGHT	
Light / Medium Sour	URAL / FORTIES	
Medium / Heavy Sweet	DJENO	
Heavy Sour	MAYA	

Market Outlook

Impact in Refining Industry

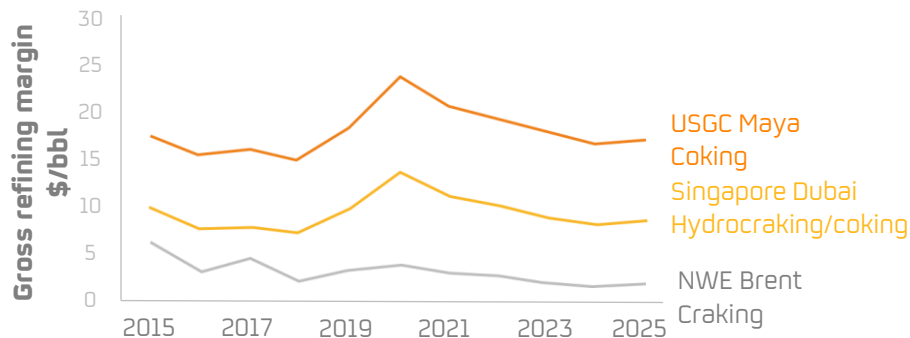
Impact in Refining

Refining industry will face the most disruptive scenario in decades.

Those refineries with high conversion capacity will profit the most

- High crude runs are expected in 2020 pushed by Middle Distillates cracks
- Refining business will suffer an important switch in the blendstocks used for the Marine Fuel Oils
- Refineries with higher conversion rates will benefit the most from IMO 2020

Gross refinery margins for selected reference assets



Source: Wood Mackenzie

Margin for high conversion refineries will improve in the range of \$1/bbl to \$3/bbl

Impact for Repsol

> Fully Invested

01

> Maximize refineries availability

- Turnaround management
- Refineries Flexibility
- Debottlenecking

02

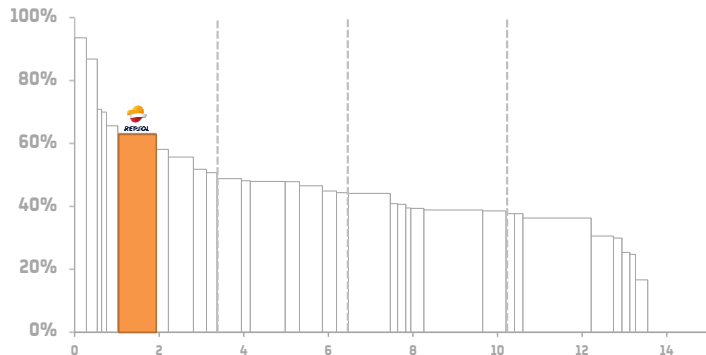
Impact for Repsol

Fully invested

STRONG REFINING PORTFOLIO

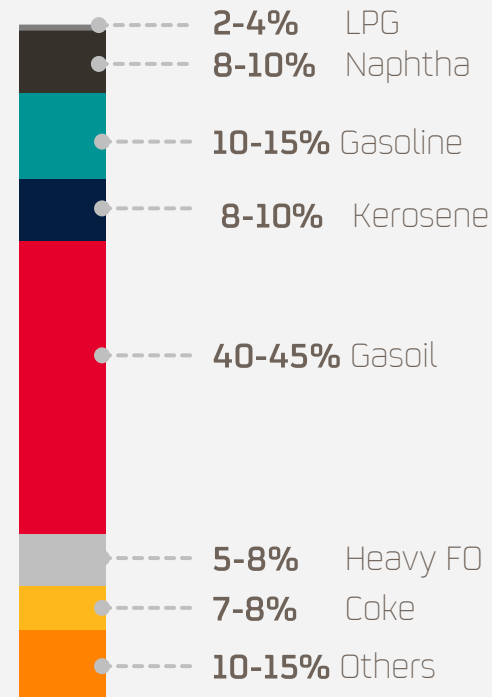
In a position of competitive advantage compared to the rest of European refineries that will not be able to capture such high margins.

FCCeq. Top quartile position among EU peers



STRONG PRODUCT SLATE

Distillates are our main production, while fuel oil output is minimal.

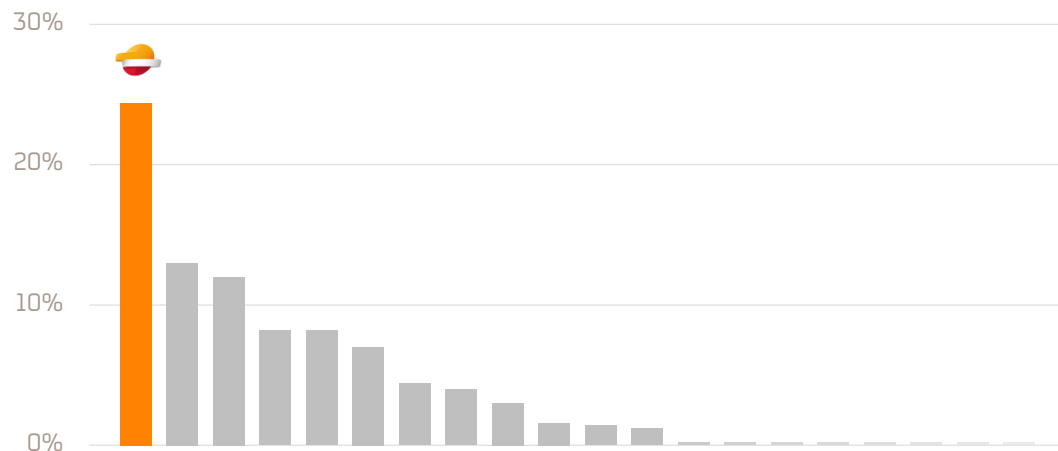


Impact for Repsol

% Coker capacity per company in Europe

Highest Coking capacity in UE as well as great distillation capacity (#4)

% European Coking Capacity

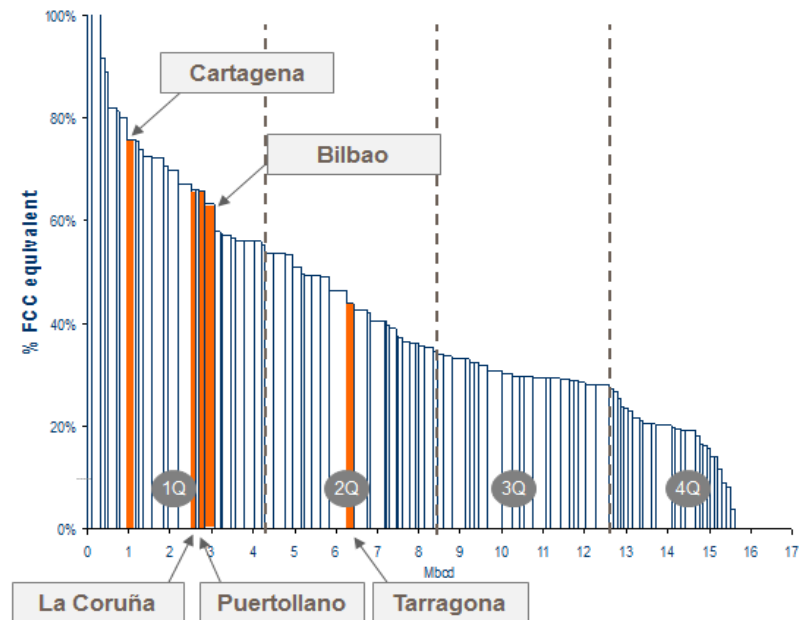


Source: Wood Mackenzie, Refinery Evaluation Model, 2018. Repsol figures, internal data

Impact for Repsol

Top European player in Conversion

Additionally to
Coking Capacity,
other conversion
units position
Repsol as a top
conversion player



Source: Wood MacKenzie Refinery Benchmarking tool

Impact for Repsol

Repsol Refineries - Fuel Oil production

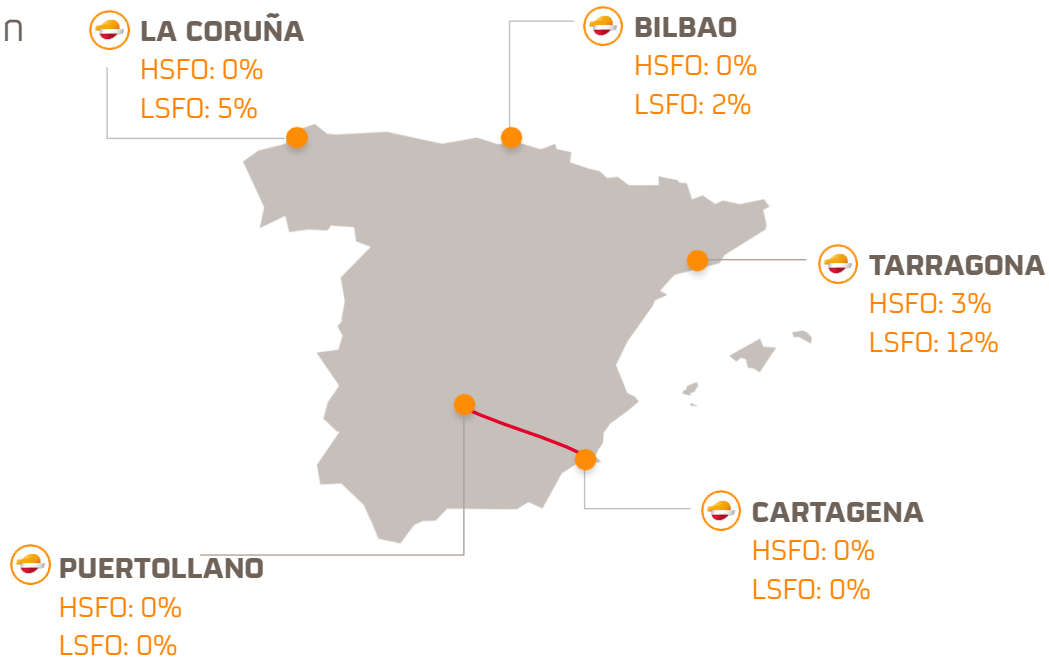
PERU REFINERY



LA PAMPILLA
HSFO: 24%
LSFO: 0%

- RLP-21 project leveraged Pampilla in Middle Distillates and Gasoline
- Access to regional sweet and light crude oil
- Possibility to export conversion feedstock to Asia / US.

SPAIN REFINERY^[1]



- Coruña, Bilbao and part of Tarragona LSFO production is dedicated to meet the inland domestic demand.

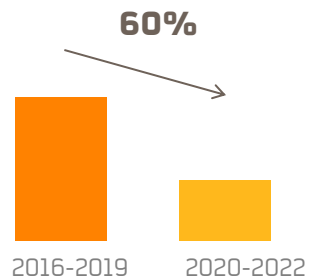
[1] Repsol Refining 2018

Impact for Repsol

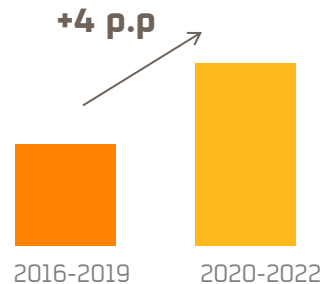
Turnaround management

Turnaround management in previous years will enable to maximize utilization in main units, including conversion units

Turnaround intensity [days]



Conversion Capacity Utilization



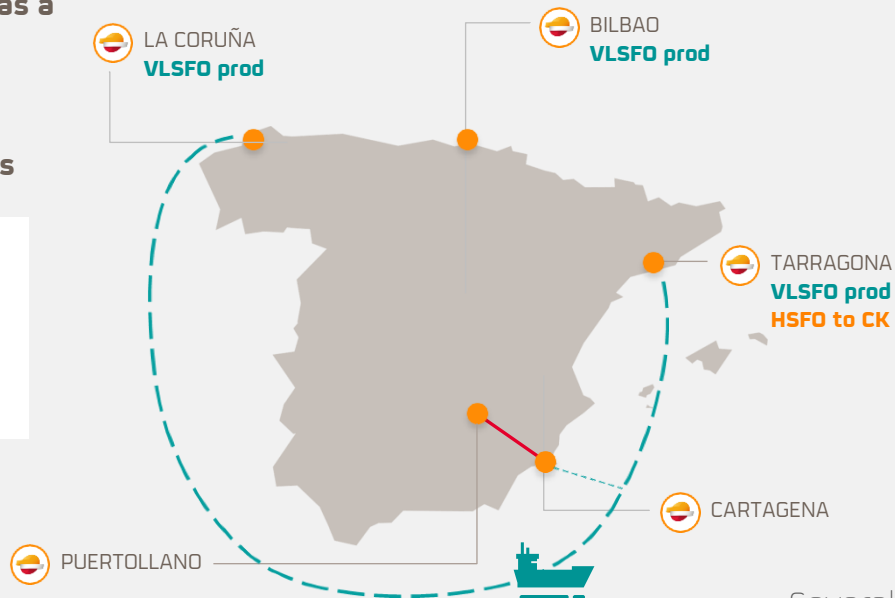
Impact for Repsol

Refineries flexibility

Optimization and operation as a single refinery provide additional flexibility to maximize margin, depending on price scenarios

CORUÑA

- Maintain conversion utilization
- Increase efficiency



TARRAGONA

- Fuel production with quality enough to allow transportation in cold conditions

Several batches of VLSFO have already been produced in Tarragona and Coruña

Several tests have already been carried out, sending residue from Tarragona to Coruña and Cartagena

Impact for Repsol

Middle distillates and conversion units debottlenecking

Small investments to eliminate bottlenecks and revamp MD's production

> Feedstock increase in MD's desulphurization units



> Hydrogen availability improvement for hydrotreating



> Debottlenecking of conversion units



> Increase the feedstock and improvement Topping / Vacuum fractionation



Key messages

- 1 IMO compliance will be high
- 2 IMO will imply a huge drop in HSFO demand due to limited presence of scrubbers
- 3 IMO will mean a change in relative prices of crude oil and products, with uncertainty in time and depth that will benefit the most sophisticated refineries
- 4 Repsol is fully invested, with strong refining portfolio and product slate
- 5 Operational activities have been undertaken to maximize margin capture



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