Refining in the Iberian Peninsula - Challenges and Opportunities

Oil Conference by Diário Económico & Apetro
AOP: THE SPANISH OIL DOWNSTREAM INDUSTRY ASSOCIATION

- Integrated downstream oil companies which market oil products in Spain with refining capacity in the EU.

- Its main objective is to defend its Associates’ general interests.

- AOP follow up legislation, advise and co-operation with Spanish Central Administration and regional governments, europeans institutions and oil industry in general.
1. Refining in Iberia:
   • The hardware
   • Logistics
   • Recent investments

2. Challenges
   • Internal demand drop
   • Competition from refineries in USA, Asia, Middle East & Russia
   • Over regulation burden in the EU. High taxation environment

3. Opportunities
   • Delivering products that are needed
   • Strategic location for exports
   • Flexible & cost competitive crude diet
   • Innovation

4. Conclusions
IBERIAN REFINERIES, LOCATION

- La Coruña
- Bilbao 85% Repsol
- Tarragona
- Castellón
- Puertollano
- Matosinhos
- Sines
- La Rábida
- San Roque
- Santa Cruz de Tenerife
- Cartagena
- Asesa 50% Repsol/50% Cepsa

■ = 30,000 Bbl/día
# IBERIAN REFINING CAPACITY, 2013

## PORTUGAL

<table>
<thead>
<tr>
<th>Refinery</th>
<th>Atmos. Desti. Mt/year</th>
<th>Atmos. Desti. Bbl/d</th>
<th>Nelson Complexity Index</th>
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<tbody>
<tr>
<td>Matosinhos</td>
<td>5.5</td>
<td>110,000</td>
<td>10.7</td>
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<tr>
<td>Sines</td>
<td>11.0</td>
<td>220,000</td>
<td>7.7</td>
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<tr>
<td>TOTAL</td>
<td>16.5</td>
<td>330,000</td>
<td>8.7</td>
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## SPAIN

<table>
<thead>
<tr>
<th>Refinery</th>
<th>FCC Equiv. Mt/y</th>
<th>Procesing Units</th>
<th>Capacity Mt/y</th>
<th>Capacity Kbbl/day</th>
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</thead>
<tbody>
<tr>
<td>Cartagena</td>
<td>11.0</td>
<td>Atm. Dest.</td>
<td>76.8</td>
<td>1,536</td>
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<tr>
<td>A Coruña</td>
<td>6.0</td>
<td>Vacuum Dest.</td>
<td>30.52</td>
<td>540</td>
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<tr>
<td>Puertollano</td>
<td>7.5</td>
<td>Vacuum Lubs. Dest.</td>
<td>2.77</td>
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<td>Tarragona</td>
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<td>FCC</td>
<td>10.41</td>
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<tr>
<td>Bilbao</td>
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<td>Hydrocracking</td>
<td>9.20</td>
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<td>Tenerife</td>
<td>4.6</td>
<td>Visbreaking</td>
<td>8.82</td>
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<td>San Roque</td>
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<td>Coquer</td>
<td>8.70</td>
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<td>La Rápida</td>
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<td>Reforming</td>
<td>9.10</td>
<td>214</td>
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<td>Castellón</td>
<td>5.4</td>
<td>HDS/HDT</td>
<td>51.56</td>
<td>1,087</td>
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<tr>
<td>Asesa</td>
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</tr>
<tr>
<td>TOTAL</td>
<td>76.8</td>
<td></td>
<td>1,536,000</td>
<td>39.6</td>
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</table>
EFFICIENT AND VERY FLEXIBLE SUPPLY SYSTEM FOR THE LOCAL MARKET & FOR EXPORT. SECURITY OF SUPPLY IS GUARANTEED
DIESELIZATION OF EU DEMAND, EVOLUTION OF THE MIDDLE DISTILLATE/GASOLINE DEMAND RATIO, THE RATIO IS EVEN HIGHER IN PORTUGAL AND SPAIN

Sources: CONCAWE (WoodMackenzie), DGE G Portugal, CORES and AOP
GROWING MIDDLE DISTILLATES WEIGHT IN THE DEMAND, HEAVIER AND LIGHT PRODUCTS WILL CONTINUE LOOSING GROUND

IBERIAN DEMAND STRUCTURE

* Others include heavy (coke, asphalt, lubes) and light (naphthas & petrochemicals raw material)

Sources: APETROL, CORES and AOP
POOLE POSITION FOR IBERIAN REFINERS IN ADAPTING TO MARKET DEMAND REQUIREMENTS, ENVIRONMENTAL IMPROVEMENTS AND ENERGY EFFICIENCY

- More than 8,100 millions € investment in the period 2008-2012

- 9.5 millions of ton additional middle distillates production

Growth in the capacity of crude processing

- Atmospheric and vacuum distillation units at La Rábida, Cartagena, San Roque, Matosinhos & Sines

Transformation of fuel-oil & heavy gas oil into diesel

- Cokers at Castellón, Cartagena and Bilbao
- Hydrocrackers at Huelva, Cartagena and Sines

Cleanest products

- Hydrogen plants and HDS

Improved energy efficiency

- New CHP (cogeneration) units at Bilbao, Castellón, Huelva and Matosinhos

Security of supply, employment & gross added value has improved.
Positive contribution to current account balance
Before the expansion

Cartagena
+ 5.3 Mm³/año

Bilbao
+ 0.5 Mm³/year

La Rábida
+ 3.7 Mm³/year

S. Roque
+ 0.2 Mm³/year

Castellón
+ 0.4 Mm³/year

SPAIN
+ 10 Mm³/year (~8 Mt/y)

Before
After the expansion

Source: AOP
MIDDLE DISTILLATES PRODUCTION GROWTH, PORTUGAL

Sines
+ 1.6 Mm³/año

Matosinhos
+ 0.3 Mm³/year

PORTUGAL
+ 1.9 Mm³/year (~1.5 Mt/y)

Source: Galp
OIL PRODUCTS CONSUMPTION BADLY AFFECTED BY THE ECONOMIC CRISIS IN BOTH COUNTRIES

Total demand evolution

Spain (kt)

Portugal (kt)

Sources: DGEG Portugal, CORES and AOP
EU WILL BE EXPOSED TO A STRONG COMPETITION FROM REFINERIES BASED IN USA (GC), ASIA, MIDDLE EAST & RUSSIA

USA:

- Decline in gasoline demand is leading to a reduction of imports from Western Europe.
- Overcapacity, cheap energy cost (20% of refinery cost vs 60% in Europe) has reversed the closure of East Coast refineries.
- Gulf Coast: deep conversion refineries, heavier crudes and shale oil (Bakken & Eagle Ford) are substituting more expensive light/sweet crudes. Exports to Europe, Latin America and West Africa.

ASIA & MIDDLE EAST:

- India mega hubs exporting oil products, fiscal advantages.
- Saudi Arabia will reduce by 50% their gasoline imports in one year. UAE, Kuwait, Qatar, Oman also expanding refineries.

RUSSIA:

- VGO exports due to dissapear, upgrading refineries will be able to export finished products.
LEGISLATIVE REGULATION IN EUROPE, COMPLEX AND BURDENSOME. PARLIAMENT, COMMISSION & COUNCIL NO CLOSE ENOUGH TO THE INDUSTRY, DIFFICULT AND EXPENSIVE TO FOLLOW UP THE PROCESS.
EXAMPLE: SOIL, WATER and WASTE LEGISLATIVE ENVIRONMENT. INVESTORS ARE HEROES
THREE DIRECTIVES WILL HAVE A SUBSTANCIAL IMPACT ON OUR INDUSTRY, WE REQUEST THE SUPPORT OF THE PORTUGUESE AND SPANISH GOVERNMENT TO DEFEND NATIONAL INTEREST

FQD, Art. 7 A:

- DG CLIMA is intending to discriminate crude by its relative emissions of CO$_2$, that would penalize heavier crudes and badly affect the competitiveness of our business without any gain to global CO$_2$ emissions.
- Our impact analysis, we estimate an income loss for Spanish refiners of 460 millions € per year in case that non conventional oils will be discriminated. In order to avoid that loss we should blend more biofuels that are more expensive than mineral fuels.

EID:

- Our estimates for Spain is that the total investment in order to reduce emissions will be in the range of 500 million € in the next years.
- Industry is defending the bubble concept in order to optimize investments and grant operation flexibility.

MARINE FUEL D:

- Marine Fuel Oil will have to have less than 0.5 % Sulphur content by 2020. Again, the EU has gone further than what it was agreed at the IMO. It is questionable product availability which may affect security of supply to shipping.
IN THE MEDIUM TERM OIL PRODUCTS WILL BE ESSENTIAL FOR TRANSPORT REQUIREMENTS AND AS FEEDSTOCK FOR THE PETROCHEMICAL INDUSTRY

OIL SHARE IN SECTOR

- Power
- Other
- Industry
- Transport

TRANSPORT DEMAND BY FUEL

Source: BP Energy Outlook 2030
STRATEGIC LOCATION FOR EXPORTS TO NORTH AND LATIN AMERICA, AFRICA, NWE, EAST MEDITERRANEAN
STRUCTURAL CHANGE IN 2012: FROM BEING NET PRODUCT IMPORTERS THE INTERNAL DEMAND DROP HAS OBLIGED IBERIAN REFINERS TO EXPORT. POSITIVE CONTRIBUTION TO CURRENT ACCOUNT BALANCE

Source: CORES
SPANISH EXPORTS BY DESTINY (thousand mt)

- **Europa**: 10,929 (64%)
- **América**: 2,621 (15%)
- **África**: 2,858 (17%)
- **Asia**: 672 (4%)

Source: CORES
WELL DIVERSIFIED CRUDE SUPPLY, IBERIAN REFINERS ARE ABLE TO PROCESS HEAVY AND SOURER CRUDES WHICH GIVES THEM A COMPETITIVE EDGE

OIL IMPORT SOURCES, SPAIN 2012

- Nigeria 14%
- Mexico 15%
- Saudi Arabia 13%
- Russia 14%
- Lybia 8%
- Others 24%
- Venezuela 4%
- Irak 8%

Source: CORES
Innovation is playing an important role in our industry. Technological research centres for investigating new processes, new sources and alternative fuels. Upstream (Deep water, unconventional crude and gas, CCS), GTL, BTL, HVO and other biofuels.

Advanced Biofuels are being investigated, when viable economically they will be developed at a industrial scale. The process of UCO through hydrogenation to get biodiesel in our refineries is already a reality, most sustainable. Hydrotreated Vegetable Oil (HVO) biodiesel is the best biofuel quality wise, produced and blended by refiners.

Our industry is able to attract skilled scientists and engineers that are working for the future and trying to find the best energy solutions.
CONCLUSIONS

- Portugal & Spain, like the rest of the countries, are going to depend on oil products for transport and as petrochemical industry feedstocks for several years.

- Refining is a strategic industry in order to make possible an easy transition toward a low carbon economy. This transition is going to be gradual and long, our industry will play a key role.

- Efficient and competitive production in Iberia of oil products is essential to guarantee the security of supply. Investments have been made to adapt local production to market demand, improve energy efficiency and environmental standards.

- Refining industry contributes to the added value of the oil marketing and petrochemical industries, its suppliers and contractors, engineering firms and the service activities linked with them. High quality employment generator.

- Oil industry is committed to decrease its carbon footprint, and is proved by the progressive blending of biofuels, the energy efficiency and reduction of CO₂ emissions in their processes and the production of cleanest fuels.