Refining Spain

November 18th, 2005

Disclaimer

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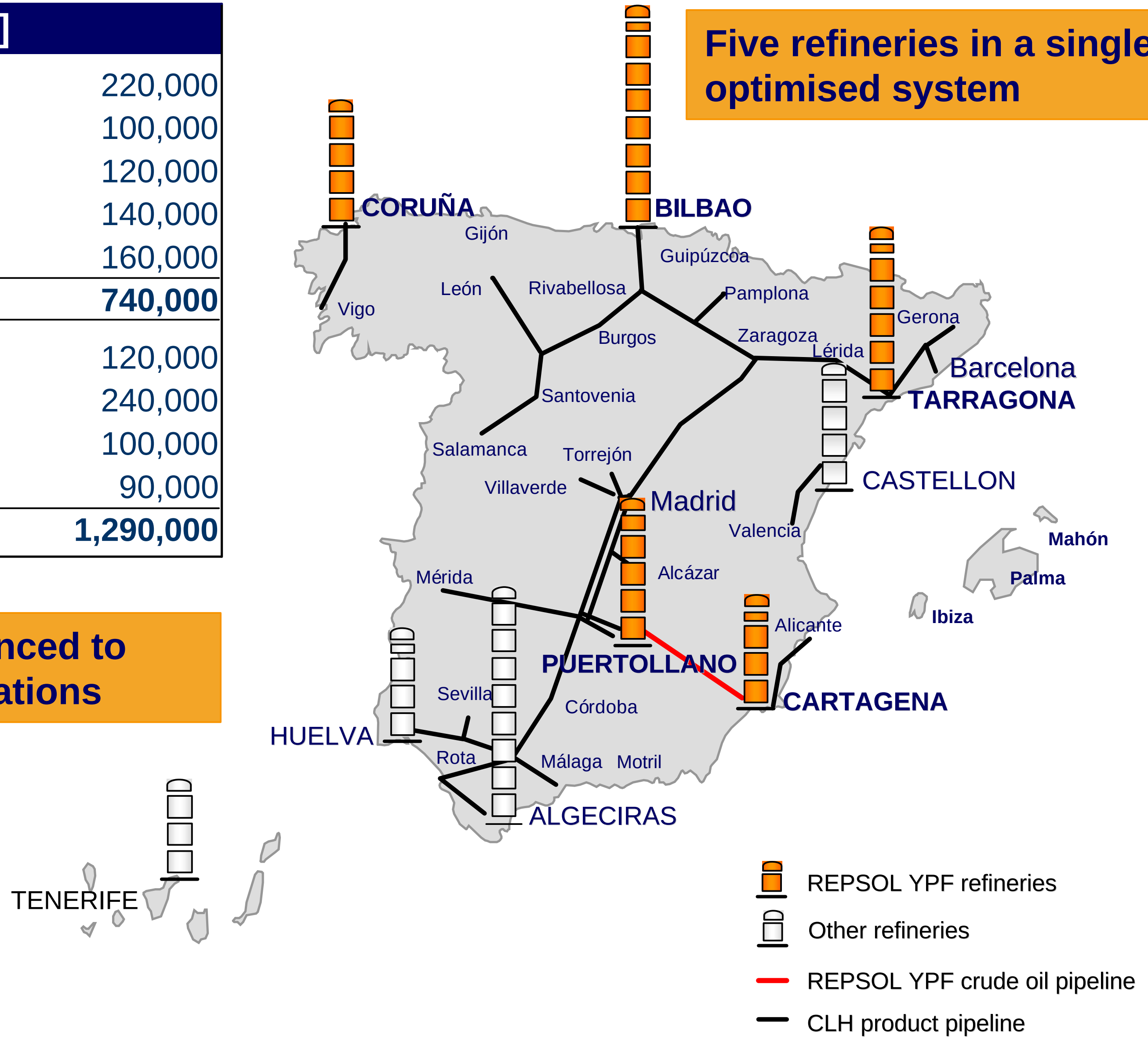
Repsol YPF: Leading refiner in Spain

Refining Capacity (bpd)	
Bilbao	220,000
Cartagena	100,000
La Coruña	120,000
Puertollano	140,000
Tarragona	160,000
TOTAL Repsol YPF	**740,000**
Castellón	120,000
Algeciras	240,000
Huelva	100,000
Tenerife	90,000
TOTAL Spain	**1,290,000**

Five refineries in a single optimised system

Investments well advanced to meet 2009 EU specifications



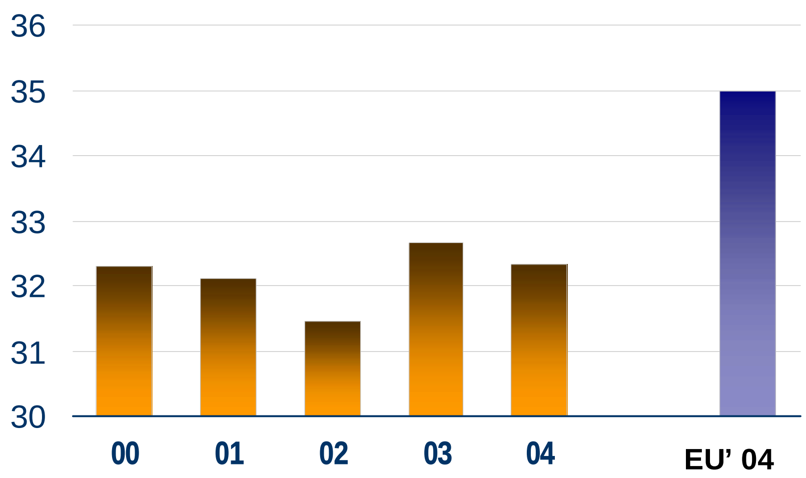
Repsol YPF refineries scheme in Spain

	Puertollano	La Coruña	Tarragona	Bilbao	Cartagena
Topping	●	●	●	●	●
Vacuum distillation	●	●	●	●	●
Platforming	●	●	●	●	●
HDS	●	●	●	●	●
FCC	●	●		●	
Mildhydrocracker	●	●		●	
Hydrocracker			●		
Visbreaking			●	●	
Coking	●	●			
Current Conversion (1)	70	65	47	32	--

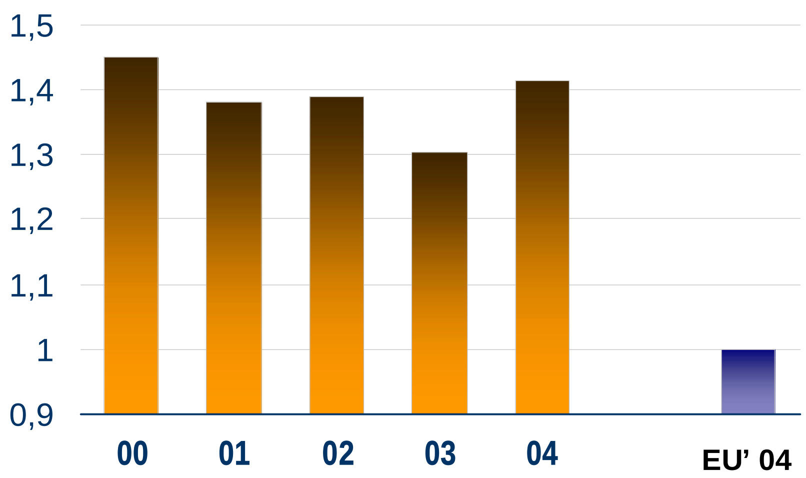
(1) Conversion index as % FCC equivalent

Crude oil processed - Spain

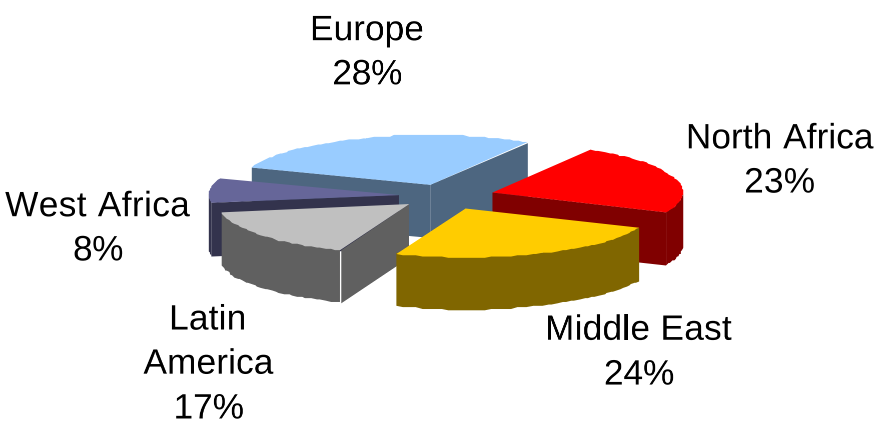
Density [ºAPI]



Sulphur [wt %]



Crude Oil Slate by Origin (2004)



High integration

Refining Integration

Repsol YPF Refineries Spain	Marketing	Chemicals	Lube Oils	Asphalt
SPAIN				
Cartagena	●		●	●
La Coruña	●			●
Puertollano	●	●	●	●
Tarragona	●	●		●
Bilbao	●			●

Market environment

- Increase in demand for middle distillates in Europe, and specially in Spain, with a shortage of 12 Mt in 2004
- Growing global deficit of middle distillates
- Reduction of demand for gasoline in Europe
- European surplus of gasoline and naphtha exported to USA and Asia
- Reduction of fuel oil consumption
- Stricter quality requirements for products
- Growing demand for coke in Spain, with a 4 Mt deficit in 2004
- Growth in world crude oil demand, with increasing heavy/sour crude oil supply
- Lack of refining and conversion capacity

Higher Refining Margins

Refining margin: Concepts

Crude Oil

C_1

C_2

C_3

C_n

Refining costs

Variable **Fixed**

Products

P_1

P_2

P_3

P_n

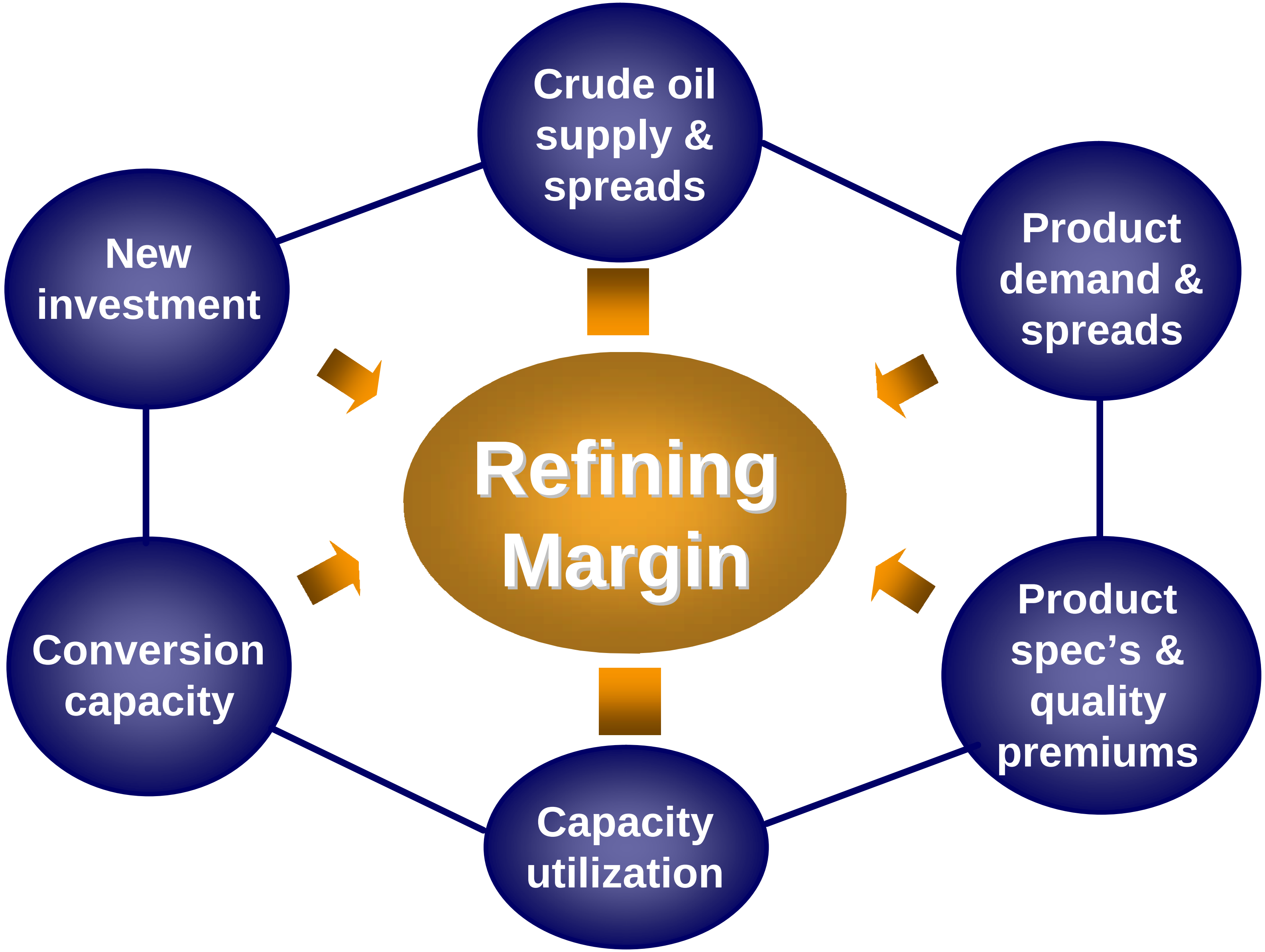
Refining margins affected by:

- ✓ Crude oil mix (spreads vs Brent)
- ✓ Product slate (spreads vs Brent)
- ✓ Refinery complexity (conversion)
- ✓ Variable costs (efficiency)

$$\textbf{REFINING MARGIN (U\$/Bbl)} = \frac{\sum_{i=1}^{i=n} \textbf{(Product volumes x Price)}_i - \sum_{i=1}^{i=n} \textbf{(Crude Oil volumes x Price)}_i - \textbf{Variable Costs}}{\sum_{i=1}^{i=n} \textbf{(Crude Oil volumes)}_i}$$

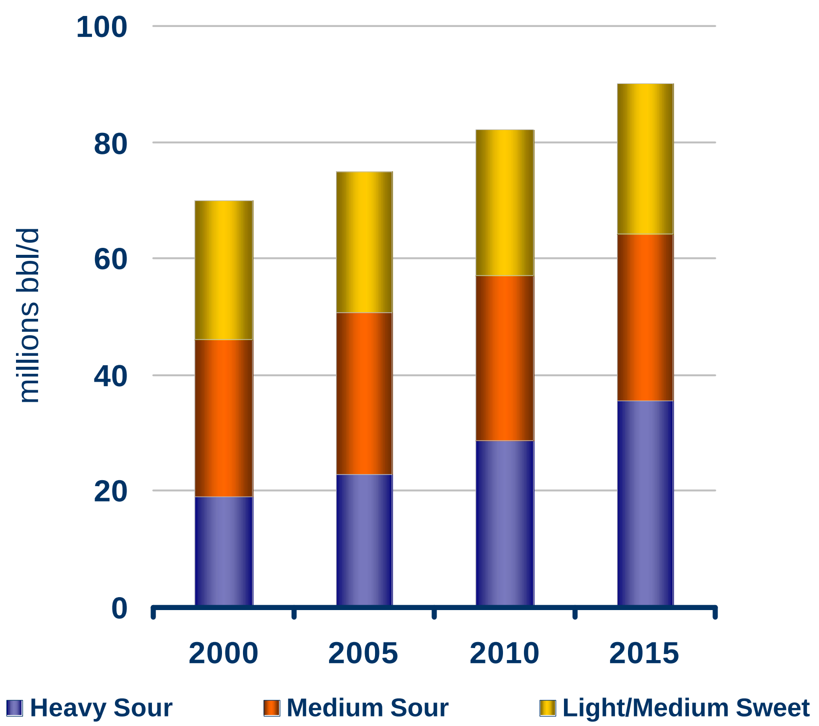
REFINING MARGIN INDEX: Refining margin calculated with a specific refining scheme

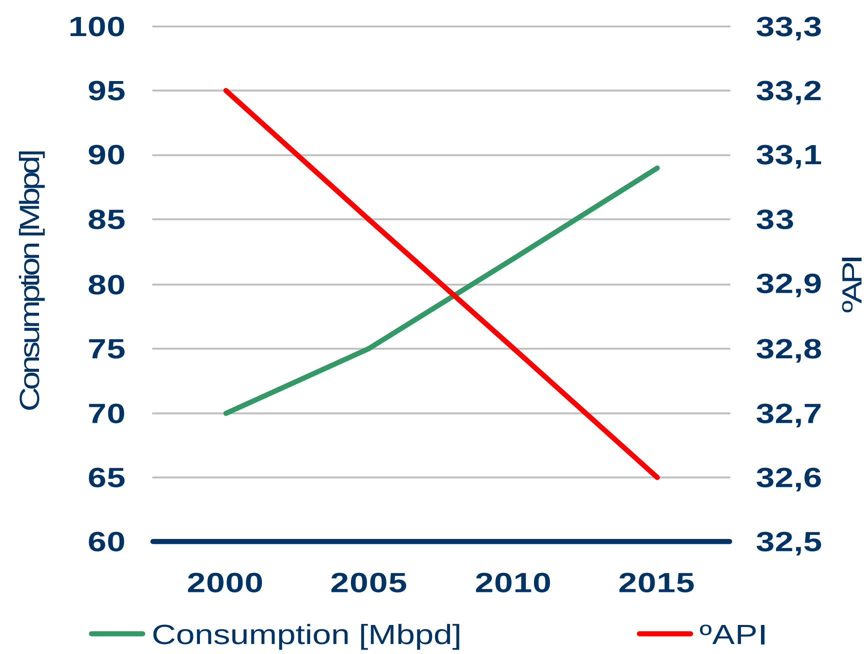
Refining margin drivers



Refining margin drivers: Crude oil supply

Future availability: increase of Medium/Heavy & Sour crude



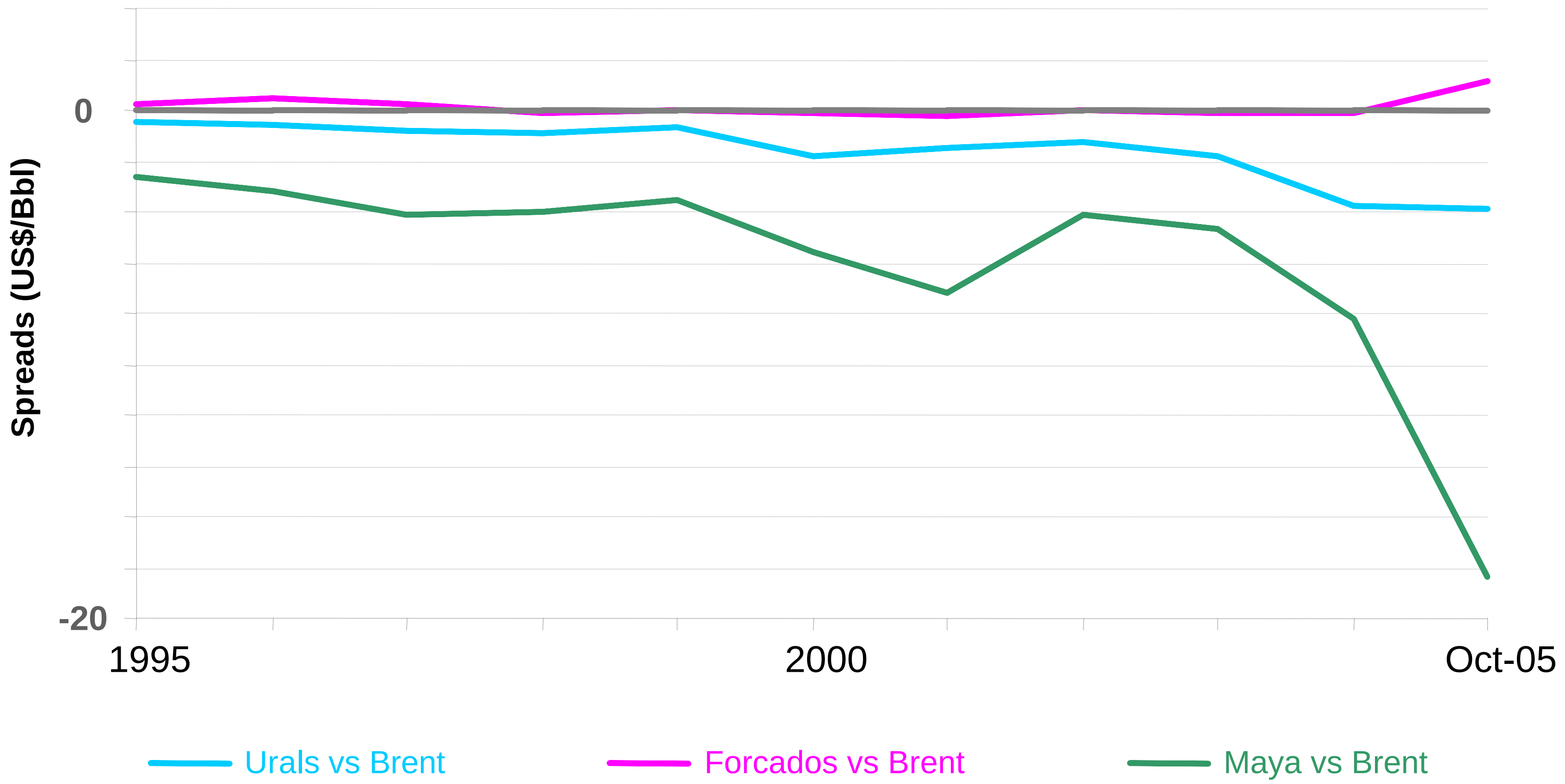


Source: Pira Energy Group

Growth in world crude oil production will be mainly medium/heavy & sour

Refining margin drivers: Crude oil spreads

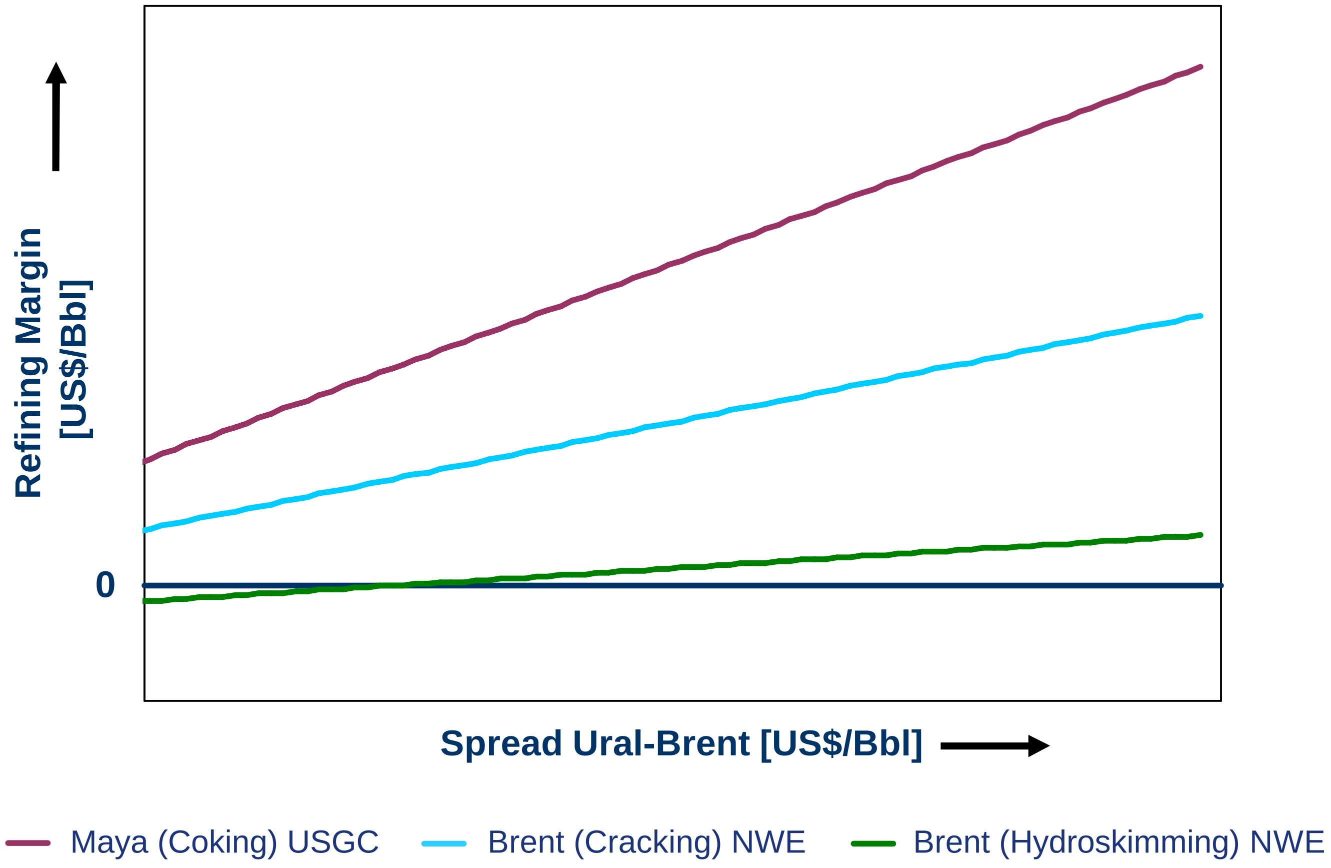
Wider Light/Heavy crude oil spread



Source: Platt's

Refining margin vs spreads

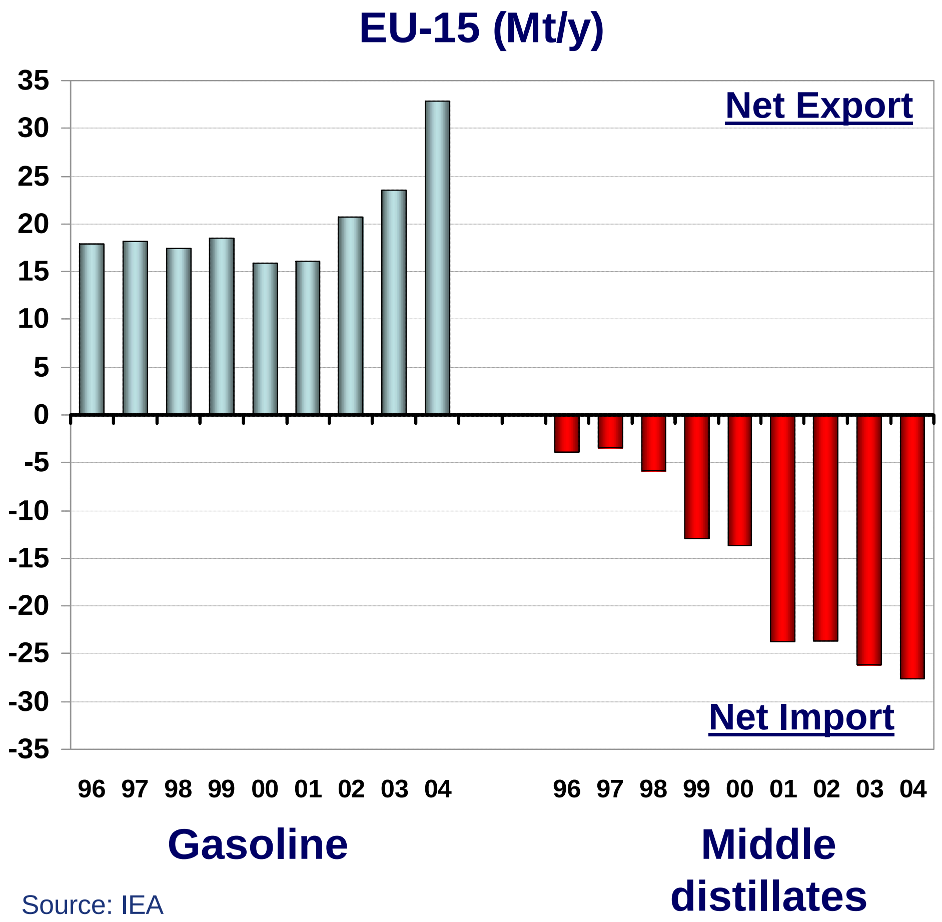
Refining margin grows in conversion refineries, as light-heavy differentials widen

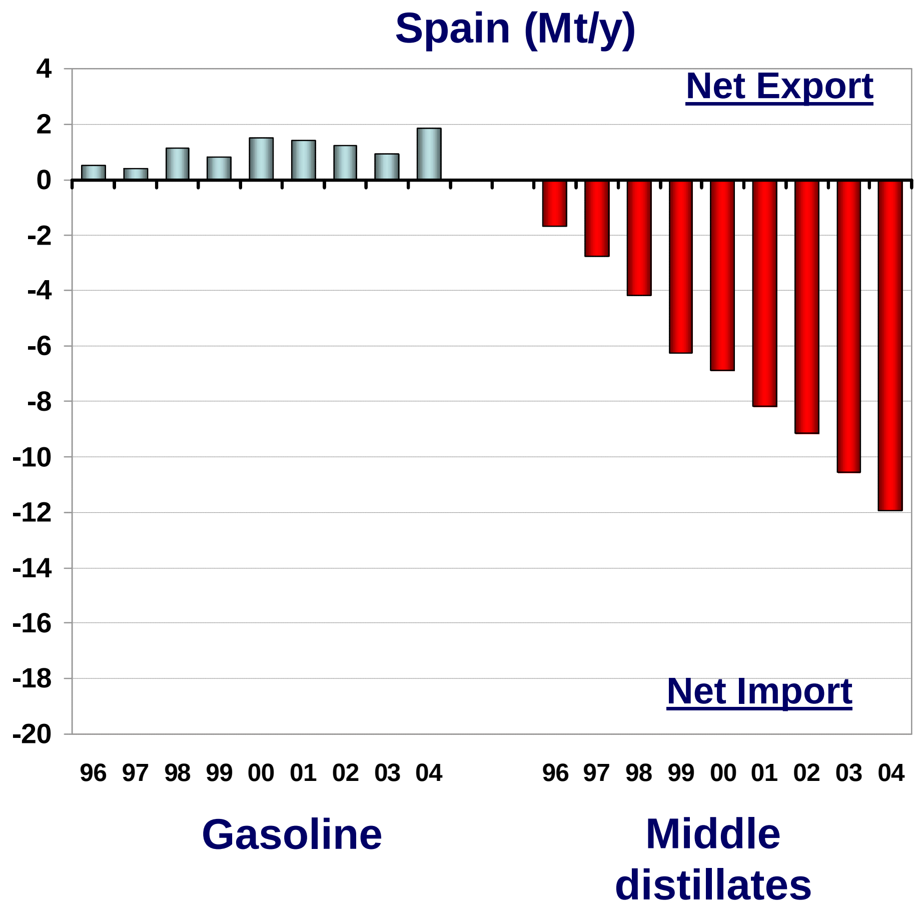


Source: IEA & Repsol YPF

Refining margin drivers: Product demand

Spain: more than 50% of net middle distillates european deficit.

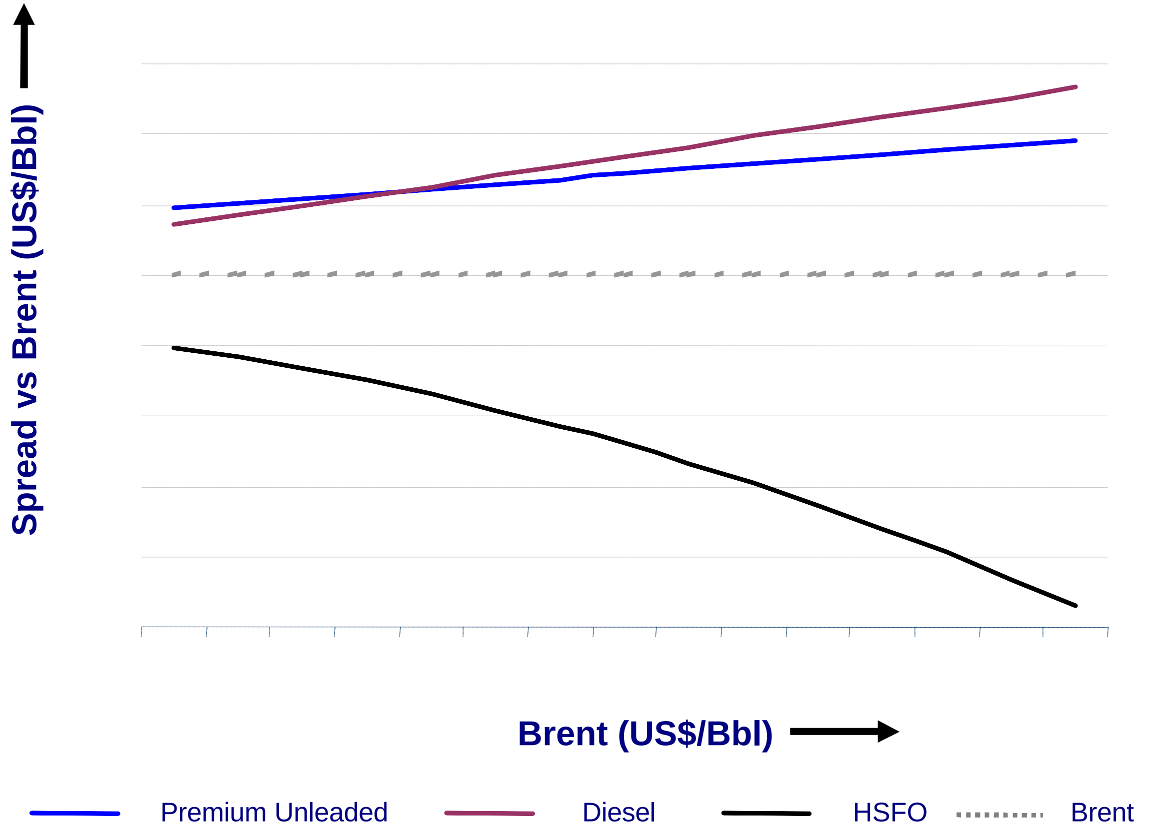




Source: IEA

Refining margin drivers: Product spreads

Higher crude oil prices: wider light/heavy product spread & higher refining margin in conversion refineries



Source: Repsol YPF

Refining margin drivers: Product specifications

Tightening product specs

- **The key factor is demand for high-spec transport fuels in US and Europe**
- **The Auto Oil II requirements will govern yield patterns**
- **Investments are required to meet tighter EU specs**
- **Tighter specs will restrict imports from middle distillate supplier-countries to Europe**

Gasoline

Sulphur	<50 ppm in 2005
	<some quantities of 10 ppm gasoline must be available
	<10 ppm in 2009
Aromatics	< 35 % vol in 2005

Diesel

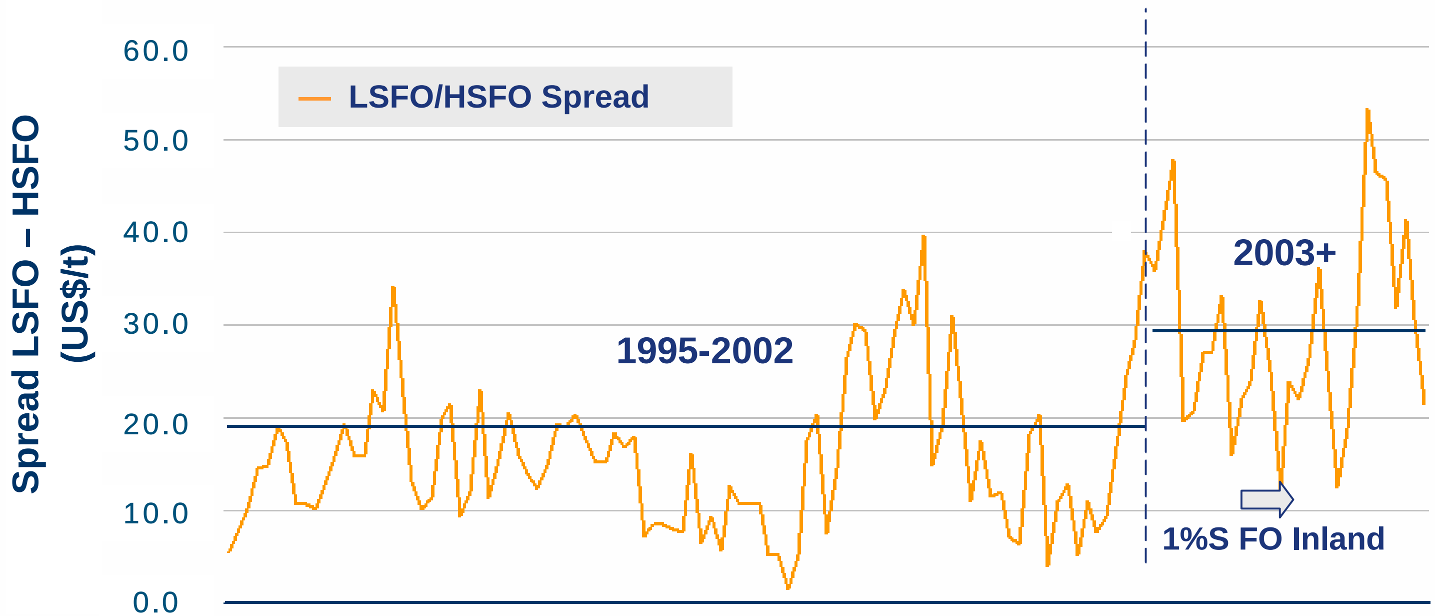
Sulphur	<50 ppm in 2005
	<some quantities of 10 ppm diesel must be available
	<10 ppm in 2009
Polyaromatics	Uncertainties about date of reduction

Fuel Oil

Bunker Sulphur	< 1,5 % in 2007/08
	(SOxECA's and passengers boats)

Refining margin drivers: Quality premiums

Low demand for sulphur products creates quality premiums, increasing refining margin at conversion refineries

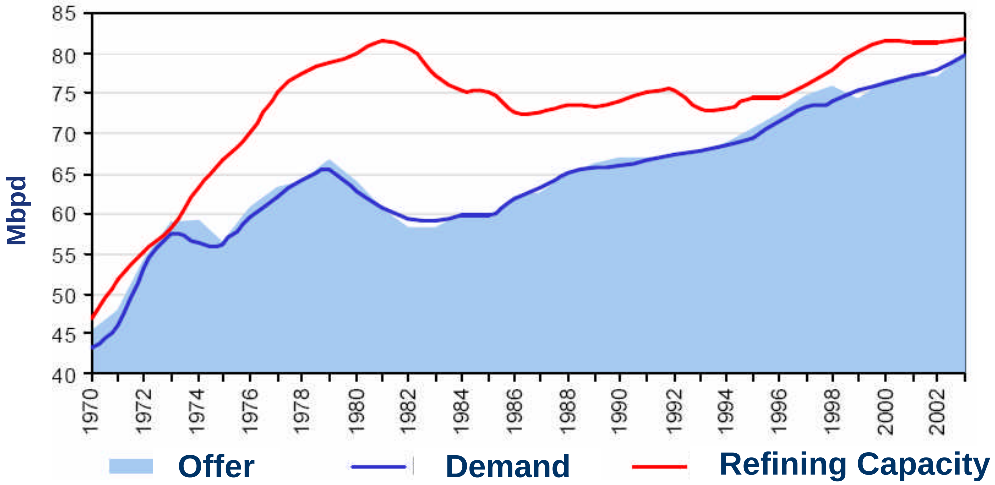


January 2003:	**Sulphur 1% weight max in FuelOil Inland**
2007- 2008:	**Low sulphur bunker at SOxECA's**

Source: Platt's & Repsol YPF

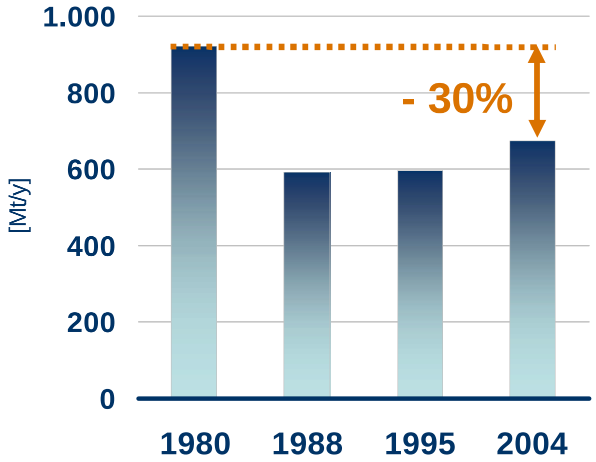
Refining margin drivers: Capacity utilization

Worldwide Refining Capacity Utilization



Source: AIE y EIA

UE-12 Topping Capacity

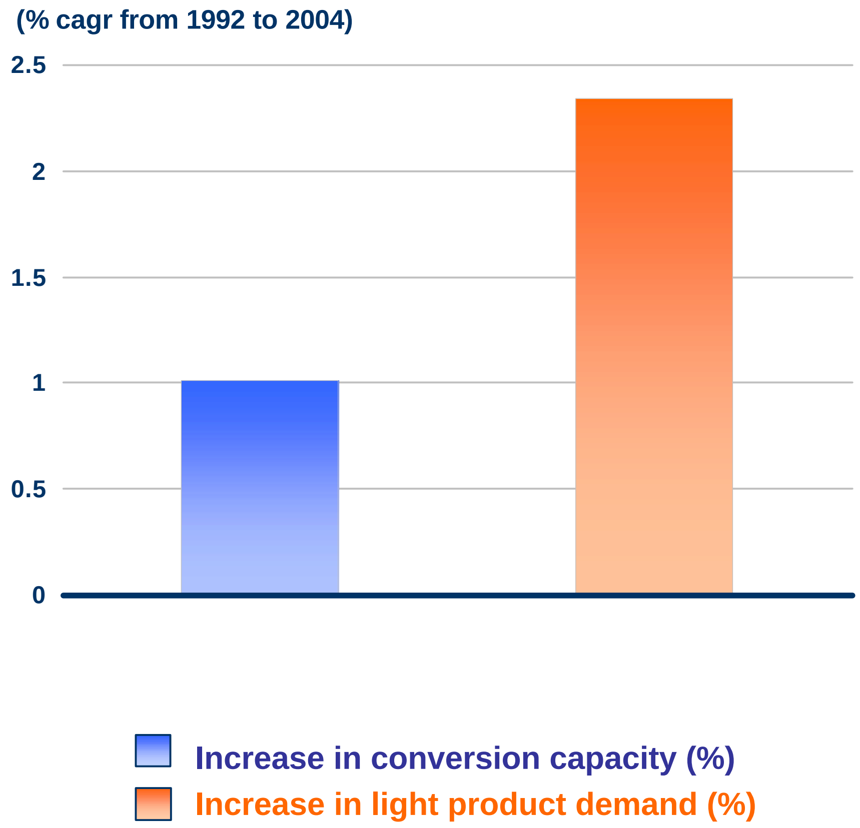


Source: Report on the situation of oil supply, refining and markets in the European Community (2004 Oil&Gas Journal)

- **Refinery utilization rates at highest for the last 30 years**
- **Refining capacity same as 25 years ago, while product demand has grown 30%**
- **Refinery capacity has decreased by 30% since 1980**
- **Minor capacity increase by revamp of existing units during the past 15 years**

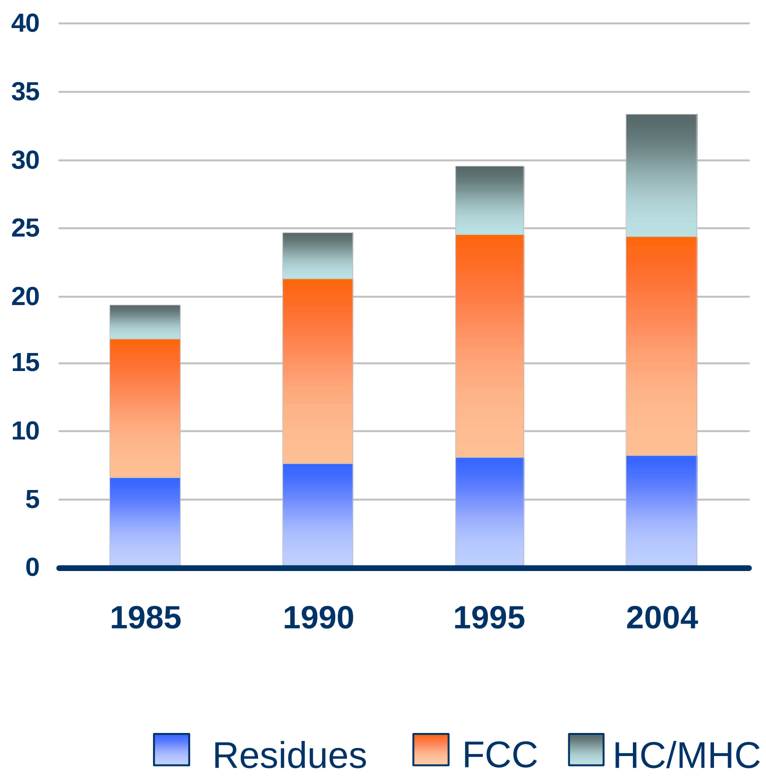
Refining margin drivers: Conversion capacity

Increase in conversion capacity much lower than light product demand increase



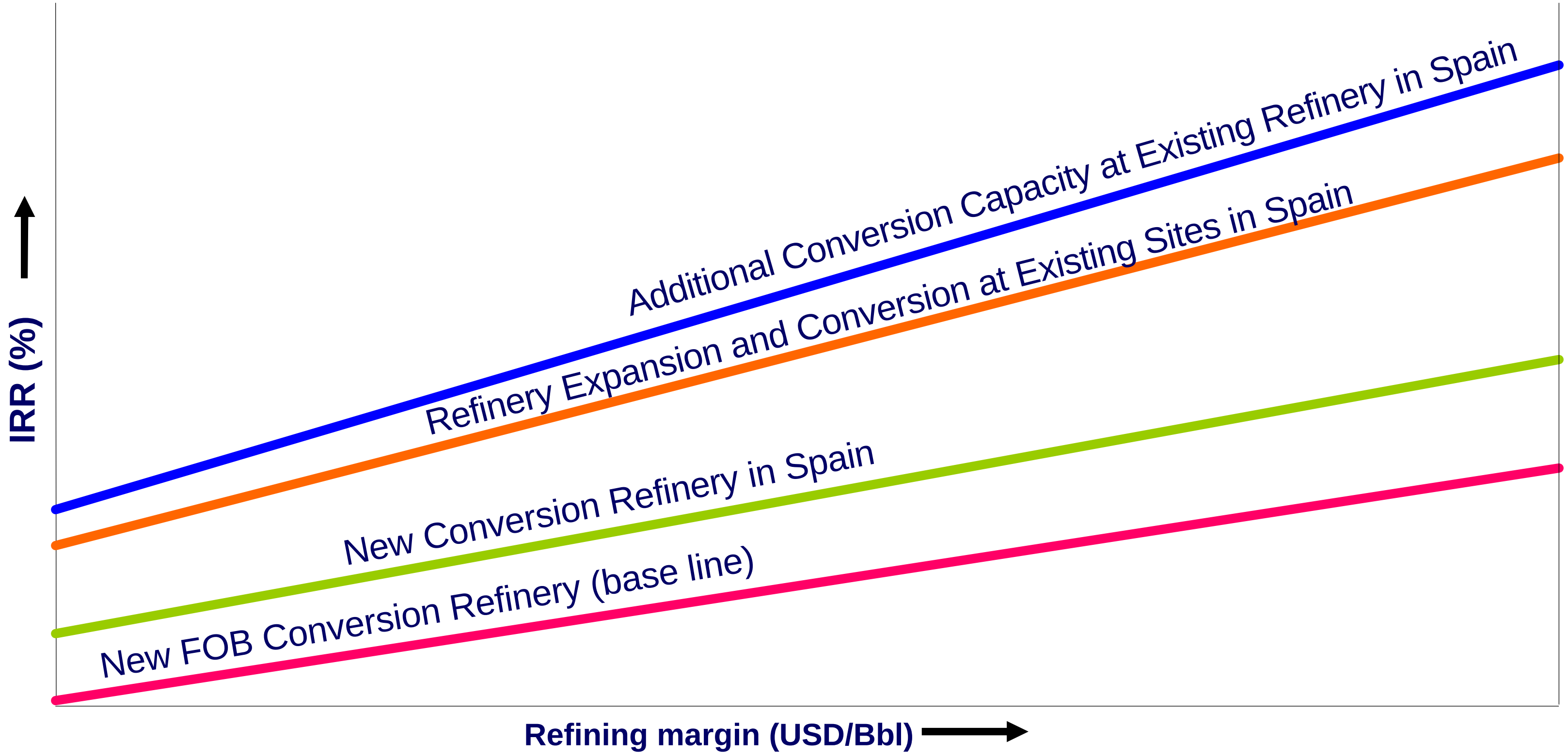
Source: Oil & Gas journal and BP Statistical Review 2004

EU-12 Conversion Capacity (% FCC Equivalent)



Source: Oil & Gas journal

Refining margin drivers: New investment



- **Reinvestment process in conversion refineries will set higher refining margins**
- **Marginal investments to increase distillation and conversion capacity at existing refineries will be more profitable**

New investment in VGO conversion

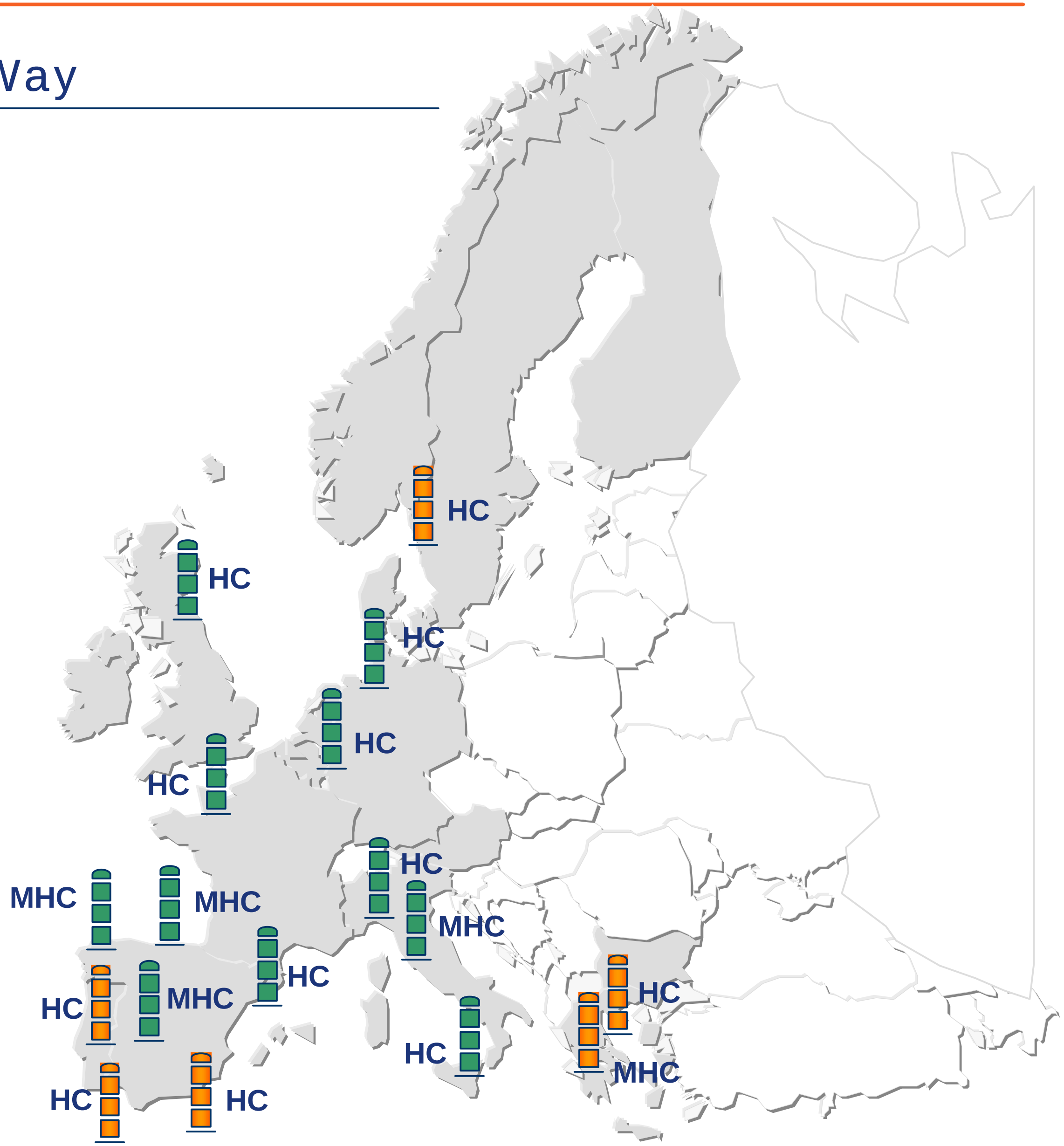
Hydrocracking: Preferred Way

HC **Hydrocracker**

MHC **Mild Hydrocracker**

Recent Construction

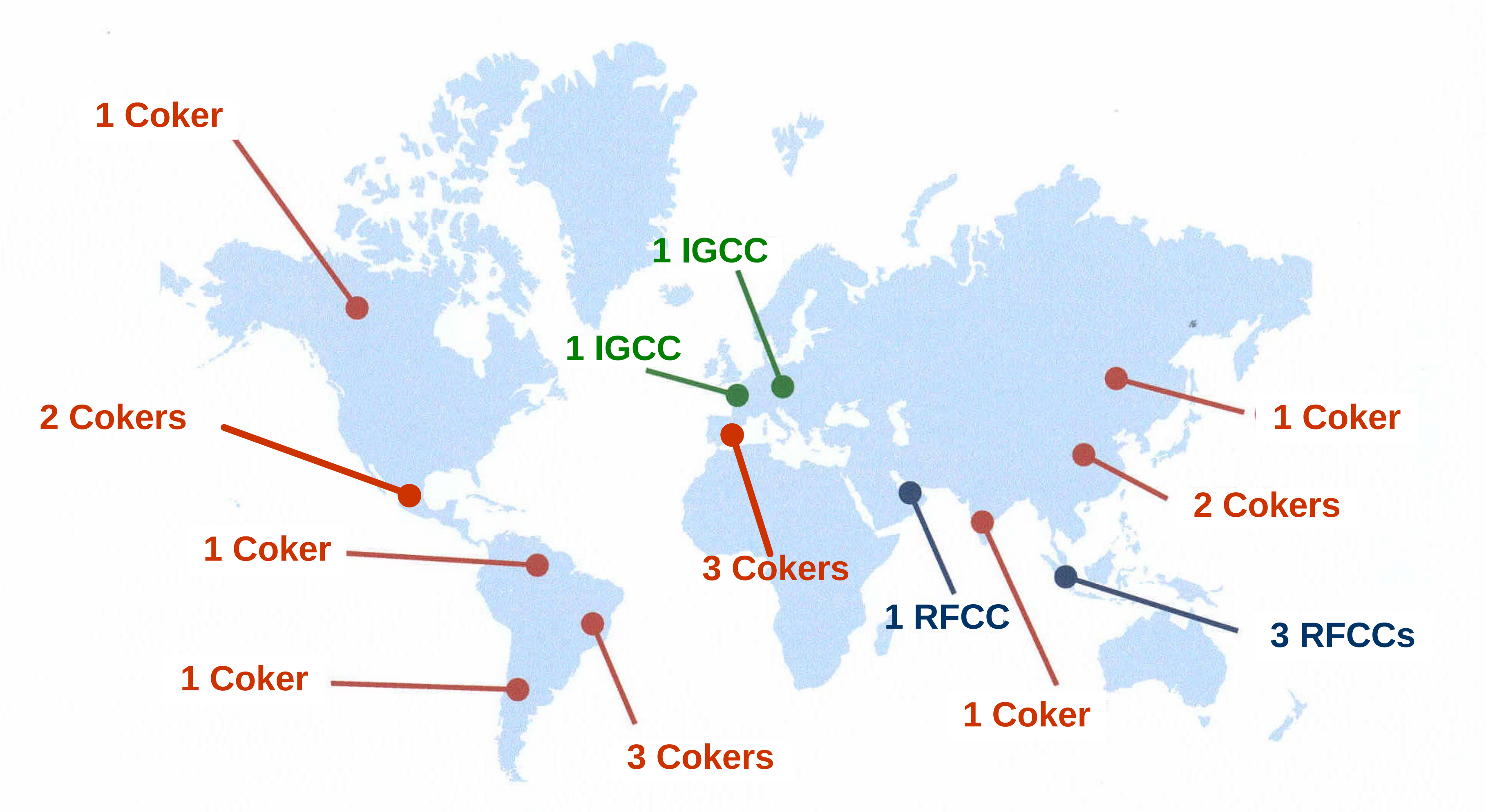
Under Project/Construction



Source: Repsol YPF

New investment in residue conversion

Coking: Preferred Way



Source: Nexant Chemsystems & Repsol YPF

Refining strategy 2005-2009 in Spain

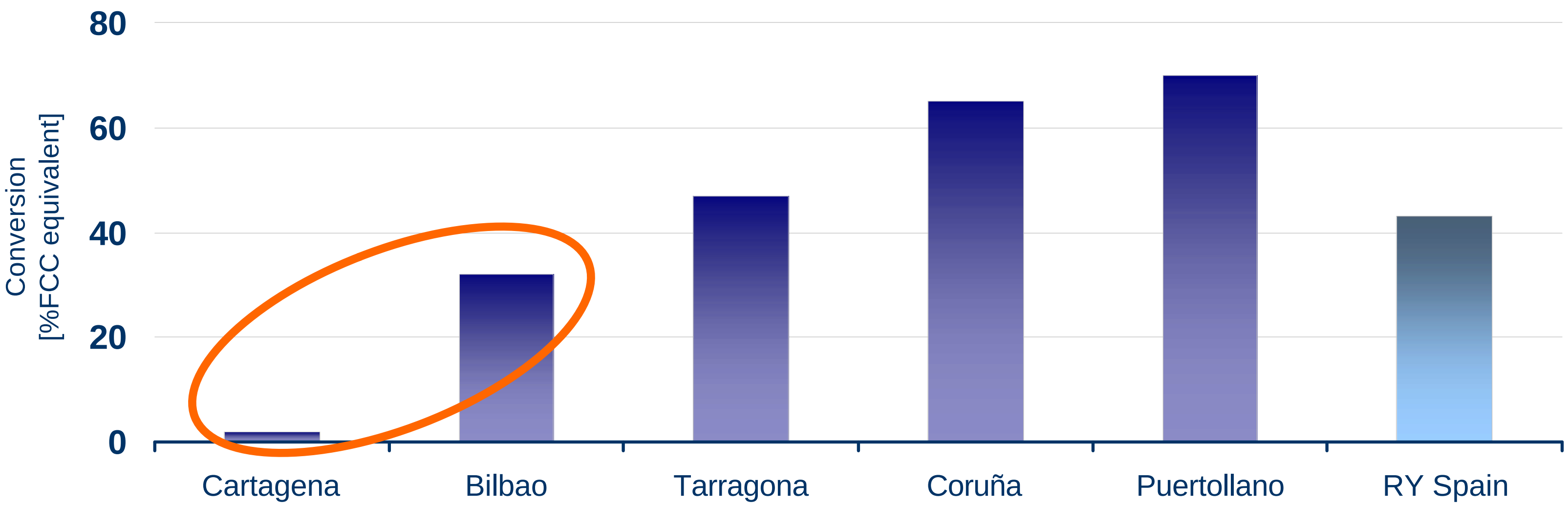
Reinforcing strengths

- Location advantages in areas with strong deficit of middle distillates
- Extensive inland logistics and coastal refineries
- Flexible refining system, with above average conversion, able to treat heavier/sourer crude oils
- Integrated with petrochemicals and lube oil & asphalt production
- Cost effectiveness & energy efficiency improvement

Refining Spain: Investment strategy

- **Complete the investment program to comply with new specifications (2009+)**
- **Increase refining system's conversion capacity by installing new coking and hydrocracking units**
- **Increase refining capacity at existing sites**
- **Renewables: Biodiesel, to meet the EU Directive (5.75% biofuels in 2010) reinforcing the current leadership position of Repsol YPF as bioethanol user for gasolines via ETBE (140.000 t/y of bioethanol)**
- **Improve efficiency, safety and environment**

Major Investments 2005-2009 at Cartagena & Bilbao Refineries



Source: Repsol YPF

Refining investment in Spain

Refining projects

Major Investments

- New conversion capacity at Bilbao refinery
- New refining and conversion capacity at Cartagena refinery

2,700 M€

Other Investments

- De-bottlenecking
- Infrastructure facilities
- Other facilities

300 M€

Product Quality (1)

- 2009+ Product spec's
- HDS/HDA's and other related projects

270 M€

Energy Efficiency + HS&E

400 M€

Bio-diesel

up to 200 M€

3,870 M€

CAPEX 2005-2009

3,200 M€ (2)

(1) Investments already made up to 2005 for product quality improvement = 830 M€

(2) Rest of capex after 2009, up to 3,870 M€

Refining Spain: 2005 – 2009 Major investments

Bilbao Refinery = 600 M€

- New coking unit (2,000 kt/y)
- New storage & coke handling facilities
- Other complementary facilities
- Existing visbreaking unit modification
- Existing facilities and utilities revamping

Cartagena Refinery = 2,100 M€

- New crude-oil distillation unit (5,500 kt/y <> 110,000 bpd)
- New vacuum distillation unit (4,900 kt/y)
- New coking unit (3,200 kt/y)
- New hydrocracking unit (2,500 kt/y)
- New HDS units (3,000 kt/y)
- New isomerization unit (300 kt/y)
- New hydrogen plant
- New complementary facilities, utilities, coke handling & infrastructure

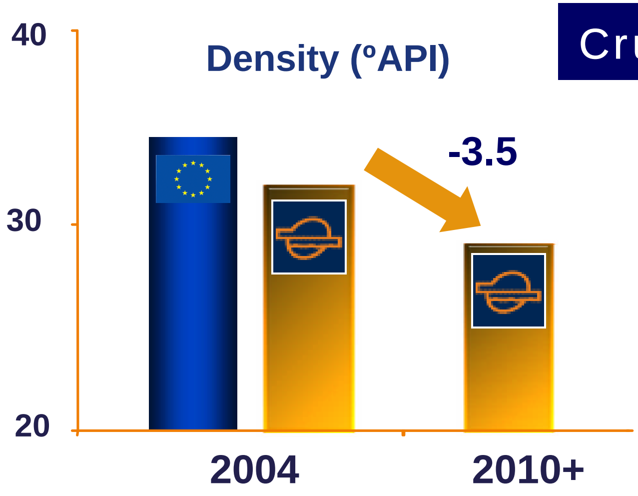
New Repsol YPF refineries scheme in Spain

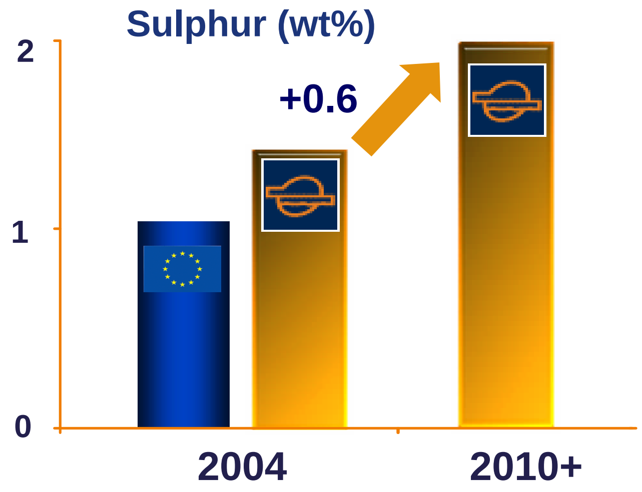
	Puertollano	La Coruña	Tarragona	Bilbao	Cartagena
Topping	●	●	●	●	●
Vacuum distillation	●	●	●	●	●
Platforming	●	●	●	●	●
HDS	●	●	●	●	●
FCC	●	●		●	
Mildhydrocracker	●	●		●	
Hydrocracker			●		○
Visbreaking			●	●	
Coking	●	●		○	○
Current Conversion (1)	70	65	47	32	--
Future Conversion (1)	70	65	47	63	80

(1) Conversion index as % FCC equivalent

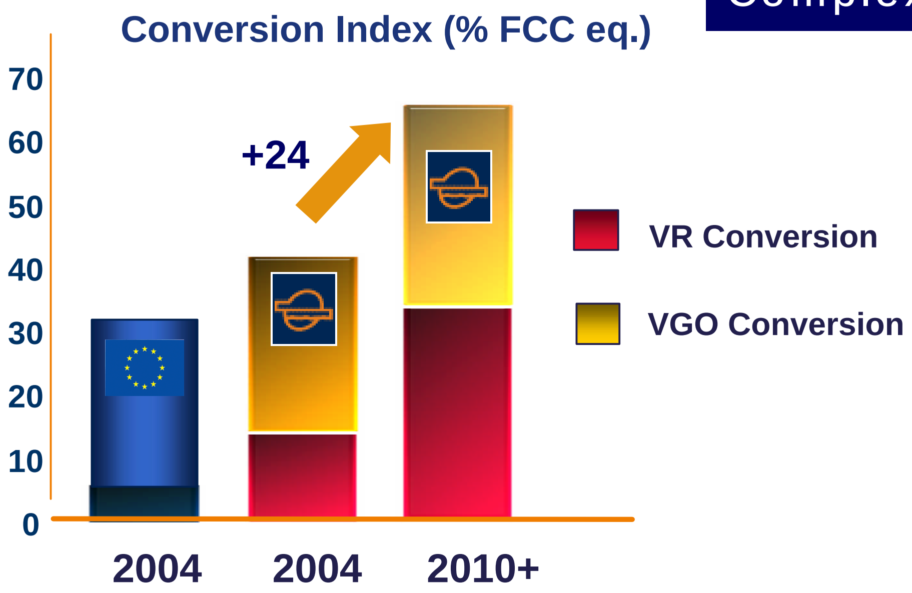
Effect of new investments on conversion

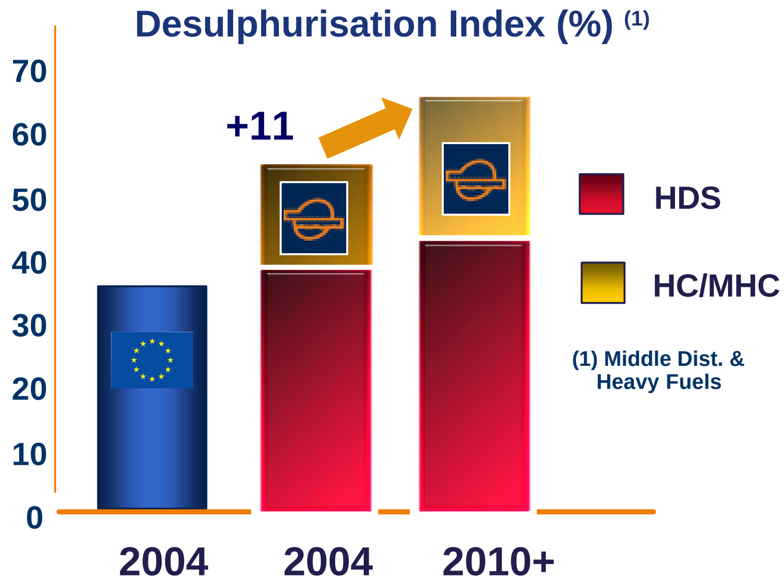
Crude Oil Quality





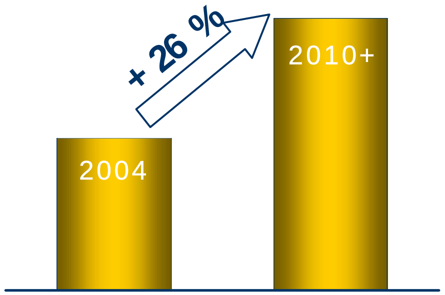
Complexity





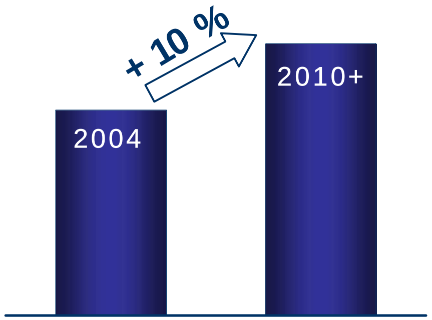
New investments effect on production

Middle Distillates



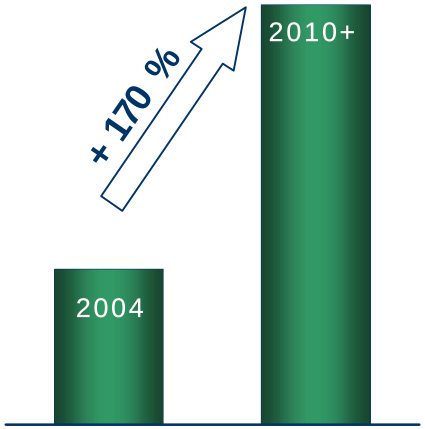
+5.4 Mm^3/y

Gasolines



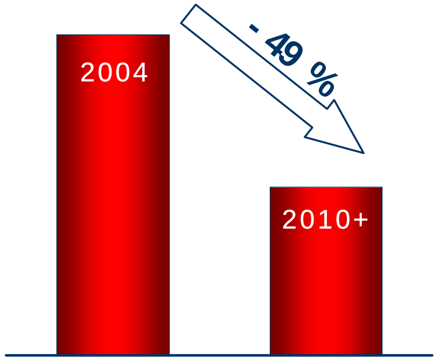
+0.8 Mm^3/y

Coke



+1.6 Mt/y

Fuel Oil



-1.8 Mt/y

New investments effect on refining capacity