

# Refining and Marketing

 [www.bp.com/FOI\\_2006-10/r&m.xls](http://www.bp.com/FOI_2006-10/r&m.xls)

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# Refining and Marketing

BP's Refining and Marketing business is responsible for the supply and trading, refining, manufacturing, marketing and transportation of crude oil, petroleum, petrochemicals products and related services to wholesale and retail customers.

We have significant operations in Europe and North America and also manufacture and market our products across Australasia, in China and other parts of Asia, Africa and Central and South America.

Our organization is managed through two main business groupings: fuels value chains (FVCs) and international businesses (IBs). The FVCs integrate the activities of refining, logistics, marketing and supply and trading on a regional basis. This provides the opportunity to optimize our activities from crude oil purchases to end consumer sales through our physical assets (refineries, terminals, pipelines and retail stations). The IBs operate on a global basis and include the manufacturing, supply and marketing of lubricants, petrochemicals, aviation fuels and liquefied petroleum gas.

Our purpose is to be the product and service-led arm of BP, focused on fuels, lubricants, petrochemicals products and related services.

We aim to be excellent in the markets we choose to be in – those that allow BP to serve the major energy markets of the world.

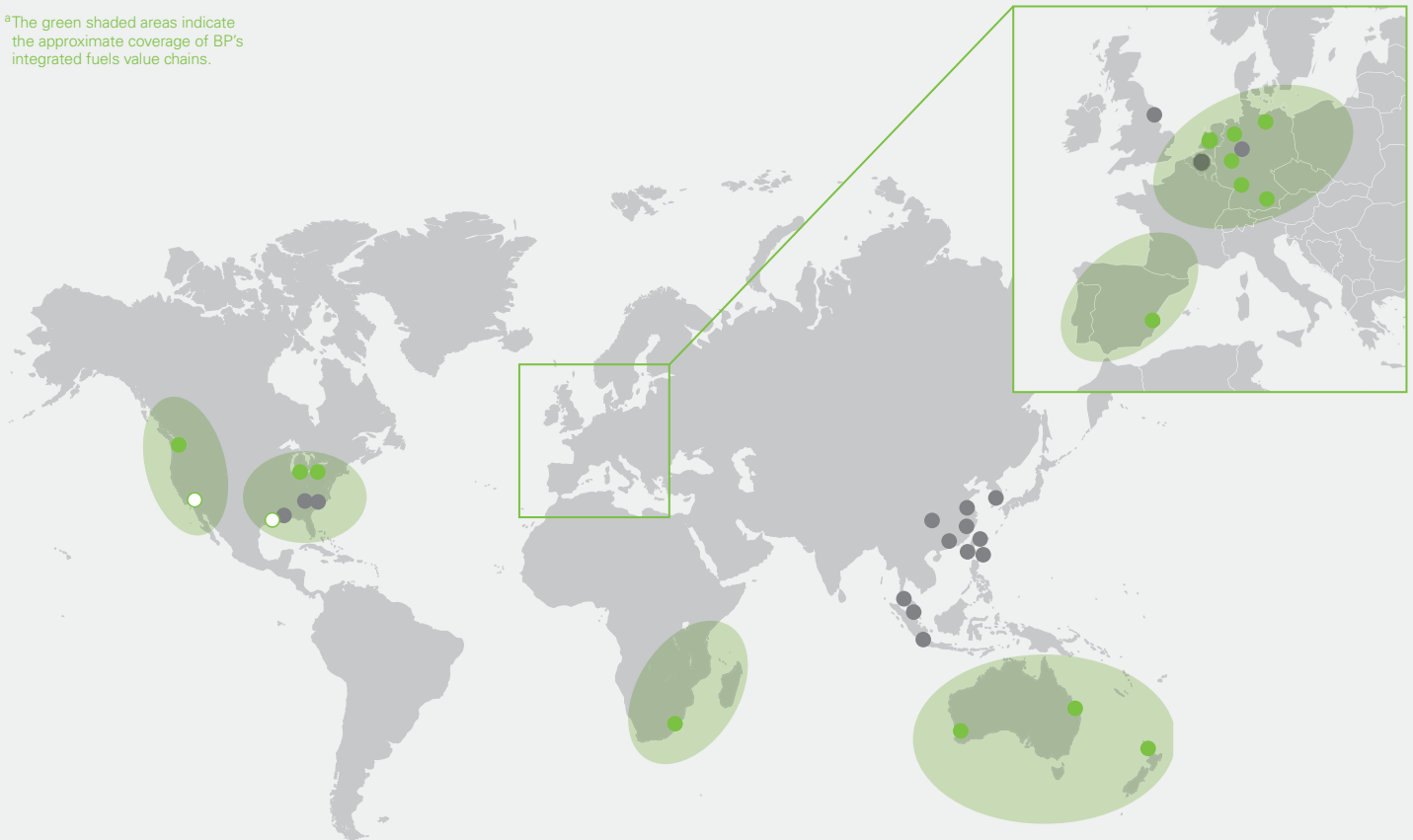
We are in pursuit of competitive returns and enduring growth, as we serve customers and promote BP and our brands through quality products.

We believe that key to our continued success in Refining and Marketing is holding a portfolio of quality, integrated, efficient positions and accessing available market growth in emerging markets.

**Refining and Marketing  
BP's global presence in 2010<sup>a</sup>**

- BP refinery (wholly or partly owned)
- Petrochemicals site(s) (wholly or partly owned)
- Proposed for disposal by the end of 2012

<sup>a</sup>The green shaded areas indicate the approximate coverage of BP's integrated fuels value chains.



These maps illustrate our Refining and Marketing operations around the world. For more information on our refineries and petrochemicals plants, click on the relevant link. The links will take you to content on [www.bp.com](http://www.bp.com) that does not form part of *BP Financial and Operating Information 2006-2010*.

## Key indicators

	2006 <sup>c</sup>	2007	2008	2009	2010
Result and refining margin					
Replacement cost profit before interest and tax (\$ billion)	5.66	2.62	4.18	0.74	<b>5.56</b>
Refining marker margin <sup>a</sup> (\$/bbl)	15.70	17.24	15.11	9.19	<b>10.02</b>
Refining availability <sup>b</sup> (%)	82.5	82.9	88.8	93.6	<b>95.0</b>

### Refining marker margin by region<sup>a</sup>

	\$ per barrel				
	2006	2007	2008	2009	2010
US West Coast	23.43	23.93	16.35	13.40	<b>13.09</b>
US Gulf Coast	20.10	20.78	16.97	9.16	<b>10.17</b>
US Midwest	12.17	14.70	8.50	6.02	<b>6.00</b>
North West Europe	12.22	14.43	17.22	8.95	<b>10.36</b>
Mediterranean	11.85	13.04	14.27	7.93	<b>8.82</b>
Singapore	14.05	14.96	16.99	8.51	<b>10.69</b>
BP Average RMM	15.70	17.24	15.11	9.19	<b>10.02</b>

<sup>a</sup>The refining marker margin is the average of regional indicator margins weighted for BP's crude refining capacity in each region. Each regional marker margin is based on product yields and a 'marker' crude oil deemed appropriate for the region. The regional indicator margins may not be representative of the margins achieved by BP in any period because of BP's particular refinery configurations and crude and product slate.

<sup>b</sup>Refining availability represents Solomon Associates' operational availability, which is defined as the percentage of the year that a unit is available for processing after subtracting the annualized time lost due to turnaround activity and all planned mechanical, process and regulatory maintenance downtime.

<sup>c</sup>As reported in Annual Report on Form 20-F. There was a \$500 million (\$315 million post tax) timing difference between the profit reported under IFRS in the Annual Report and Accounts and the profit reported under IFRS in BP Annual Report on Form 20-F 2006. For further information see BP Annual Report and Accounts 2006.

## Financial statistics

	\$ million				
	2006 <sup>b</sup>	2007	2008	2009	2010
Replacement cost profit (loss) before interest and tax					
US	1,858	(1,232)	(644)	(2,578)	<b>935</b>
Non-US	3,803	3,853	4,820	3,321	<b>4,620</b>
	5,661	2,621	4,176	743	<b>5,555</b>
Operating capital employed					
US	16,527	17,748	15,904	20,114	<b>23,463</b>
Non-US	24,611	30,163	25,295	26,387	<b>24,959</b>
	41,138	47,911	41,199	46,501	<b>48,422</b>
Sales and other operating revenues	232,386	250,221	320,039	213,050	<b>266,751</b>
Property, plant and equipment (net book value)					
US	10,247	9,440	10,608	12,497	<b>14,151</b>
Non-US	12,901	15,030	14,016	14,616	<b>13,996</b>
	23,148	24,470	24,624	27,113	<b>28,147</b>
Capital expenditure and acquisitions					
US	1,339	1,872	4,297	2,625	<b>2,761</b>
Non-US	1,788	3,623	2,337	1,489	<b>1,268</b>
	3,127	5,495	6,634	4,114	<b>4,029</b>
Employee numbers at year end					
Non-service station staff	41,900	42,700	40,300	37,700	<b>37,100</b>
Service station staff <sup>a</sup>	26,100	24,500	21,200	13,900	<b>15,200</b>
	68,000	67,200	61,500	51,600	<b>52,300</b>

<sup>a</sup>Service station staff are those employed directly by BP at BP-owned retail sites. It excludes staff at BP-branded sites operated by dealers, jobbers and franchisees.

<sup>b</sup>As reported in Annual Report on Form 20-F. There was a \$500 million (\$315 million post tax) timing difference between the profit reported under IFRS in the Annual Report and Accounts and the profit reported under IFRS in BP Annual Report on Form 20-F 2006. For further information see BP Annual Report and Accounts 2006.

## Petrochemicals production capacities<sup>a b</sup>

Geographical area	Site	Product	Group interest %	BP share of capacity thousand tonnes per year
<b>US</b>				
	Cooper River	Purified terephthalic acid (PTA)	100.0	1,342
	Decatur	PTA	100.0	1,043
		Paraxylene (PX)	100.0	1,101
		Naphthalene dicarboxylate	100.0	29
	Texas City	Acetic acid	100.0	583 <sup>c</sup>
		PX	100.0	1,271
		Metaxylene	100.0	123
				5,492
<b>Europe</b>				
UK	Hull	Acetic acid	100.0	532
		Acetic anhydride	100.0	153
		Ethylidene diacetate	100.0	4
Belgium	Geel	PTA	100.0	1,343
		PX	100.0	631
Germany	Gelsenkirchen	Olefins and Derivatives (O&D)	50.0 to 61.0	1,764 <sup>b d</sup>
	Mülheim	Solvents	50.0	130 <sup>b</sup>
				4,557
<b>Rest of World</b>				
China	Caojing	O&D	50.0	3,103 <sup>b</sup>
	Chongqing	Acetic acid	51.0	215 <sup>b</sup>
		Esters	51.0	52 <sup>b</sup>
	Nanjing	Acetic acid	50.0	274 <sup>b</sup>
	Zhuhai	PTA	85.0	1,549 <sup>e</sup>
Indonesia	Merak	PTA	50.0	253 <sup>b</sup>
Korea	Ulsan	Acetic acid	51.0	261 <sup>b</sup>
		Vinyl acetate monomer	34.0	56 <sup>b</sup>
Malaysia	Kertih	Acetic acid	70.0	391 <sup>b</sup>
	Kuantan	PTA	100.0	610
Taiwan	Kaohsiung	PTA	61.4	847 <sup>b</sup>
	Taichung	PTA	61.4	471 <sup>b</sup>
	Mai Liao	Acetic acid	50.0	179 <sup>b</sup>
				8,261
<b>Total BP share of capacity at 31 December 2010</b>				<b>18,310</b>

<sup>a</sup> Petrochemicals production capacity is the proven maximum sustainable daily rate (msdr) multiplied by the number of days in the respective period, where msdr is the highest average daily rate ever achieved over a sustained period.

<sup>b</sup> Includes BP share of equity accounted entities, as indicated.

<sup>c</sup> Sterling Chemicals plant, 100% of the output of which is marketed by BP.

<sup>d</sup> Group interest varies by product.

<sup>e</sup> BP Zhuhai Chemical Company Ltd is a subsidiary of BP, the capacity of which is shown above at 100%.

## Petrochemicals production capacities<sup>a,b</sup> continued

### Petrochemicals production capacities summary

By geographical area						BP share of capacity thousand tonnes per year	
	PTA	PX	Acetic acid	Other	O&D	Total	
US	2,385	2,372	583	152	–	<b>5,492</b>	
Europe	1,343	631	532	157	1,894	<b>4,557</b>	
Rest of World	3,730	–	1,320	108	3,103	<b>8,261</b>	
Total BP share of capacity at 31 December 2010	7,458	3,003	2,435	417	4,997	<b>18,310</b>	

<sup>a</sup>Petrochemicals production capacity is the msdr multiplied by the number of days in the respective period, where msdr is the highest average daily rate ever achieved over a sustained period.

<sup>b</sup>Includes BP share of equity-accounted entities.

## Petrochemicals production<sup>a</sup>

By geographical area	thousand tonnes				
	2006	2007	2008	2009	2010
US	3,464	4,328	3,487	3,110	<b>4,146</b>
Europe <sup>b</sup>	4,508	3,909	3,574	3,724	<b>4,051</b>
Rest of World	6,454	6,083	5,774	5,826	<b>7,397</b>
	14,426	14,320	12,835	12,660	<b>15,594</b>

<sup>a</sup>Comprises actual production in respect of the products listed in the capacity table above.

<sup>b</sup>A minor amendment has been made to comparative periods.

## Refinery throughputs and utilization

### Refinery throughputs<sup>a</sup>

	thousand barrels per day				
	2006	2007	2008	2009	2010
US	1,110	1,064	1,121	1,238	<b>1,350</b>
Europe	813	758	739	755	<b>775</b>
Rest of World	275	305	295	294	<b>301</b>
	<b>2,198</b>	<b>2,127</b>	<b>2,155</b>	<b>2,287</b>	<b>2,426</b>
Crude distillation capacity at 31 December <sup>b</sup>	2,823	2,769	2,678	2,666	<b>2,667</b>
Refinery capacity utilization <sup>c</sup>	78%	77%	81%	86%	<b>91%</b>

<sup>a</sup> Refinery throughputs reflect crude and other feedstock volumes.

<sup>b</sup> Crude distillation capacity is gross rated capacity, which is defined as the highest average sustained unit rate for a consecutive 30-day period.

<sup>c</sup> Refinery utilization is annual throughput divided by crude distillation capacity, expressed as a percentage. The measure was redefined in 2009 to be more consistent with industry standards.

### Crude oil input

					%
	2006	2007	2008	2009	2010
Low sulphur crude	45	41	31	34	<b>34</b>
High sulphur crude	55	59	69	66	<b>66</b>

### Refinery yield<sup>a</sup>

	thousand barrels per day				
	2006	2007	2008	2009	2010
Aviation fuels	216	231	268	276	<b>290</b>
Gasolines	874	788	757	818	<b>881</b>
Middle distillates	626	607	631	674	<b>723</b>
Fuel oil	136	115	127	123	<b>93</b>
Other products	432	390	414	447	<b>497</b>
	<b>2,284</b>	<b>2,131</b>	<b>2,197</b>	<b>2,338</b>	<b>2,484</b>

<sup>a</sup> Refinery yields exceed throughputs because of volumetric expansion.

# Refineries

## Refinery capacities

		thousand barrels per day																
		Crude distillation capacities <sup>a</sup>								Major upgrading plant capacities <sup>b</sup>								
		Group interest % <sup>c</sup>	Total	BP share	Vacuum distillation	Fluid catalytic cracking	Hydro-cracking	Catalytic reforming	Alkylation and Polymerization	Hydro-treating gasoline and naphtha	Hydro-treating jet, dist and heavier	Visbreaking	Coker	Aromatics and Isomerization	Asphalt	Hydrogen <sup>d</sup>	Other <sup>e</sup>	Nelson Complexity Index <sup>f</sup>
Wholly and partly owned refineries at 31 December 2010																		
<b>US</b>																		
California	Carson <sup>g</sup>	100.0	266	266	140	103	50	53	17	115	136	–	67	31	–	125	–	13.2
Washington	Cherry Point <sup>g</sup>	100.0	234	234	106	–	65	65	–	97	49	–	62	24	–	135	–	10.2
Indiana	Whiting <sup>g</sup>	100.0	405	405	191	165	–	64	25	125	209	–	35	26	30	59	–	9.6
Ohio	Toledo <sup>g</sup>	50.0	160	80	36	28	16	22	6	20	34	–	17	–	5	28	–	10.6
Texas	Texas City <sup>g</sup>	100.0	475	475	237	175	130	138	37	213	243	–	43	95	–	60	–	14.1
			1,540	1,460	710	471	261	342	85	570	671	–	224	176	35	407	–	11.9
<b>Europe</b>																		
Germany	Bayernoil	22.5	215	48	18	11	10	9	–	17	21	3	–	–	–	44	1	8.6
	Gelsenkirchen <sup>g</sup>	50.0	265	132	80	15	29	16	–	36	51	10	17	10	8	105	–	9.4
	Karlsruhe	12.0	324	39	16	10	–	7	2	12	29	–	4	2	–	–	1	9.1
	Lingen <sup>g</sup>	100.0	93	93	43	–	28	32	–	33	45	–	23	25	–	128	–	14.4
	Schwedt	18.8	237	45	29	11	–	7	2	18	35	9	–	5	1	8	1	10.9
Netherlands	Rotterdam <sup>g</sup>	100.0	377	377	87	60	–	30	9	90	272	36	–	–	–	14	3	5.8
Spain	Castellón <sup>g</sup>	100.0	110	110	47	30	–	17	4	56	84	–	20	19	–	86	–	12.2
			1,621	844	320	137	67	118	17	262	537	58	64	61	9	385	6	8.7
<b>Rest of World</b>																		
Australia	Bulwer <sup>g</sup>	100.0	102	102	39	23	20	16	3	20	43	–	–	–	3	35	–	7.3
	Kwinana <sup>g</sup>	100.0	143	143	22	35	–	24	6	49	49	–	–	15	2	–	–	7.4
New Zealand	Whangarei	23.7	118	28	10	–	8	6	–	9	11	–	–	–	1	1	–	6.3
South Africa	Durban	50.0	180	90	38	19	–	17	1	24	43	14	–	5	3	1	8	12.7
			543	363	109	77	28	63	10	102	146	14	–	20	9	37	8	8.6
			3,704	2,667	1,139	685	356	523	112	934	1,354	72	288	257	53	829	14	10.4

<sup>a</sup> Crude distillation capacity is gross rated capacity, which is defined as the highest average sustained unit rate for a consecutive 30-day period.

<sup>b</sup> These are shown as BP share of capacities; BP has varying interests.

<sup>c</sup> BP share of equity, which is not necessarily the same as BP share of processing entitlements.

<sup>d</sup> Reported as standard cubic feet per day.

<sup>e</sup> Other consists of ethyl, methyl tertiary butyl ether and lubricants units.

<sup>f</sup> Nelson Complexity Index is calculated as defined by the *Oil and Gas Journal* survey January 2010. In general, the higher a refinery's Nelson Complexity Index, the greater that refinery's ability to make higher-value products from a given feedstock.

<sup>g</sup> Indicates refineries operated by BP.

## Regional refining distillation capacity

		thousand barrels per day				
		2006	2007	2008	2009	2010
US Gulf Coast		475	475	475	475	<b>475</b>
US Midwest		560	560	483	485	<b>485</b>
US West Coast		497	500	500	499	<b>500</b>
Total US		1,532	1,535	1,458	1,459	<b>1,460</b>
Europe		922	866	851	851	<b>844</b>
Rest of World		369	368	369	356	<b>363</b>
Total		2,823	2,769	2,678	2,666	<b>2,667</b>



Retail sites<sup>a b</sup>

	at 31 December				
	2006	2007	2008	2009	2010
US	12,300	12,200	11,700	11,500	<b>11,300</b>
Europe	9,000	8,600	8,600	8,600	<b>8,400</b>
Rest of World	2,600	2,500	2,300	2,300	<b>2,400</b>
	<b>23,900</b>	<b>23,300</b>	<b>22,600</b>	<b>22,400</b>	<b>22,100</b>

<sup>a</sup>The number of retail sites includes sites not operated by BP but instead operated by dealers, jobbers, franchisees or brand licencees that operate under a BP brand. These may move to or from the BP brand as their fuel supply or brand licence agreements expire and are renegotiated in the normal course of business. Retail sites are primarily branded BP, Arco and Aral.

<sup>b</sup>Excludes our interest in equity-accounted entities that are dual branded.

Oil sales volumes<sup>a</sup>

	thousand barrels per day				
	2006	2007	2008	2009	2010
Refined product marketing sales volumes by region					
US					
Aviation fuels	176	165	178	173	<b>188</b>
Gasolines	1,049	1,052	1,015	1,010	<b>958</b>
Middle distillates	296	260	201	186	<b>228</b>
Fuel oil	31	28	33	30	<b>30</b>
Other products	43	28	33	27	<b>29</b>
	<b>1,595</b>	<b>1,533</b>	<b>1,460</b>	<b>1,426</b>	<b>1,433</b>
Europe					
Aviation fuels	218	223	220	231	<b>264</b>
Gasolines	409	384	337	324	<b>259</b>
Middle distillates	741	711	719	670	<b>627</b>
Fuel oil	196	202	180	158	<b>147</b>
Other products	132	113	110	121	<b>105</b>
	<b>1,696</b>	<b>1,633</b>	<b>1,566</b>	<b>1,504</b>	<b>1,402</b>
Rest of World					
Aviation fuels	94	102	103	91	<b>94</b>
Gasolines	145	136	148	110	<b>109</b>
Middle distillates	133	148	135	156	<b>157</b>
Fuel oil	161	199	247	230	<b>214</b>
Other products	48	55	52	43	<b>36</b>
	<b>581</b>	<b>640</b>	<b>685</b>	<b>630</b>	<b>610</b>
Total marketing sales volumes by product					
Aviation fuels	488	490	501	495	<b>546</b>
Gasolines	1,603	1,572	1,500	1,444	<b>1,326</b>
Middle distillates	1,170	1,119	1,055	1,012	<b>1,012</b>
Fuel oil	388	429	460	418	<b>391</b>
Other products	223	196	195	191	<b>170</b>
Total marketing sales <sup>b</sup>	<b>3,872</b>	<b>3,806</b>	<b>3,711</b>	<b>3,560</b>	<b>3,445</b>
Trading/supply sales <sup>c</sup>	1,929	1,818	1,987	2,327	<b>2,482</b>
Total refined product sales	<b>5,801</b>	<b>5,624</b>	<b>5,698</b>	<b>5,887</b>	<b>5,927</b>
Crude oil sales	2,110	1,885	1,689	1,824	<b>1,658</b>
Total oil sales	<b>7,911</b>	<b>7,509</b>	<b>7,387</b>	<b>7,711</b>	<b>7,585</b>

## Sales and other operating revenues from marketing sales of refined product

	\$ million				
	2006	2007	2008	2009	2010
US	71,175	76,898	93,764	63,442	<b>80,576</b>
Europe	79,327	87,719	114,522	71,189	<b>88,347</b>
Rest of World	27,493	30,362	40,275	31,457	<b>40,298</b>
	<b>177,995</b>	<b>194,979</b>	<b>248,561</b>	<b>166,088</b>	<b>209,221</b>

<sup>a</sup>Excludes sales to other BP businesses and sales of petrochemicals products.

<sup>b</sup>Marketing sales are sales of refined products to service stations, end-consumers, bulk buyers and jobbers (i.e. third parties who own networks of a number of service stations and small resellers).

<sup>c</sup>Trading/supply sales are sales of refined products to large unbranded resellers and other oil companies.