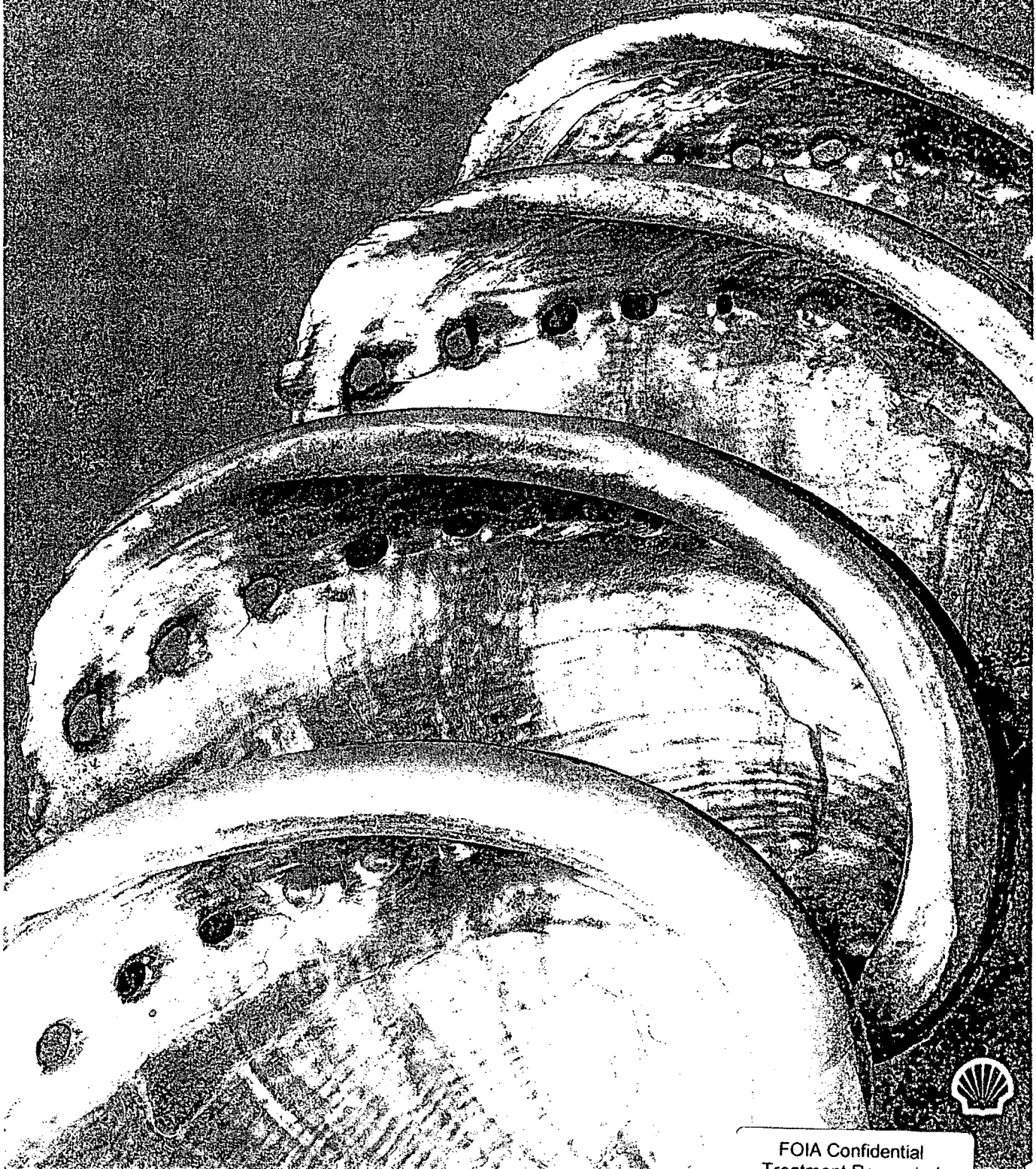


## **Exhibit 90**

# Annual Report on Form 20-F 2002

Royal Dutch Petroleum Company

The "Shell" Transport and Trading Company, Public Limited Company



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**UNITED STATES**  
**SECURITIES AND EXCHANGE COMMISSION**  
 WASHINGTON, D.C. 20549  
**FORM 20-F**

**Annual Report Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934**

For the fiscal year ended December 31, 2002

Commission file number 1-3788

**N.V. KONINKLIJKE NEDERLANDSCHE  
 PETROLEUM MAATSCHAPPIJ**

(Exact name of registrant as specified in its charter)

**ROYAL DUTCH PETROLEUM COMPANY**

(Translation of registrant's name into English)

**The Netherlands**

(Jurisdiction of incorporation or organization)

30, Carel van Bylandtlaan, 2596 HR The Hague, The Netherlands

tel. no: (011 31 70) 377 9111

(Address of principal executive offices)

Commission file number 1-4039

**THE "SHELL" TRANSPORT AND TRADING  
 COMPANY, PUBLIC LIMITED COMPANY**

(Exact name of registrant as specified in its charter)

**England**

(Jurisdiction of incorporation or organization)

Shell Centre, London SE1 7NA, England

tel. no: (011 44 20) 7934 1234

(Address of principal executive offices)

**Securities Registered Pursuant to Section 12(b) of the Act**

Title of Each Class	Name of Each Exchange on Which Registered	Title of Each Class	Name of Each Exchange on Which Registered
Ordinary shares of the nominal (par) value of 0.56 Euro (€0.56) each	New York Stock Exchange*	New York Shares representing Ordinary shares of the issuer of an aggregate nominal amount of £1.50 each and evidenced by Depository Receipts ("New York Shares")	New York Stock Exchange**
		Ordinary shares of 25p each***	

\*Also admitted to unlisted trading privileges on the following  
 Stock Exchanges: Boston, Cincinnati, Midwest, Pacific and Philadelphia.

\*\*Also admitted to unlisted trading privileges on the following  
 Stock Exchanges: Boston, Cincinnati, Midwest, Pacific and Philadelphia.

\*\*\*Not for trading, but only in connection with the listing of New York  
 Shares on the New York Stock Exchange

**Securities Registered Pursuant to Section 12 (g) of the Act**

None

**Securities For Which There is a Reporting Obligation  
 Pursuant to Section 15(d) of the Act**

None

Indicate the number of outstanding shares of each of the  
 issuer's classes of capital or common stock as of the close  
 of the period covered by the annual report.

Outstanding as of December 31, 2002: 2,099,285,000

ordinary shares of €0.56 each.

Indicate the number of outstanding shares of each of the  
 issuer's classes of capital or common stock as of the close  
 of the period covered by the annual report.

Outstanding as of December 31, 2002: 9,667,500,000

Ordinary shares of the nominal amount of 25p each.

Indicate by check mark whether the registrants (1) have filed all reports required to be filed  
 by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months  
 (or for such shorter period that the registrants were required to file such reports), and (2) have  
 been subject to such filing requirements for the past 90 days. Yes / No

Indicate by check mark which financial statement item the registrants have elected to follow.

Item 17 /

Item 18

Copies of notices and communications from the Securities and Exchange Commission should be sent to:

CRAVATH, SWAINE & MOORE,  
 CityPoint, One Ropemaker Street, London EC2Y 9HR, England  
 Attn: William P. Rogers

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# Cross Reference Sheet for Annual Report on Form 20-F

Headings\* in this Annual Report which relate to:

Item number and captions	N.V. Koninklijke Nederlandsche Petroleum Maatschappij (Royal Dutch Petroleum Company)	The "Shell" Transport and Trading Company, Public Limited Company
1 Identity of Directors, Senior Management and Advisers	Not applicable	Not applicable
2 Offer Statistics and Expected Timetable	Not applicable	Not applicable
3 Key Information	Selected Financial Data - Royal Dutch Discussion and Analysis of Financial Condition and Results of Operations - Group Group - Business and Property - risk factors	Selected Financial Data - Shell Transport Discussion and Analysis of Financial Condition and Results of Operations - Group Group - Business and Property - risk factors
4 Information on the Company	Introduction - Parent Companies, Group Discussion and Analysis of Financial Condition and Results of Operations - Group Group - Business and Property Supplementary Information - Oil and Gas Introduction - Group	Introduction - Parent Companies, Group Discussion and Analysis of Financial Condition and Results of Operations - Group Group - Business and Property Supplementary Information - Oil and Gas Introduction - Group
5 Operating and Financial Review and Prospects	Discussion and Analysis of Financial Condition and Results of Operations - Royal Dutch, Group Group - Business and Property - business environment, description of activities, research	Discussion and Analysis of Financial Condition and Results of Operations - Shell Transport, Group Group - Business and Property - business environment, description of activities, research
6 Directors, Senior Management and Employees	Royal Dutch - control of registrant, management, share ownership Note 11 to Royal Dutch Financial Statements Group - Business and Property - personnel	Shell Transport - control of registrant, management, share ownership Note 10 to Shell Transport Financial Statements Group - Business and Property - personnel
7 Major Shareholders and Related Party Transactions	Royal Dutch - control of registrant	Shell Transport - control of registrant
8 Financial Information	Index to Financial Statements and Exhibits Financial Statements - Royal Dutch, Group Selected Financial Data - Royal Dutch Discussion and Analysis of Financial Condition and Results of Operations - Royal Dutch, Group	Index to Financial Statements and Exhibits Financial Statements - Shell Transport, Group Selected Financial Data - Shell Transport Discussion and Analysis of Financial Condition and Results of Operations - Shell Transport, Group
9 The Offer and Listing	Royal Dutch - Nature of trading market	Shell Transport - Nature of trading market
10 Additional Information	Royal Dutch - Articles of Association, exchange controls and other limitations affecting security holders, taxation Introduction - documents on display	Shell Transport - Memorandum and Articles of Association, exchange controls and other limitations affecting security holders, taxation Introduction - documents on display
11 Quantitative and Qualitative Disclosures about Market Risk	Discussion and Analysis of Financial Condition and Results of Operations - Group - risk management and internal control, treasury and trading risks Supplementary Information - Derivatives and other Financial Instruments and Derivative Commodity Instruments	Discussion and Analysis of Financial Condition and Results of Operations - Group - risk management and internal control, treasury and trading risks Supplementary Information - Derivatives and other Financial Instruments and Commodity Instruments
12 Description of Securities Other than Equity Securities	Not applicable	Not applicable
13 Defaults, Dividend Arrearages and Delinquencies	None	None
14 Material Modifications to the Rights of Security Holders and Use of Proceeds	None	None
15 Controls and Procedures	Controls and Procedures - Royal Dutch	Controls and Procedures - Shell Transport
17 Financial Statements	Financial Statements - Royal Dutch, Group	Financial Statements - Shell Transport, Group
18 Financial Statements	Not applicable	Not applicable
19 Exhibits	Index to Financial Statements and Exhibits	Index to Financial Statements and Exhibits

\* Names of the registrants and references to the Royal Dutch/Shell Group of Companies appearing in headings have been abbreviated to Royal Dutch, Shell Transport and Group, respectively.

**N.V. Koninklijke Nederlandsche Petroleum Maatschappij  
(Royal Dutch Petroleum Company),**

**The "Shell" Transport and Trading Company, Public Limited Company**

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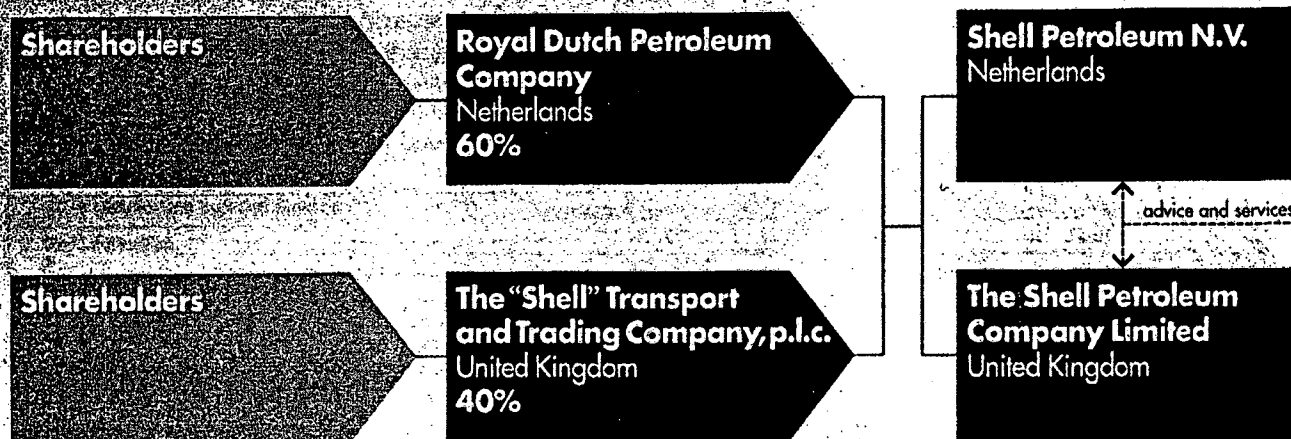
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## Introduction



### A THE PARENT COMPANIES

N.V. Koninklijke Nederlandsche Petroleum Maatschappij (Royal Dutch Petroleum Company, hereinafter referred to as "Royal Dutch") was incorporated on June 16, 1890, under the laws of the Netherlands.

The "Shell" Transport and Trading Company, Public Limited Company (hereinafter referred to as "Shell Transport") was incorporated on October 18, 1897, under the laws of England.

Royal Dutch and Shell Transport do not engage in operational activities. They derive the whole of their respective incomes – except for interest income on cash balances or short-term investments – from their respective interests in the companies known collectively as the Royal Dutch/Shell Group of Companies.

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## Service Companies

### Operating Companies

In more than 145 countries and territories around the world, the companies of the Royal Dutch/Shell Group are engaged in the business of Exploration and Production, Gas & Power, Oil Products, Chemicals and Renewables as well as Other Activities.

The management of each Operating Company is responsible for the performance and long-term viability of its own operations, but it can draw on the experience of the Service Companies and, through them, of other Operating Companies.

### Exploration and Production

Shell companies have been exploring for and producing hydrocarbons for over a century. Today Exploration and Production (EP) companies have interests and ventures in over 40 countries. Sometimes known as the "upstream" business, the activities in EP extend from exploring, drilling and assessing new sources for hydrocarbon reserves; executing projects for development of those reserves; planning and running production operations to ultimately decommissioning when the operation has run its course. Technology, entrepreneurial skills and operational excellence are key enablers to these activities.

### Gas & Power

Gas is the cleanest conventional fuel. Shell processes and transports natural gas, develops power plants and markets natural gas and electricity to a wide range of customers. Shell has pioneered the development of the liquefied natural gas (LNG) industry and has a leading market position with interests in five LNG projects and a number of expansions and new plants under development. Gas & Power also has interests in natural gas pipelines, power generation (mostly through our InterGen joint venture), marketing and trading activities and is a leader in Gas to Liquids technology.

### Oil Products

Oil Products encompasses all the activities which transform crude oil from the wellhead into Shell products for customers. It has an interest in more than 50 refineries worldwide and markets fuels for the automotive, aviation and marine sectors, along with heating oils, industrial and consumer lubricants, speciality products such as bitumen and liquefied petroleum gas (LPG) and technical services. Oil Products serves some 25 million retail customers a day through 55,000 service stations and has the world's largest single branded retail network. Shell Global Solutions brings our technology and experience to market by providing industry customers with innovative solutions to improve their performance.

### Chemicals

Chemicals produces and sells petrochemical building blocks and polyolefins to industrial customers globally. Chemicals' products make an important contribution to many aspects of modern life. They are widely used in plastics, coatings and detergents which in turn are used in products such as fibres and textiles, thermal and electrical insulation, medical equipment and sterile supplies, computers, lighter and more efficient vehicles, paints and biodegradable detergents.

### Renewables and Other Activities

Renewables is developing the Group's renewable energy portfolio, focusing on two principal areas - solar and wind energy. The business manufactures solar energy systems in Europe and the USA and markets these globally. In wind energy the business develops and operates wind parks, focusing on Europe and the USA and sells "green" electricity.

Shell Consumer focuses on identifying and developing new scalable consumer and financial product offerings. Shell Hydrogen invests in hydrogen and fuel cell technologies to build a leading position for the Group in the hydrogen economy.

Shell Trading is a global trading organisation which utilises the Group's trading skills across the Oil Products and Gas & Power businesses and in chemical feedstocks trading.

Introduction 1

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## **B ROYAL DUTCH/SHELL GROUP OF COMPANIES**

The numerous companies in which Royal Dutch and Shell Transport own investments are collectively referred to as the Royal Dutch/Shell Group of Companies. Royal Dutch and Shell Transport are the Parent Companies of the Group but are not themselves part of it. The Royal Dutch/Shell Group of Companies has grown out of an alliance made in 1907 between Royal Dutch and Shell Transport, by which the two companies agreed to merge their interests on a 60:40 basis while remaining separate and distinct entities. Arrangements between Royal Dutch and Shell Transport provide, *inter alia*, that, notwithstanding variations in shareholdings, Royal Dutch and Shell Transport shall share in the aggregate net assets and in the aggregate dividends and interest received from Group companies in the proportion of 60:40. It is further arranged that the burden of all taxes in the nature of or corresponding to an income tax leviable in respect of such dividends and interests shall fall in the same proportion. Details of supplemental arrangements to the 60:40 arrangements are given in Note 1 on page G5.

The illustration on the previous page shows the relationship between the Parent Companies and the Royal Dutch/Shell Group of Companies.

### **Group Holding Companies**

There are two Group Holding Companies: Shell Petroleum N.V. in the Netherlands and The Shell Petroleum Company Limited in the UK. The Group Holding Companies between them hold all the shares in the Service Companies and, directly or indirectly, all Group interests in the Operating Companies. Some of these interests, including all the shares in the US-based Shell Oil Company (hereinafter referred to as "Shell Oil", which expression shall include its subsidiaries), are held by Shell Petroleum Inc., a Delaware Corporation. Shell Petroleum N.V. holds equity shares in Shell Petroleum Inc. that entitle it to the dividend flow from that company, but direct controlling interest in Shell Petroleum Inc. is jointly held by Royal Dutch and Shell Transport.

Royal Dutch is entitled to have its nominees elected as a majority of, and Shell Transport is entitled to have its nominees elected as the balance of, the members of the Boards of Directors of the two Group Holding Companies. Every member of the Board of Management of Royal Dutch and every Managing Director of Shell Transport is also a member of the Presidium of the Board of Directors of Shell Petroleum N.V. and a Managing Director of The Shell Petroleum Company Limited. As such, they are generally known as "Group Managing Directors". They are also appointed by the Boards of Shell Petroleum N.V. and The Shell Petroleum Company Limited to a joint committee known as the Committee of Managing Directors, which considers and develops objectives and long-term plans.

### **Service Companies**

The main business of the Service Companies is to provide advice and services to other Shell companies.

### **Operating Companies**

Present in more than 145 countries and territories around the world, the companies of the Royal Dutch/Shell Group are engaged in the business of Exploration and Production, Gas & Power, Oil Products, Chemicals and Renewables as well as Other Activities.

**Exploration and Production:** Searches for, finds and produces crude oil and natural gas. Builds and operates the infrastructure needed to deliver hydrocarbons to market.

**Gas & Power:** Liquefies and transports natural gas, develops gas markets and infrastructure, develops gas-fired power plants and engages in the marketing and trading of natural gas and electricity. Converts natural gas to liquids to provide clean fuels.

**Oil Products:** Markets transportation fuels, lubricants and speciality products. Refines, supplies, trades and ships crude oil and petroleum products. Provides technical consultancy services.

**Chemicals:** Produces and sells petrochemical building blocks and polyolefins globally.

**Renewables:** Generates "green" electricity and provides renewable energy solutions. Develops and operates wind parks; manufactures and markets solar systems.

**Other Activities** include Shell Consumer and Shell Hydrogen.

The management of each Operating Company is responsible for the performance and long-term viability of its own operations, but it can draw on the experience of the Service Companies and, through them, of other Operating Companies.



The information contained on the list of significant Group companies, including the jurisdiction of incorporation and the Parent Companies' proportion of ownership, filed as Exhibit 8 to this Annual Report on Form 20-F, is incorporated herein by reference.

## C PRESENTATION OF INFORMATION

The information in this Report relating to Royal Dutch has been provided by Royal Dutch and that relating to Shell Transport has been provided by Shell Transport.

The information given in this Report for the Royal Dutch/Shell Group of Companies reflects the operational and financial results of Group companies throughout the world. The financial information given is an aggregation of the accounts of all Group companies (except where otherwise indicated) expressed in US dollars. It should be noted that the accounts of Royal Dutch for the year 2002 (of which the Financial Statements of the Royal Dutch/Shell Group of Companies and the notes thereto form part) are subject to finalisation by the General Meeting of Shareholders to be held on April 23, 2003.

The companies in which Royal Dutch and Shell Transport directly or indirectly own investments are separate and distinct entities, but in this report the collective expressions "Shell" and "Group" are sometimes used for convenience in contexts where reference is made to the companies of the Royal Dutch/Shell Group in general. Likewise the words "we", "us" and "our" are sometimes used in some places to refer to companies of the Royal Dutch/Shell Group in general, and in others to those who work in those companies. These expressions are also used where no useful purpose is served by identifying the particular company or companies. The expression "Group companies" as used in this report refers to companies in which Royal Dutch and Shell Transport either directly or indirectly have control, by having either a majority of the voting rights or the right to exercise a controlling influence. The companies in which Group companies have significant influence but not control are referred to as "associated companies".

The expression "Operating Companies" as used in this Report refers to those Group and associated companies which are engaged in various branches of the businesses of oil, natural gas, chemicals, power generation and renewable energy as well as in other businesses. The term "Group interest" is used for convenience to indicate the direct or indirect equity interest held by the Group Holding Companies in a venture or partnership or company (i.e., after exclusion of all third-party interests).

The figures shown in most of the tables in this Report represent those in respect of Group companies only, without deduction of minority interests. However, where figures are given specifically for oil production (net of royalties in kind), natural gas production available for sale, and both the refinery processing intake and total oil product sales volumes of Equilon and the Motiva joint venture (following the Group's additional share purchases in 2002, Equilon is no longer a joint venture), the term "Group share" is used for convenience to indicate not only the volumes to which Group companies are entitled (without deduction in respect of minority interests in Group companies) but also the portion of the volumes of associated companies to which Group companies are entitled or which is proportionate to the Group interest in those companies.

The discussion and analysis in this Annual Report contains forward-looking statements that are subject to risk factors associated with the oil, gas, chemicals, power generation and renewable resources businesses. It is believed that the expectations reflected in these statements are reasonable, but they may be affected by a variety of variables which could cause actual results or trends to differ materially, including, but not limited to: price fluctuations, actual demand, currency fluctuations, drilling and production results, reserve estimates, loss of market, industry competition, environmental risks, physical risks, legislative, fiscal and regulatory developments, economic and financial market conditions in various countries and regions, political risks, project delay or advancement, approvals and cost estimates.

## D DOCUMENTS ON DISPLAY

Documents concerning Royal Dutch, Shell Transport or the Royal Dutch/Shell Group of Companies referred to in this Annual Report that have been filed with the Securities and Exchange Commission may be examined and copied at the public reference facility maintained by the Securities and Exchange Commission at 450 Fifth Street, N.W., Room 1300, Washington, D.C. 20549. You may also obtain copies of these materials by mail. For further information on the operation of the public reference room and the copy charges, please call the Securities and Exchange Commission at (800) SEC-0330. All of the Securities and Exchange Commission filings made electronically by Royal Dutch and Shell Transport are available to the public at the Securities and Exchange Commission website at [www.sec.gov](http://www.sec.gov).

## Royal Dutch/Shell Group of Companies – Business and Property

### A ACTIVITIES AND MAJOR INTERESTS

The companies of the Royal Dutch/Shell Group are engaged worldwide in all the principal aspects of the oil and natural gas industry. They also have interests in chemicals and additional interests in power generation, renewable energy (chiefly in wind and solar energy), and other businesses.

Oil and gas, by far the largest of the Group companies' business activities, accounted for over 90% of net proceeds in 2002. In fact, Group and associated companies constitute one of the largest oil and gas enterprises in the world. They market their oil products in more countries than any other oil company, and have a strong position not only in the major industrialised countries but also in the developing ones. The distinctive Shell pecten (a trademark in use since the early part of the twentieth century) and trademarks in which the word "Shell" appears, support this marketing effort throughout the world. Taken together, Group and associated companies also rank among the world's major chemical companies; in 2002 chemicals accounted for around 8% of the net proceeds of Group companies. The Group's interests in power generation and renewable energy are considerably smaller. Nevertheless, the Group's Renewables business is now one of the largest global solar enterprises following the acquisition of the Siemens solar business early in 2002. Renewables also has plans to become a leading player in the wind energy sector. The Group's various activities are conducted to one extent or another – in more than 145 countries and territories.

The breakdown of net proceeds of Group companies by industry segment and by geographical region for the years 2000 to 2002 is set out in the following tables:

<b>Net Proceeds by Industry Segment</b> (including inter-segment sales)		\$ million		
	2002	2001	2000	
<b>Exploration and Production</b>				
Third parties	12,017	12,137	13,468	
Inter-segment	14,319	13,951	14,326	
	<b>26,336</b>	<b>26,088</b>	<b>27,794</b>	
<b>Gas &amp; Power</b>				
Third parties	16,992	15,721	15,991	
Inter-segment	620	705	496	
	<b>17,612</b>	<b>16,426</b>	<b>16,487</b>	
<b>Oil Products</b>				
Third parties	135,544	93,517	104,002	
Inter-segment	3,080	2,108	2,280	
	<b>138,624</b>	<b>95,625</b>	<b>106,282</b>	
<b>Chemicals</b>				
Third parties	14,125	13,260	15,205	
Inter-segment	1,082	990	1,102	
	<b>15,207</b>	<b>14,250</b>	<b>16,307</b>	
<b>Corporate and other</b>				
Third parties	753	576	480	
Inter-segment	17	2	–	
	<b>770</b>	<b>578</b>	<b>480</b>	
	<b>198,549</b>	<b>152,967</b>	<b>167,350</b>	

<b>Net Proceeds by Geographical Area</b> (excluding inter-segment sales)		\$ million		
	2002	2001	2000	
Europe	65,137	62,259	68,060	
Other Eastern Hemisphere	33,322	31,866	34,144	
USA	62,632	21,095	26,089	
Other Western Hemisphere	18,340	19,991	20,853	
	<b>179,431</b>	<b>135,211</b>	<b>149,146</b>	

## B BUSINESS ENVIRONMENT

In 2002, Brent crude prices averaged \$25.05 a barrel compared with \$24.45 a barrel in 2001. Crude oil prices recovered steadily in the first three quarters of 2002 from below \$20 to in excess of \$30 a barrel amid production restraints by key producing countries. Prices subsequently weakened as major oil producers increased output significantly to meet higher seasonal demand in the fourth quarter, falling close to \$24 a barrel by late November. In December prices rebounded when supply from Venezuela was disrupted and had risen to just above \$30 a barrel by year-end. Crude price outlook for 2003 is highly uncertain with prices expected to be volatile. Much will depend on the pace of economic growth, severity of the northern hemisphere winter and political developments in Venezuela and the Middle East.

Oil demand was weak in 2002 and grew by a mere 0.2 mb/d due to a slow US economic recovery and a very mild winter in the first quarter. Demand growth is expected to move closer to trend in 2003 but there are more uncertainties than usual surrounding the pace of economic recovery, the weakness of equity markets and the impact of high oil prices.

For the full year 2002, Henry Hub gas prices averaged \$3.33 per million British Thermal Units (Btu) compared to \$4.10 per million Btu in 2001 (when gas prices spiked to around \$10 in the 2000/2001 winter). Prices strengthened towards the end of 2002. In the fourth quarter of 2002, Henry Hub cash prices averaged \$4.27 per million Btu, with prices over \$1 higher than in the third quarter of 2002 and almost \$2 more than a year ago. Higher prices were driven by a rundown in levels of gas in storage below prior year levels. Concerns about production declines onshore USA and Western Canada also contributed to higher prices. In contrast, a year ago, storage was reaching record levels.

In 2002, industry refining margins averaged \$0.85 and \$0.40 a barrel in Rotterdam and Singapore compared to \$1.80 and \$0.80 a barrel respectively a year ago; for 2002 the US Gulf Coast and West Coast margins were \$2.90 and \$3.90 a barrel (2001 \$5.30 and \$7.75). Refining margins for the first three quarters of 2002 were squeezed by a combination of weak product demand and firming crude oil prices due to supply tightness. Margins recovered in October and November as seasonal product demand increased and crude oil prices fell with rising supply availability. Decline came in December as crude oil prices escalated as a result of the Venezuelan crisis. Overall refining margins in 2002 were poor and at their lowest level for a decade in many locations. Furthermore heavy crude coking margins in the US Gulf Coast were exceptionally weak with a very negative impact on refining profitability in the region. The refining margin outlook for this year is uncertain but on average may improve marginally from the poor level in 2002. Much will depend on crude supply availability and the pace of global economic recovery. Margins have been firm in the first quarter as a result of the loss of the Venezuelan product exports, a heavy industry refinery maintenance program in the Atlantic Basin and cold weather in the northern hemisphere.

Retail margins were under pressure for much of 2002, reflecting difficulties in passing on escalating supply cost to customers. The margin outlook for 2003 is uncertain. Keen competition in the mature markets will continue to temper margins.

Chemicals saw some signs of improvement in the business environment but it was still a very challenging year due to difficult trading conditions, particularly in the USA. Industry utilisation remained flat in Europe but improved in the USA from historically low levels in 2001. Cracker margins in both regions were down from a year ago. The outlook for Chemicals is mixed and will depend on economic recovery and improvement in consumer confidence levels.

## C GENERAL DEVELOPMENT OF THE BUSINESS

Total capital investment in 2002 amounted to \$24.6 billion, including acquisitions. Four important acquisitions were completed; Enterprise Oil (Enterprise) in the UK, DEA Oil (DEA) in Germany, and in the USA Pennzoil-Quaker State and Texaco's interests in Equilon and Motiva. Excluding major acquisitions, capital investment totalled \$14.2 billion.

Net additions to proved hydrocarbon reserves, including oil sands, over the last five years (1998-2002) are equivalent to 109% of total production. The total five year proved oil and natural gas reserves replacement ratio, excluding oil sands, is 100% (111% for oil, including natural gas liquids, and 83% for gas).

Group and associated companies' natural gas production available for sale has increased by 10% since 2000. Investment continues in the expansion of existing operations and in major new pipelines. Moreover, additional liquefied natural gas (LNG) projects and



Gas to Liquids plants are being considered in several countries. Gas is the environmentally preferred fuel for power generation and demand for both gas and electricity is expected to grow.

Group companies continue to pursue a policy of a diversified supply base, and they trade actively in crude oil and its refined products throughout the world. Major acquisitions in the USA, the world's largest market and in Germany, Europe's largest market have strengthened Oil Products' competitive position and enhanced the quality of the global portfolio. This has reinforced the Oil Product's objective of leading the global downstream industry. Furthermore, the Group will continue to address environmental concerns through tighter product specifications. Above all, Group companies will maintain their emphasis on innovative customer offers, portfolio optimisation and structural cost reduction. Both refining and marketing operations have maintained efforts to improve their health, safety and environmental performance.

After a period when the focus has been on divestment, attention in the Chemicals business in 2002 turned to strengthening and enhancing the portfolio. A single marketing and supply company for Europe was established in order to improve speed and efficiency for customers and suppliers. The final investment decision to proceed with construction of the \$4.3 billion Nanhai petrochemicals complex in southern China was taken. The completion of a new olefins and alcohols unit at the Geismar plant in Louisiana consolidated the Group's position as a major player in these products. Further strengthening of the portfolio was achieved through the completion of a styrene monomer/propylene oxide business unit in Singapore, and a benzene plant at Moerdijk, the Netherlands.

In 2002, Renewables became one of the largest global solar photovoltaic (pv) players by acquiring the balance of shares in its solar joint venture with Siemens and E.On, and continued its growth in the wind energy sector with the development of two wind parks in California, Whitewater Hill and Cabazon Pass.

All the business activities described in this section are supported by research. The finding of oil and gas, the enhancement of recovery from existing fields and the engineering of offshore structures, are subjects that receive particular attention, as do the products and processes of oil refining, gas processing and chemicals manufacturing.

## **D RISK FACTORS**

The Group and its businesses are subject to various risks relating to changing competitive, economic, political, legal, social, industry, business and financial conditions. These conditions are described below and discussed in greater detail elsewhere in this Annual Report.

### **Price fluctuations**

Oil, natural gas and chemical prices can vary as a result of changes in supply and demand for products, which may be global or limited to specific regions and influenced by factors such as economic conditions, weather conditions or action taken by major oil exporting countries.

### **Currency fluctuations**

The Group is present in more than 145 countries and territories throughout the world and is subject to risks from changes in currency values and exchange controls.

### **Drilling and production results**

The Group's future oil and gas production is significantly dependent on successful drilling and well development. There are risks in this process in interpretation of geological and engineering data, project delay, cost overruns and technical, fiscal and other conditions.

### **Reserve estimates**

Information on oil and gas reserves is given on pages G34 to G36. Oil and gas reserves cannot be measured exactly since estimation of reserves involves subjective judgement and arbitrary determinations and is dependent, amongst other things, on the reliability of technical and economic data.

### **Loss of market**

Group companies are subject to differing economic and financial market conditions in countries and regions throughout the world. There are risks to such markets from political or economic instability, as well as from industry competition.

**Environmental risks**

Group companies are subject to a number of different environmental laws, regulations and reporting requirements. Costs are incurred for prevention, control, abatement or elimination of releases into the air and water, as well as in the disposal and handling of wastes at operating facilities. Expenditures of a capital nature include both remedial measures on existing plants and integral features of new plants.

**Physical risks**

The Group's assets are subject to risk from operational hazards, natural disasters and expropriation of property.

**Legislative, fiscal and regulatory developments**

The Group's operations are subject to risk of change in legislation, taxation and regulation. For exploration and production activities, these matters include land tenure, entitlement to produced hydrocarbons, production rates, royalties, pricing, environmental protection, social impact, exports, taxes and foreign exchange.

**Political developments**

Political developments, including war, embargos and internal political strife can affect world oil supply and prices.

**E DESCRIPTION OF ACTIVITIES****1 Exploration and Production****(a) General**

Group and associated companies involved in the exploration for and production of crude oil and natural gas operate under a broad range of legislation and regulations that change over time. These laws and rules cover virtually all aspects of exploration and production activities, including matters such as land tenure, entitlement to produced hydrocarbons, production rates, royalties, pricing, environmental protection, social impact, exports, taxes and foreign exchange. The conditions of the leases, licences and contracts under which oil and gas interests are held vary from country to country. In almost all cases, the legal agreements generally have in common that they are granted by or entered into with a government, government entity or state oil company, and that the exploration risk practically always rests with the oil company. Of these agreements, the following are most relevant to Group interests:

- Licences (or concessions) entitle the holder to explore for hydrocarbons and exploit any commercial discoveries. Under a licence, the holder bears the risk of exploration, development and production activities and of financing these activities. In principle, the licence holder is entitled to the totality of production minus any royalties in kind. The state or state oil company may sometimes enter as a joint-venture partner sharing the rights and obligations of the licence but usually without sharing the exploration risk. In a few cases the state company or agency has an option to purchase a certain share of production.
- Production-sharing contracts entered into with a state or state oil company obligate the oil company, as contractor, to provide all the financing and bear the risk of exploration, development and production activities in exchange for a share of the production. Usually this share consists of a fixed or variable part, which is reserved for the recovery of contractor's cost (cost oil); the remainder is split with the state or state oil company on a fixed or volume/revenue-dependent basis. In some cases the state oil company will participate in the rights and obligations of the contractor and will share in the costs of development and production. Such participation can be across the venture or be on a per-field basis.

Group companies' exploration and production interests, including acreage holdings and statistics on wells drilled and drilling, are shown on pages 11 to 13.

Details of Group companies' and the Group share of associated companies' estimated net proved reserves are summarised in the following table and are set out in the supplementary information on pages G34 to G36. Particular reference is made to the statement: Oil and gas reserves cannot be measured exactly since estimation of reserves involves subjective judgement and arbitrary determinations. Estimates remain subject to revision. It should be noted that totals are further influenced by acquisition and divestment activities. Proved reserves are shown net of any quantities of crude oil or natural gas that are expected to be taken by others as royalties in kind but do not exclude certain quantities related to royalties expected to be paid in cash or those related to fixed margin contracts. Proved reserves also include certain quantities of crude oil or natural gas which will be produced under arrangements which involve Group companies in upstream risks and rewards but which do not transfer title of the product to those Group companies.

**Proved Developed and Undeveloped Reserves (at December 31)** million barrels

	2002	2001	2000
<b>Crude oil and natural gas liquids</b>			
Group companies	9,026	8,544	8,670
Group share of associated companies	1,107	925	1,081
	<b>10,133</b>	<b>9,469</b>	<b>9,751</b>

thousand million standard cubic feet

<b>Natural gas</b>			
Group companies	48,240	50,613	50,842
Group share of associated companies	5,198	5,216	5,441
	<b>53,438</b>	<b>55,829</b>	<b>56,283</b>

**Capital Expenditure and Exploration Expense by Geographical Area<sup>a</sup>**  
(oil and gas exploration and production only)

	2002	2001	2000
Europe	7,519	1,236	1,024
Other Eastern Hemisphere	2,996	3,214	1,551
USA	2,015	2,009	1,217
Other Western Hemisphere	1,531	1,273	762
	<b>14,061</b>	<b>7,732</b>	<b>4,554</b>

- <sup>a</sup> **Capital expenditure** Capital expenditure is the cost of acquiring property, plant and equipment, and - following the successful efforts method in accounting for exploration costs - includes exploration drilling costs capitalised pending determination of commercial reserves. In the case of material capital projects, the related interest cost is included until these are substantially complete. The amount shown above includes acquisitions and the costs of acquiring Enterprise Oil in 2002 of \$5.3 billion has been included within the amount shown for Europe.
- Exploration expense** is the cost of geological and geophysical surveys and of other exploratory work charged to income as incurred, and exploratory drilling costs which were initially taken up in capital expenditure pending determination of commercial reserves but where the efforts are subsequently determined to be unsuccessful and then charged to income (with a corresponding reduction in capital expenditure). Exploration expense excludes depreciation and release of currency translation differences.

**Average Production Costs of Group Companies by Geographical Area**

	2002	2001	2000
Europe	2.94	2.35	2.42
Other Eastern Hemisphere	2.75	2.28	2.31
USA	2.61	2.38	2.10
Other Western Hemisphere	3.73	3.32	3.93
Total Group	<b>2.86</b>	<b>2.39</b>	<b>2.42</b>



**Production<sup>a</sup>**

	thousand barrels daily				
	2002 <sup>b</sup>	2001	2000	1999	1998
<b>Europe</b>					
UK	402	311	378	402	373
Denmark	140	130	129	118	109
Norway	131	89	87	83	87
Netherlands	9	10	13	13	14
Germany	5	6	6	6	7
Others	9	1	-	-	-
	696	547	613	622	590
<b>Other Eastern Hemisphere</b>					
Africa					
Nigeria	215	250	239	212	232
Gabon	46	56	69	89	110
Cameroon	17	19	21	22	25
Egypt	11	14	10	7	7
Others	2	3	3	3	3
	291	342	342	333	377
<b>Middle East</b>					
Oman <sup>c</sup>	319	327	326	299	284
Abu Dhabi	100	94	96	82	90
Syria	49	48	50	71	88
Yemen	-	-	-	-	14
Others	46	23	9	1	-
	514	492	481	453	476
<b>Asia Pacific</b>					
Australia	92	99	111	47	54
Brunei	101	97	95	86	74
Malaysia	59	60	56	66	76
China	24	23	25	20	27
Thailand	15	16	18	18	18
New Zealand	29	30	9	10	12
Others	5	-	-	-	-
	325	325	314	247	261
<b>Total Other Eastern Hemisphere</b>	1,130	1,159	1,137	1,033	1,114
<b>USA</b>	442	411	417	504	521
<b>Other Western Hemisphere</b>					
Canada	56	56	58	61	68
Colombia	-	-	-	-	18
Others	48	47	49	48	43
	104	103	107	109	129
<b>Total</b>	2,372	2,220	2,274	2,268	2,354

<sup>a</sup> Less than one thousand barrels daily

	million tonnes a year				
<b>Metric equivalent</b>	119	111	114	113	118

- a Of Group companies, plus Group share of associated companies, and including natural gas liquids (Group share of associated companies is assumed to be equivalent to Group interest). Royalty purchases are excluded. In those countries where production-sharing contracts operate, the figures shown represent the entitlements of the Group companies concerned under those contracts.
- b The acquisition of Enterprise contributed some 180 thousand barrels of oil equivalent per day to 2002 total hydrocarbon production (9 months of production averaged over the full year). Production came mainly from assets in the UK and Norway.
- c Exceptionally, the minority interest is deducted in respect of production volumes given for Oman.

**Natural gas production available for sale<sup>a</sup>**

million standard cubic feet daily

	2002 <sup>b</sup>	2001	2000	1999	1998
<b>Europe</b>					
Netherlands	1,527	1,555	1,431	1,520	1,616
UK	1,148	1,196	1,118	967	824
Germany	408	428	450	484	489
Denmark	313	309	300	312	310
Norway	242	176	199	230	202
Others	29	20	17	16	14
	<b>3,667</b>	<b>3,684</b>	<b>3,515</b>	<b>3,529</b>	<b>3,455</b>
<b>Other Eastern Hemisphere</b>					
Oman	786	553	459	119	-
Malaysia	664	580	553	634	597
Brunei	508	491	450	455	480
New Zealand	461	470	157	148	129
Australia	373	379	367	361	360
Nigeria	244	219	177	78	84
Egypt	232	248	140	105	103
Others	135	126	121	113	95
	<b>3,403</b>	<b>3,066</b>	<b>2,424</b>	<b>2,013</b>	<b>1,848</b>
<b>USA</b>	<b>1,679</b>	<b>1,598</b>	<b>1,644</b>	<b>1,774</b>	<b>1,738</b>
<b>Other Western Hemisphere</b>					
Canada	610	614	594	562	587
Others	64	47	35	46	51
	<b>674</b>	<b>661</b>	<b>629</b>	<b>608</b>	<b>638</b>
<b>Total</b>	<b>9,423</b>	<b>9,009</b>	<b>8,212</b>	<b>7,924</b>	<b>7,679</b>

million standard cubic metres daily

<b>Europe</b>					
Netherlands	43	44	40	43	46
UK	32	34	32	27	23
Germany	12	12	13	14	14
Denmark	9	9	8	9	9
Norway	7	5	6	7	6
Others	1	-	-	-	-
	<b>104</b>	<b>104</b>	<b>99</b>	<b>100</b>	<b>98</b>
<b>Other Eastern Hemisphere</b>					
Oman	22	16	13	4	-
Malaysia	19	16	16	18	17
Brunei	14	14	13	13	13
New Zealand	13	13	4	4	4
Australia	11	11	10	10	10
Nigeria	7	6	5	2	2
Egypt	7	7	4	3	3
Others	3	4	4	3	3
	<b>96</b>	<b>87</b>	<b>69</b>	<b>57</b>	<b>52</b>
<b>USA</b>	<b>48</b>	<b>45</b>	<b>46</b>	<b>50</b>	<b>49</b>
<b>Other Western Hemisphere</b>					
Canada	17	18	17	16	17
Others	2	1	1	1	1
	<b>19</b>	<b>19</b>	<b>18</b>	<b>17</b>	<b>18</b>
<b>Total</b>	<b>267</b>	<b>255</b>	<b>232</b>	<b>224</b>	<b>217</b>

\* Less than one million cubic metres daily

- a By country of origin from gas produced by Group and associated companies (Group share). In those countries where production sharing contracts operate, the figures shown represent the entitlements of the Group companies concerned under those contracts.
- b The acquisition of Enterprise contributed some 180 thousand barrels of oil equivalent per day to 2002 total hydrocarbon production (9 months of production averaged over the full year). Production came mainly from assets in the UK and Norway.

**Location of activities (at December 31, 2002)<sup>a</sup>**

Europe	Exploration	Production	Shell Operator <sup>b</sup>		Exploration	Production	Shell Operator <sup>b</sup>		Exploration	Production	Shell Operator <sup>b</sup>
Austria	●	●	●		Egypt	● ●	● ●	● ●			
Denmark	●	●	●		Gabon	● ●	●	● ●	<b>USA</b>	● ●	● ●
Germany	● ●	● ●	●		Iran		●	●			
Ireland, Republic of	●		●		Kazakhstan	● ●			<b>Other Western Hemisphere</b>		
Italy	● ●	●	● ●		Malaysia	●	●	●	Argentina	●	●
Netherlands	● ●	● ●	● ●		Mauritania	●			Brazil	●	●
Norway	●	●	●		Morocco	●		●	Canada	● ●	● ●
Spain	●				New Zealand	● ●	● ●	● ●	Trinidad and Tobago	●	●
UK	●	●	●		Nigeria	● ●	● ●	● ●	Venezuela	●	●
					Oman	●	●	●			
<b>Other Eastern Hemisphere</b>					Pakistan	● ●	●	●			
Algeria	●				Papua New Guinea	● ●					
Angola	●				Philippines	●	●	●			
Australia	●	●	●		Russia	● ●	● ●	● ●			
Azerbaijan	●				Senegal	●					
Bangladesh	● ●	●	● ●		Syria		●	●			
Brunei	● ●	● ●	● ●		Thailand	●	●	● ●			
Cameroon	●	●	●		United Arab Emirates	●	●				
China	● ●	●	● ●								

● = Onshore ● = Offshore

a Including associated companies.

b In several countries where "Shell operator" is indicated, a Group interest company is operator of some but not all exploration and/or production ventures.



**Oil and gas acreage (at December 31)<sup>a,b,c</sup>**

	thousand acres				thousand acres			
	Developed		2002 Undeveloped		Developed		2001 Undeveloped	
	Gross	Net	Gross	Net	Gross	Net	Gross	Net
Europe	10,417	3,259	19,752	6,930	9,570	3,031	12,616	4,581
Other Eastern Hemisphere	45,701	15,185	162,407	68,740	44,760	14,821	160,957	69,801
USA	1,557	754	4,670	3,183	1,599	702	3,931	2,609
Other Western Hemisphere	832	509	33,338	22,841	767	492	35,709	22,001
	58,507	19,707	220,167	101,694	56,696	19,046	213,213	98,992

**Number of productive wells (at December 31)<sup>a,b</sup>**

	Oil		2002 Gas		Oil		2001 Gas	
	Gross	Net	Gross	Net	Gross	Net	Gross	Net
Europe	2,002	533	1,454	458	1,618	429	1,299	427
Other Eastern Hemisphere	6,172	2,257	426	223	6,066	2,169	375	197
USA	15,686	8,294	945	686	16,717	8,511	956	658
Other Western Hemisphere	112	110	314	259	86	86	298	251
	23,972	11,194	3,139	1,626	24,487	11,195	2,928	1,533

**Number of net productive wells and dry holes drilled<sup>a</sup>**

	Productive	2002 Dry	Productive	2001 Dry	Productive	2000 Dry	Productive	1999 Dry	Productive	1998 Dry
<b>Exploration</b>										
Europe	3	4	2	4	3	3	5	2	6	6
Other Eastern Hemisphere	12	11	17	14	15	11	13	16	12	18
USA	10	4	2	4	9	4	8	9	18	16
Other Western Hemisphere	2	2	3	3	1	2	-	13	6	9
	27	21	24	25	28	20	26	40	42	49
<b>Development</b>										
Europe	55	-	30	10	19	-	32	2	46	1
Other Eastern Hemisphere	166	13	165	11	152	10	149	2	179	6
USA	559	1	549	2	492	3	290	-	555	8
Other Western Hemisphere	31	-	25	-	10	1	14	2	49	-
	811	14	769	23	673	14	485	6	829	15

a Including associated companies.

b The term "gross" relates to the total activity in which Group and associated companies have an interest, and the term "net" relates to the sum of the fractional interests owned by Group companies plus the Group share of associated companies' fractional interests.

c One thousand acres equals approximately four square kilometres.

thousand acres				thousand acres				thousand acres			
Developed		2000 Undeveloped		Developed		1999 Undeveloped		Developed		1998 Undeveloped	
Gross	Net	Gross	Net	Gross	Net	Gross	Net	Gross	Net	Gross	Net
9,399	2,973	13,951	4,920	10,162	3,218	16,697	5,790	10,078	3,189	20,141	7,640
44,761	14,534	131,644	68,854	44,680	14,530	135,798	75,106	44,896	14,946	158,345	86,520
1,967	934	4,280	2,743	3,642	1,245	6,074	3,499	4,290	1,331	8,054	4,485
1,198	824	49,219	27,368	1,149	850	61,344	33,215	1,430	1,052	39,910	25,699
57,325	19,265	199,094	103,885	59,633	19,843	219,913	117,610	60,694	20,518	226,450	124,344

Oil				Oil				Oil			
2000 Gas		1999 Gas		2000 Gas		1999 Gas		2000 Gas		1999 Gas	
Gross	Net	Gross	Net	Gross	Net	Gross	Net	Gross	Net	Gross	Net
1,640	442	1,349	438	1,642	447	1,359	436	1,603	437	1,334	424
5,910	2,097	332	159	6,299	2,271	352	153	6,037	2,249	275	119
17,870	8,870	1,044	627	28,165	11,636	1,631	845	27,818	10,679	1,909	938
338	193	274	230	413	267	259	223	1,009	650	260	226
25,758	11,602	2,999	1,454	36,519	14,621	3,601	1,657	36,467	14,015	3,778	1,707

**Number of wells drilling (at December 31, 2002)<sup>a,b</sup>**

	Exploration		Development		Total	
	Gross	Net	Gross	Net	Gross	Net
Europe	2	1	31	9	33	10
Other Eastern Hemisphere	9	2	63	24	72	26
USA	6	3	16	10	22	13
Other Western Hemisphere	3	2	7	5	10	7
	20	8	117	48	137	56

a Including associated companies.

b The term "gross" relates to the total activity in which Group and associated companies have an interest, and the term "net" relates to the sum of the fractional interests owned by Group companies plus the Group share of associated companies' fractional interests.

**(b) Major oil and gas interests**

Major oil and gas interests as well as recent developments in countries where Group or associated companies have exploration and production interests are summarised, by country, in the following pages. Certain aspects of the legislation, regulations or agreements affecting the activities of the significant companies are also included.

**Europe**

**Denmark** A Group company has a 46% non-operator interest in a producing concession due to expire in 2012, as well as varying percentage interests in 6 (non-operated) exploration licences.

**Germany** A Group company holds a 50% interest in the Brigitta & Elwerath Betriebsfuehrungsgesellschaft (BEB) joint venture (50:50) which is the major producer of oil and gas in Germany. Since September 2002, the BEB upstream and operational midstream activities have been contracted out to a service company. Activities include onshore and offshore exploration and production activities, gas storage, the operation of two large sour gas treatment plants, numerous compression stations and some 3,000km of pipelines. BEB is also one of the major transmission and distribution companies in Germany. (See also page 21).

Exploration and Production licences are awarded under the terms of Germany's Federal Mining Law. Most licences are awarded to more than one company and are governed by consortia (JVs). Operatorship is normally awarded to the party holding the highest equity share. BEB is involved in some 30 consortia with varying interests and is the main operator in Germany. Further German interests include the 43% Group share in the outside operated Deutsche Offshore Konsortium. Royalties are determined by the individual German states on a yearly basis and are different for the production of natural gas and oil. Royalty incentives are given for the development of tight gas reservoirs.

**Ireland** During 2002 EO Ireland (Group interest 100%) was acquired as a part of the Group's acquisition of Enterprise Oil. The main assets are offshore, north west of Ireland and include a 45% interest in the Corrib project (a potential gas development) and exploration prospects that include the Dooish discovery.

**Italy** During 2002 EO Italy (Group interest 100%) was acquired as a part of the Group's acquisition of Enterprise Oil. The main assets are onshore in southern Italy and include various interests in producing assets (Monte Alpi, Monte Enoch and Cerro Falcone), development projects (including Tempa Rossa) and nearby exploration prospects.

**Netherlands** The Group share of natural gas and crude oil is produced by Nederlandse Aardolie Maatschappij B.V. (NAM), (Group interest 50%) in a 50:50 joint venture. An important part of NAM's gas production is from its very large onshore Groningen gas field in which the Dutch State has a 40% financial interest.

NAM's production of oil and gas is covered by concessions (onshore) and production licences (offshore). Government participation in development and production varies between 0% and 50%, depending mainly on the legislation applicable when the concessions or licences were granted and whether the participation covered gas or oil. Production is preceded by a drilling permit (onshore) or an exploration licence (offshore), the duration of which, since 1997, varies with the work programme that has to be submitted with the application for a permit or licence. In practice, this means a period of about 3 to 10 years, which can be shortened by the authorities when the exploration effort falls short of the licence or permit programme. Upon making a commercial discovery, a concession (onshore) or production licence (offshore) is granted. The onshore concessions are not currently limited in time but the duration of the offshore licenses vary with the estimated production period – normally a period of 15 to 45 years.

**Norway** A/S Norske Shell (Group interest 100%) holds an interest in a number of Production Licences (PL), three of which encompass currently producing oil and gas fields, Statfjord area (PL 37, expiring in 2009), Draugen area (PL 93, expiring in 2024), and Troll area (PL 54, expiring in 2030). A/S Norske Shell also holds interests in three non-producing licences (PL 208, PL 209 and PL 250, expiring in 2039, 2041 and 2041 respectively) which straddle the large undeveloped Ormen Lange gas field discovered in 1997. Shell International Pipelines Inc. (Group Interest 100%) holds interests in gas transportation and processing systems (pipelines and terminals). The licence period for these assets expire in the period from 2010 to 2020.

Various Norwegian assets were part of the Group's acquisition of Enterprise Oil in 2002, including 10 producing fields, the largest of which were Jotun (45% interest) and Valhall (28.09% interest). Also during 2002 A/S Norske Shell increased their ownership interest in the Draugen area to 26.2%.

**United Kingdom** Shell UK Limited (Group interest 100%) is one of the largest integrated oil and gas exploration and production companies operating in the UK. It operates in the North Sea on behalf of a 50:50 joint venture and has interests in the UK Continental Shelf on behalf of this venture and with other partners.

Most of Shell UK's production comes from the North Sea. Natural gas comes from associated gas in mixed oil and gas fields in the northern North Sea and gas fields in the southern sector of the North Sea, whereas crude oil comes from the central and northern fields, which include the large Brent field. Shell UK also has interests, as a non-operator partner, in another joint venture in the North Sea in the Atlantic margin, West of Shetlands. Group production in the West of Shetlands comes from the Schiehallion/Loyal fields. Licences issued before August 20, 1976 were for an initial period of six years and, following successful exploration, were extended for a further 40 years in respect of half the original licence area. Licences issued between August 20, 1976 and June 13, 1980 were for an initial period of four years followed by a second period of three years. In cases of successful exploration, these licences were extended for a further 30 years after relinquishment of two-thirds of the acreage. From June 14, 1980, licences were granted for an initial period of six years (nine years for deepwater) and in successful cases extended for a further 30 years (40 years for deepwater) in respect of no more than half the licence area. Licences issued since July 1988 carry an additional requirement that if, after 12 years of the 30-year period, no field development has been approved, the licence must be surrendered. No royalty is payable on production from fields for which development approval was granted after April 1982; royalties for other fields has been abolished with effect from January 2003. In August 2002, and with effect from April 2002, a new oil tax on firms operating in the British North Sea was enacted raising the marginal tax rate from 30% to 40%.



The acquisition of Enterprise Oil in 2002 for a cash consideration of \$5.3 billion was the most significant change to the Group's upstream portfolio, adding new developments and exploration acreage in Ireland, Italy, Norway, the UK, the USA, Brazil and Russia (see respective write-ups in this section). In the UK, interest in various exploratory and producing assets such as Pierce, Nelson and Beryl, was acquired as part of the Group's acquisition of Enterprise Oil.

Also during 2002 Shell UK increased their ownership interest in the Goldeneye development from 41.5% to 48%.

#### Other Eastern Hemisphere

**Abu Dhabi** Crude oil and natural gas liquids are produced by the Abu Dhabi Company for Onshore Oil Operations in which a Group company's concessionary share is 9.5% (licence expiry in 2014), arising from a 23.75% Group interest in the Abu Dhabi Petroleum Company, which in turn holds a 40% interest in the concession granted by the Abu Dhabi government. A Group company has a 15% interest in Abu Dhabi Gas Industries Limited, which extracts propane and butane, as well as heavier liquid hydrocarbons, for export sales from wet associated natural gas produced by Abu Dhabi Petroleum Company.

**Australia** Shell Development Australia (SDA) (Group interest 100%) has interests in some 50 offshore production and exploration licences in the North-West Shelf (NWS), in the Browse basin and Timor Sea area. The interests are held by SDA directly, or indirectly through its shareholding (34%) in Woodside Petroleum Ltd. (Woodside) which is the operator on behalf of six joint-venture partners of the NWS gas/condensate and oil fields. (See also page 21.) Gas and condensate are produced from the North Rankin and Goodwyn facilities to an onshore treatment and LNG facility at Burrup. Woodside is also the operator of the producing Laminaria and Corallina fields situated in the Timor Sea. Together with its partner Woodside, SDA also has interests in significant liquid-rich gas fields in the Timor Sea as well as the Browse basin.

SDA is also a participant in another joint venture that carries out exploration and production operations in the NWS region. As party to this joint venture, SDA has non-operator interest (ranging from 12.5% to 28.57%) in the significant gas reserves known as greater Gorgon, which are situated West of Barrow Island.

**Brunei** A Group company is a 50% shareholder in Brunei Shell Petroleum Company Sendirian Berhad (the other 50% shareholder being the Brunei government). The company, which has renewable long-term oil and gas concession rights both onshore and offshore Brunei, sells most of its natural gas production to Brunei LNG Sendirian Berhad (Group interest 25%). (See also page 21.)

A Group company has a 35% share in the non-operated Block B Joint Venture (BBJV) concession where gas is produced from the Maharaja Lela Field.

**Egypt** Shell Egypt (Group interest 100%) participates in four exploration concessions (operator in three and non-operator in Rosetta) and in five development leases (operator in four and non-operator in Rashid). All concessions and leases are granted on the basis of production-sharing agreements. Included in Shell Egypt's portfolio is an 84% interest in the North-eastern Mediterranean deepwater concession. Shell Egypt has a 50% interest in Badr Petroleum Company (Bapetco), a joint venture company with the Egyptian General Petroleum Corporation (the Egyptian national oil company). Bapetco operates two producing fields, Badr El Din and Obaiyed.

**Gabon** Shell Gabon (Group interest 75%) has interests in 6 onshore mining concessions/exploitation permits, two of which (Rabi/Kounga and Gamba/Ivinga) are operated by the company. The Rabi/Kounga concession expires in 2007, Gamba/Ivinga in 2042; all other concessions expire between 2010 and 2018. Production in Gabon is dominated by the Rabi field, which is operated by Shell Gabon holding 42.5% equity in the field. Shell Gabon's portfolio also includes 4 exploration permits, one around the Gamba/Ivinga concession, two near the Rabi field, and one directly offshore Libreville.

Two Group companies Shell Offshore North Gabon BV (SONG) and Shell Offshore Gabon BV (SOSG) hold 7 permits in the Ultra-Deepwater areas in the north and south.

**Malaysia** Four 100%-owned Group companies have production-sharing contracts with the state oil company Petronas. In most of these contracts Petronas Carigali Sendirian Berhad (PCSB), a 100% Petronas subsidiary, is the sole joint-venture partner. One Group company, Sarawak Shell Berhad (SSB) is the operator, with a 50% equity stake, of five non-associated producing gas fields. The majority of the gas is supplied to Malaysian LNG Sendirian Berhad (Group interest 15%) for deliveries of liquefied natural gas to customers mainly in Japan and Korea. (See page 22.) SSB operates one oil field (D35) and has a 50% equity stake in the non-operated

Baram Delta production-sharing contract. SSB has exploration interests in the deepwater SK-E block and shallow-water blocks SK-307, SK-308 and SK-8. SSB also holds exploration acreage in SB-301, SB-J and the deepwater block SB-G. Sabah Shell Petroleum Company (SSPC) operates five producing fields in Sabah waters of which Kinabalu (80% equity share) is the largest. SSPC and Shell Sabah Selatan Sdn Bhd (SSS) also have a production-sharing contract for the exploration and production in Block SB-303, offshore Sabah. Shell Exploration and Production Malaysia (SEPM) operates an exploration license in Peninsula Malaysia (PM-303) where they also have 50% interest in Block PM-301/302.

**New Zealand** Shell New Zealand BV (SNZ) (Group interest 100%) has 77.5% interest in the production licences for the large offshore Maui gas field, in which another wholly owned Group company has a further 6.25% indirect interest, and a 50% interest in the onshore Kapuni gas field. The gas produced is sold domestically, mainly under long-term contracts. SNZ also has interests in other exploration licence areas in the Taranaki Basin. All of these interests are operated by Shell Todd Oil Services Ltd, a service company (Group interest 50%).

During 2002 the Group completed the divestment of a number of New Zealand interests which were a condition of the New Zealand Commerce Commission granting approval for the acquisition of Fletcher Challenge Energy which was completed in 2001.

**Nigeria** The Shell Petroleum Development Company of Nigeria Ltd. (SPDC) (Group interest 100%) is operator of a joint venture (Group interest 30%) with the Nigerian National Petroleum Corporation and two other companies. The venture's offshore oil and gas mining leases expire in 2008 and its onshore leases in 2019. At the end of 2002 production began from the EA field offshore Nigeria.

Shell Nigeria Exploration and Production Company (SNEPCO) (Group interest 100%) operates production-sharing contracts with 30-year terms with a 55% equity for two deepwater blocks (OML-118 and OPL-219). SNEPCO also has non-operator interests in four other deepwater blocks (OPL-209, OPL-316, OPL-211 and OPL-250).

**Oman** A Group company has a 34% interest in Petroleum Development Oman (PDO), which is the operator of an oil concession expiring in 2012, or at such a later date as the government and the 40% concession-owning company Private Oil Holdings Oman Ltd. (in which a Group company has an 85% shareholding) may agree.

Gas Investment and Services Company Ltd. (GISCO) (in which a Group company has an 85% shareholding) holds a gas operating agreement which appoints PDO as the operator for any gas discovered in central Oman until 2024, with provisions for extension upon agreement with the government. The first major central Oman gas project involves the supply of gas to customers in the Sur area of north-east Oman, the largest of which is Oman LNG (Group interest 30%). (See page 22.) The upstream investment required to develop and supply the gas is being provided to the government by GISCO.

**Syria** Group companies have interests varying from 62.5% to 66.7% in five production-sharing contracts with the government and with the state-owned Syrian Petroleum Company (SPC). Under the contracts, they have certain rights and obligations in respect of the production of petroleum. Three contracts (Ash Sham, Deir Ez-Zor and Fourth Annex expiring between 2008 and 2014) concern development activities. In addition, Group companies are parties to a gas utilisation agreement with the government and SPC for the collection and processing of natural gas from the contract areas for use in Syrian power generation and other industrial plants.

## USA

Shell Oil Company (SOC) (Group interest 100%) produces crude oil, natural gas and natural gas liquids principally in the Gulf of Mexico, California, Texas, Wyoming and Michigan. The majority of SOC's oil and gas production interests are acquired under leases granted by the owner of the minerals underlying relevant acreage (including many leases for federal onshore and offshore tracts). Such leases are generally obtained for an initial fixed term that is automatically extended by the establishment of production for so long as production continues, subject to compliance with the terms of the lease (including, in the case of federal leases, extensive regulations imposed by federal law).

As part of the Group's acquisition of Enterprise Oil, SOC acquired interests in the Boomvang development, which started production in 2002, and in the Tahiti discovery. SOC also acquired additional interests in the Pinedale field in the Rocky Mountain region under two separate transactions.

Shell Oil holds a 52% interest in a USA-based exploration and production joint venture: Aera Energy LLC, holding exploration and production assets in California. This venture is accounted for using the equity method of accounting.

#### **Other Western Hemisphere**

**Brazil** Shell Brasil Ltda. (Group interest 100%) has interests in fourteen deepwater exploration blocks – five operated (BS-4, BC-10, BM-C-10, BM-ES-10 and BM-C-25) and nine non-operated (BC-2, BM-FZA-1, BM-S-8, BM-C-8, BM-C-14, BM-S-17, BM-S-19, BM-SEAL-5 and BM-S-31). Group interest in these blocks ranges from 15% to 100%.

During 2002, as a part of the Group's acquisition of Enterprise Oil, Shell Brasil acquired and retained interests in six of these deepwater exploration blocks – one operated (BM-ES-10) and five non-operated (BM-C-8, BM-C-14, BM-S-17, BM-S-19, BM-SEAL-5). Interest in these blocks ranges from 15% to 100%. Also acquired was an 80% interest in the Bijupirá and Salema oil fields, currently under development.

The Group retains an interest through Pecten Victoria Inc. in the revenue stream from the producing offshore Merluza gas field. The field is operated by Petrobras.

**Canada** Shell Canada (Group interest 78%) is a major producer of natural gas, natural gas liquids and sulphur. The majority of its gas production comes from Alberta and the Sable gas field offshore Nova Scotia (where Shell Canada has 34% interest in the onshore assets and 31% interest in the offshore assets). Exploration rights in Canada are generally granted for terms ranging from one to nine years. Subject to certain conditions, exploration rights can be converted to production leases, which may be extended as long as there is commercial production pursuant to the lease.

Shell Canada produces heavy oil through thermal recovery in the Peace River project and is nearing completion of its new heavy oil project in the Athabasca oil sands area. Shell Canada holds 60% interest in the Athabasca Oil Sands Project (AOSP) under a joint venture agreement to develop and produce syncrude from oil sand leases in northern Alberta. The AOSP is comprised of the following:

**The Muskeg River mine**, is located 75 kilometers north of Fort McMurray, Alberta. The mine uses trucks and shovels to excavate the oil sands, as well as advanced extraction technologies to separate the bitumen from the sands. AOSP is expected to produce 155,000 barrels of bitumen per day, approximately 10% of Canada's oil supply.

**The Scotford upgrader** is adjacent to Shell Canada's existing Scotford refinery north of Fort Saskatchewan, Alberta. The Scotford upgrader will process the bitumen from the Muskeg River mine into a range of premium, synthetic crude oils and will be operated by Shell Canada.

Production of bitumen from the Muskeg River Mine commenced in October 2002, with commissioning of the bitumen pipeline and upgrader also progressing on schedule. First synthetic crude from the upgrader is scheduled for early 2003.

**Venezuela** Shell Venezuela S.A. (Group interest 100%) holds an Operating Service Agreement (expiring 2013) with a subsidiary of the state oil company, Petroleos de Venezuela, to develop and produce the Urdaneta West Unit in Lake Maracaibo.

#### **(c) Other oil and gas interests**

Other oil and gas interests as well as recent developments in countries where Group or associated companies have exploration and production interests are summarised, by country, in the following pages. Certain aspects of the legislation, regulations or agreements affecting the activities of the significant companies are also included.

**Angola** Shell Development Angola B.V. (SDAN) has interest of 50% in Block 18, 10% in Block 21 and 15% in Block 34.

**Argentina** Shell Compania Argentina de Petroleo (CAPSA) (Group interest 100%) holds an interest with rights to operatorship and 51.25% of production in the Valle Morado Exploitation Lot and a 22.5% interest in the Acambuco concession. During 2002 CNO-4 Exploration Permit Rio Colorado (CAPSA interest 51.25%) was relinquished.

**Azerbaijan** A Group company holds a 25% interest in the non-operated Inam licence, offshore Azerbaijan.

**Bangladesh** A Group company holds a 50% interest in and is operator of Blocks 15 and 16, a 37.5% interest in the producing Sangu gas field (located in Block 16) and a 22% interest in Block 7. Another Group company holds 45% interest in and is operator of a joint venture owning Block 5 and Block 10 (exploration only).

**Cameroon** Pecten Cameroon Company (PCC) (Group interest 80%) has 40% working interest in a PCC operated property (Lokele), 24.5% interest in non-operated property (Rio del Rey) and 25% interest in exploratory opportunities with the state (SNH) and another partner.

**China** Group Companies (Shell China Exploration & Production Company (SCEP), formerly Shell Exploration China Limited, and Pecten Orient China) hold a 47.5% interest in the offshore South China Sea Block 15/22 (Xijiang 30-2 producing field) and 24.5% in Block 15/11 (Xijiang 24-1 & 24-3 producing fields). In addition, SCEP operates an exploration license to the north of the Xijiang fields (Block 15/12). SCEP also holds 100% of the contractors interest in the Changbei Petroleum Contract with China National Petroleum Corporation (CNPC), to assess the development potential of the Changbei gas field in the Ordos Basin of western onshore China.

SCEP, as part of a Consortium of International Companies (IOC), signed a Joint Venture Framework Agreement with PetroChina for the potential participation (IOC 45%, PetroChina 55%) in the China West to East project. This integrated project includes the development of upstream natural gas resources in the Tarim Basin, construction of a 40-inch diameter, 3,920km cross country gas pipeline from Xinjiang province in the West to Shanghai in the East and development and supply of clean energy to the emerging gas markets in the Eastern Industrial provinces.

**Democratic Republic of Congo** In 2002 the Group sold its share in Shell Lirex and Shell Kirex which held 45% non-operator interest in the East-Mibale, Liawenda-Kinkasi and Maunda-Banana concessions.

**India** A Group company divested its 50% interest in the production-sharing contract for the Rajasthan Block RJ-ON-90/1.

**Iran** After ownership dilutions in 2002, a Group company has a 70% interest in an agreement with the National Iranian Oil Company (NIOC) to develop the Soroosh and Nowrooz field in the northern Persian Gulf. This Group company will establish operations with a view to handing over operatorship to NIOC once full production has been reached.

**Kazakhstan** After pre-emptive purchase in 2002 of an additional 2.38% interest, a Group company holds a 16.67% interest in the North Caspian Production Sharing Agreement in respect of some 6,000km<sup>2</sup> offshore in the Kazakhstan sector of the Caspian Sea. During 2002 the Kashagan field was declared commercial and an oil & gas discovery was made in the Kalamkas structure, which is located 80km southwest of the Kashagan field.

**Morocco** A Group company owns an exploration license for 5 deepwater blocks named Rimella. The exploration contract calls for 7% royalty on oil and 3.5% royalty on gas. The exploration licence is for a period of two years with two extensions of two years subject to a minimum work commitment.

In 2002, an interest in the adjacent Cap Draa concession was acquired as part of the Enterprise Oil acquisition.

**Namibia** Shell Exploration and Production Namibia BV (SEPN) (Group interest 100%) withdrew as operator of the Kudu gas field offshore Namibia and no longer holds interest in this field.

**Pakistan** A Group company holds 28% interest in the Bhit Development and Production Lease and 33.25% interest in the Kirthar Exploration license.

**Philippines** Two Group companies hold interest in the deepwater block SC-38 which includes the Malampaya gas field. Shell Philippines Exploration B.V. (SPEX) holds 20% and is operator and Shell Philippines LLC holds 25%.



**Russia** Shell Sakhalin Holdings B.V. (Group interest 100%) holds 55% interest in Sakhalin Energy Investment Company Ltd. (Sakhalin Energy). Seasonal oil production continued from the Molikpaq facility on the Piltun field, offshore Sakhalin island. The planned next steps will be the full development of the Piltun oil field and Lenskoye gas field including an LNG plant in the south of Sakhalin Island for export to the Asia Pacific LNG markets.

During 2002 a group company acquired 49% interest in KMOC (Khanty Mansiysk Oil Corporation) as part of the Group's acquisition of Enterprise Oil.

Salym Petroleum Development (Group interest 50%) has the licence to develop the Salym fields.

**Saudi Arabia** The Group holds an interest in two core venture agreements, Core Venture 3 (projects in South Rub al Khali and Shaybah areas; Group interest 40% and appointed project leadership) and Core Venture 1 (South Ghawar gas development and related projects; Group interest 25%).

**Thailand** A Group company holds a 75% interest in and is operator of the producing Sirikit concession and an interest in the non-producing offshore Block B6/27.

**Trinidad** Trinidad Shell EP (TSEP) (Group interest 100%) holds 55% interest in and is operator of deepwater Block 25a.

## 2 Gas & Power

The Gas & Power business encompasses: processing, selling and delivering natural gas by long-distance pipeline and – in liquefied form – by tanker; selling and delivering liquid by-products of natural gas processing and Gas to Liquids conversion; marketing and trading of natural gas and electricity to industrial and commercial customers; and developing and operating independent power plants.

### Utilisation of plant capacity

	2002	2001	2000	1999	1998
<b>Liquefied natural gas (LNG)</b>	<b>97</b>	<b>92</b>	<b>89</b>	<b>93</b>	<b>89</b>

Processing Liquefied natural gas (LNG) plants		Group interest %	100% capacity million tonnes a year
Location, Group interest in plants <sup>a</sup> and capacity (at December 31, 2002)			
Malaysia	Bintulu	15	15.9
Australia	Karratha	22	7.5
Brunei	Lumut	25	7.1
Oman	Qalhat	30	6.6
Nigeria	Bonny	26	8.8

### Regasification terminal

Belgium	Zeebrugge	17	3.9
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### Liquefied natural gas sales volumes<sup>a</sup>

	2002	2001	2000	1999	1998
Malaysia	2.3	2.3	2.3	2.2	2.2
Australia	1.7	1.7	1.7	1.7	1.7
Brunei	1.7	1.7	1.7	1.6	1.5
Oman	1.9	1.7	0.7	–	–
Nigeria	1.5	1.5	1.1	–	–
<b>Total</b>	<b>9.1</b>	<b>8.9</b>	<b>7.5</b>	<b>5.5</b>	<b>5.4</b>

<sup>a</sup> Percentage rounded to nearest whole percentage point where appropriate.

## Europe

**Belgium** A 16.7% Group interest is held in both Distrigaz, now a Belgian gas marketing and trading company, and Fluxys, into which Distrigaz's pipeline and transportation interests were transferred in 2001.

**Germany** Brigitta & Elwerath Betriebsfuehrungsgesellschaft (BEB), a joint venture with ExxonMobil in which a Group company holds a 50% interest, is the major producer of oil and gas in Germany, and also one of the country's major gas transmission companies. Group companies have minority shareholdings in major gas transmission and distribution companies, including Thyssengas (25%), Avacon (1.2% through BEB), Erdgas Munster (1.5% through BEB), Verbundnetz Gas (5.3 % through BEB), and in pipeline companies METG, SETG and NETG (12.5 % through Thyssengas). In 2002 the Group divested its indirect participation in HEIN GAS Hamburger Gas Werke (5.1% through BEB) and its direct participations of 16.7% in METG and 25% in SETG. In 2002, the sale of the indirect 14.75% interest in Ruhrgas was agreed subject to final clearance. In March 2003 the sale was closed.

**Greece** The Group holds a 24% interest in EPA Attikis, a local gas distribution company currently with some 10,000 customers (mainly residential, but also commercial and industrial). Other shareholders are Cinergy 25%, and DEPA (State Gas Company) 51%. EPA Attikis holds a 30-year exclusive distribution licence to market and distribute gas to industrial, commercial and residential customers.

**Netherlands** Contracts between Nederlandse Gasunie (Group interest 25%) and customers in Europe will provide for long-term sales of Dutch gas for the future. In 2002, Gasunie sold approximately 79 billion cubic metres of gas for both export and domestic consumption.

**Spain** Shell Espana a wholly-owned Group subsidiary launched a natural gas marketing business in 1999.

**United Kingdom** A wholly Group-owned gas marketing company, Shell Gas Direct, maintained its market position during 2002 selling in the industrial and commercial market. The wholly owned Shell Energy, established in 1999, continues to develop sales of gas and power in a number of European markets.

**Other European Countries** Wholly owned Shell Group companies in other European countries continue to seek opportunities to develop the gas and power business. For this purpose they receive advice and assistance from Shell Energy Limited, a wholly owned Group company.

## Other Eastern Hemisphere

**Australia** A Group company directly and indirectly has a 22.3% interest in the liquefied natural gas (LNG) export phase and a 25.5% interest in the domestic gas phase of a joint venture formed to develop the gas fields of the North-West Shelf (NWS) (see page 15). Sale and purchase agreements with eight Japanese utilities call for the supply of LNG at a rate of some 7.3 million tonnes a year, equivalent to some 27 million cubic metres of gas a day. Currently, the joint venture is constructing a fourth LNG train with a 4.2 million tonnes capacity a year. This new LNG train is planned to start up in 2004 and will supply both existing and new customers. In 2002, the NWS joint venture was awarded the supply contract for the first LNG terminal in China, to be located in the Guangdong province in south-east China. The contract volume is 3.3 million tonnes per annum and first deliveries are planned in 2006.

The Group has a 28.6% interest in the Gorgon area joint venture that is considering various LNG and domestic gas project options.

A wholly owned Group company is also involved in a number of licences in the Timor Sea between the Northern Territory and Timor Leste with opportunities for both domestic gas and LNG export. The Sunrise gas fields are the most mature of these licences where a proposal to develop these fields using Shell's floating LNG technology has been made.

**Brunei** Gas is liquefied and sold to customers in Japan and Korea by Brunei LNG Sendirian Berhad (Group interest 25%). In March 1993 the company's main contract, to supply LNG to three power and gas utilities in Tokyo and Osaka, was extended for a further 20 years at an increased sales quantity of some 5.5 million tonnes a year. In 2002, the total sales quantity was some 6.8 million tonnes, mainly to Japan and Korea, but supplemented by small sales to the US and Europe. The LNG continues to be delivered in a fleet of 7 LNG vessels owned by Brunei Shell Tankers Sendirian Berhad (Group interest now 25%, following sale of 25% to a partner in B LNG during 2002), as well as a larger vessel, brought into service in June 2002, owned by Brunei Gas Carriers Sendirian Berhad (Group interest 10%).

**India** The Group holds 100% interest in three companies – Shell Hazira Gas Private Ltd., Hazira Port Private Ltd. and Hazira LNG Private Ltd., all of which are located in the State of Gujarat. Under a Build-Own-Operate-Transfer (BOOT) Concession Agreement with the Gujarat Maritime Board (with an initial term of 30 years) Hazira Port Private Ltd., together with Hazira LNG Private Ltd., is constructing a port and LNG terminal at Hazira in Gujarat. The initial capacity of this terminal is 2.5 mtpa, expandable to 5 mtpa and then 10 mtpa. Currently under construction the terminal is intended to be commissioned at the end of 2004. Shell Hazira Gas Private Ltd., will use these facilities to import LNG and to market and supply regasified LNG to customers in Gujarat and North West India.

**Malaysia** Exports of LNG from Sarawak by Malaysia LNG Sendirian Berhad (MLNG – Group interest 15%) began in January 1983 to two Japanese customers. The contract delivery rate was increased to 7.6 million tonnes of LNG a year in 1993. Three additional liquefaction trains (Group interest 15%) came on stream at the end of 1995 (MLNG Dua), doubling capacity to some 15.9 million tonnes a year, with customers in Japan, South Korea and Taiwan. For the export volume, gas is supplied from fields operated by Group companies (see page 15). Construction of a third expansion to the Bintulu facilities, MLNG Tiga (Group interest 15%), is ongoing and scheduled for completion in the first half of 2003.

The Group shareholding in the first venture, MLNG, reverts to Petronas in 2003 under a transfer agreement contained in the original joint venture agreement. A continuing role in the gas supply to MLNG has already been extended to 2020, and work is ongoing with Petronas to assess the feasibility of a continuing role in MLNG itself.

Adjacent to the LNG facilities is a Gas to Liquids plant, operated by Shell MDS (Malaysia) Sendirian Berhad (Group interest 71.8%). This plant converts approximately three million cubic meters a day of natural gas into some 12,500 barrels a day high-quality middle distillates and other products using Shell-developed technology. First commercial production of middle distillates and solvents from the plant occurred during 1993 using feedstock from offshore gas fields. Following an incident in late 1997, the plant re-started successfully in mid 2000. A full range of liquid and wax products is being sold into specialty markets in Asia Pacific, the USA and Europe.

**Nigeria** A LNG plant owned by Nigeria LNG Limited (NLNG) (Group interest 25.6%) started up in October 1999. The plant produces some 5.9 million tonnes of LNG a year from two LNG trains (Trains 1&2) for export under long-term contracts to customers in Europe. A final investment decision was taken in February 1999 by the shareholders of NLNG to expand the existing venture, through the construction of an additional 2.9 million tonnes per annum LNG train and associated LPG facilities. The third train commenced production in quarter 4 2002, three months ahead of schedule. LNG volumes from this expansion have been sold under long-term contracts to existing customers. In the first quarter of 2002, the shareholders of NLNG committed to the "NLNG Plus" project, a further two-train expansion (Trains 4&5), to supply US and European markets. NLNG Plus will increase NLNG's production capacity to approximately 16.7 million tonnes a year of LNG and 2.5 million tonnes a year of LPG in 2006.

**Oman** The LNG plant owned by Oman LNG (Group interest 30%) commenced operations in April 2000. The annual capacity of the plant is some 6.6 million tonnes per annum. The majority of the LNG is sold to Korea and Japan on long term contracts with remaining volumes sold to customers on short term sales agreements.

**Russia** A Group Company holds a 55% interest in Sakhalin Energy Investment Company Ltd. (Sakhalin Energy). Following the successful first phase oil development in July 1999, the potential second phase includes construction, in the south of Sakhalin Island, of a two-train LNG plant with 9.6 million tonnes a year capacity for export to the Asia Pacific LNG markets.

## USA

During 2002, Gas & Power in the USA conducted business in the following areas: transportation of natural gas through offshore pipelines in the Gulf of Mexico, power equity investments, holding of LNG capacity rights in US import terminals, gas storage and arbitrage activities in Texas, natural gas marketing and trading in the USA and Canada, power marketing and trading in the USA, and energy management services.

Shell US Gas & Power (Group interest 100%) manages LNG import capacity rights at the Cove Point and Elba Island terminals, the offshore pipelines in the Gulf of Mexico, an equity position in Enterprise Product Partners L.P., an equity position in Tenaska Gateway power plant in Texas, and long-term gas transportation contracts in Canada. Additionally, during 2002 Shell US Gas & Power evaluated various options to expand its LNG import capabilities.



Following the 2001 acquisition by InterGen of 30% interest in Coral Energy Holdings, Shell Trading continues to operate and manage all of Coral's gas and power activities in the USA and Canada. In 2002, Kinder Morgan purchased InterGen's Tejas gas pipeline and storage system.

#### **Other Western Hemisphere**

**Bolivia** In 1997, a Group company acquired a 25% interest in Transredes, an oil and gas pipeline company in Bolivia. In 1999, gas exports to Brazil commenced through a pipeline owned by GTB, a Transredes subsidiary in which the Group has both direct and indirect interests totalling 29.75%.

**Brazil** In 1997, Group companies acquired a minority interest in Comgas, a Brazilian natural gas distribution company in the state of São Paulo. In 1999, a joint venture was formed with BG International that successfully bid for the final and controlling block of Comgas (total Group interest now 18.2%). In 1998, an interest (25-30%) was acquired in a power station and associated gas supply pipeline at Cuiaba in western Brazil 51; the pipeline also crosses through eastern Bolivia. In 2000, Group companies, jointly with Enron, acquired the Transredes interests in the Cuiaba pipeline and power plant (Group interest in the various project entities now average 37%). The Cuiaba gas-fired power plant (480MW) became commercially operational in 2002. In 1998, an agreement was signed with Petrobras to develop an LNG import terminal in north eastern Brazil.

**Venezuela** In 2002, a Group company signed a Framing Agreement (June) and a Preliminary Development Agreement (November) covering a 30% interest in the Mariscal Sucre LNG scheme.

#### **LNG Supply and Shipping**

Two operations, Shell Western LNG (SWLNG) and Shell Eastern LNG (SELNG) have been established to secure supplies and terminal capacity for downstream markets that Shell is developing. SWLNG sources LNG in the West and supplies Shell's outlets in the Atlantic Basin (currently Spain and the USA), while SELNG sources supplies in the East, and may eventually supply Shell's terminal in India, and other potential outlets in the region including Taiwan and China. These operations will primarily use ships which have been acquired by Shell Tankers Singapore Limited (currently a fleet of 3, but with 2 more to be delivered by early 2004), and also transact short-term supplies and charters.

#### **InterGen**

InterGen is a major international developer of private power projects in which the Group has a 68% non-controlling equity interest. InterGen brought five new facilities in Egypt, Mexico, Turkey and Australia into operation in 2002, bringing the total generating capacity to 5.2 Gigawatt (GW) (InterGen net equity interest) at year-end. At the end of December 2002, the company had interests in seven other power stations under construction, with 6.9GW (InterGen net equity interest) capacity, in the UK, Turkey, Mexico, the Netherlands and the USA. Three projects in the UK, Mexico and the Netherlands secured financing in 2002.

### 3 Oil Products

#### (a) Overview

Oil Products encompasses all the activities which transform crude oil from the wellhead into Shell products for customers.

The Group has an interest in 55 refineries worldwide and markets fuels for the automotive, aviation and marine sectors, along with heating oils, industrial and consumer lubricants, speciality products such as bitumen and liquefied petroleum gas (LPG) and technical services.

The Oil Products business operates the world's largest single branded retail network, serving some 25 million retail customers a day through 55,000 service stations. Convenience retailing, offering a wide range of products, continues to show steady growth in revenues, gross margin and income. In addition, the Oil Products business serves around one million industrial and commercial customers; from small family-run businesses through to multinational companies. Lubricants, fuels and other speciality products are supplied to industrial sectors as diverse as mining, automotive manufacturing, food processing and steel-making. Underpinning Shell's marketing strength is the Shell brand. The Shell brand is one of the most trusted and reputable in the world. The Shell Global Brand Tracker is run annually, measuring in a structured and objective way the health of the Shell brand across the world, and enables Shell companies to assess their competitive strength and brand appeal. The latest study confirmed Shell's global lead in terms of Brand Preference – it was the most preferred brand in 30 of the 50 markets covered. The reach of the brand – with a Shell presence in over 145 countries and territories – provides the opportunity to combine the operational and cost benefits of global operations with a strong brand affiliation.

Group companies continue to be leaders in automotive fuel performance and quality. The range of innovative products and services offered to customers has been further expanded, drawing upon extensive research and development. The differentiated fuels programme has now been launched in 46 countries with 9 product launches in 2002. Environmentally friendlier products continued to be introduced more widely, such as low-sulphur diesel, lead replacement fuel and LPG.

Oil Products actively manages the health and safety risk of its operations and products for staff, contractors, customers and neighbours. All Oil Products business activities are covered by structured HSE management systems.

#### USA

Oil Product activities in the USA are carried out through various Shell Oil Company subsidiaries.

In early 2002, Shell Oil Company acquired the 44% Texaco Inc. interest in Equilon Enterprises LLC, which is now doing business as Shell Oil Products US. At the same time Shell Oil Company and Saudi Refining, Inc. acquired Texaco's interest in Motiva Enterprises LLC, making each company a 50% owner of that business. Shell Oil Company also holds a 50% interest in the Deer Park Refining Limited Partnership, which is a joint venture between Shell Oil Company and a subsidiary of Mexico's national oil company Petroleos Mexicanos ("Pemex").

Together, Shell Oil Products US and Motiva hold a significant position in the US refined products industry, having an approximate 15% share of the US gasoline market. At the end of 2002 the two companies together with Deer Park Refining Limited Partnership had 9 refineries with a combined capacity of approximately 1.7 million barrels per day, interests in approximately 25,000 miles of pipelines and some 21,000 retail outlets.

Shell Oil Products US and Motiva both market petroleum and other products directly and through independent wholesalers and retailers and have the exclusive rights to use the "Shell" brand on refined oil product sales in those areas of the USA where each company is authorised to conduct its respective business. In addition, Shell Oil Products US and Motiva have the exclusive rights to use the "Texaco" brand on refined oil product sales in their respective areas through June 2004, and non-exclusive rights until June 2006. Shell Oil Products US also has the non-exclusive right to use the Texaco lubricant brands through August 2003. Shell Oil Products US and Motiva plan to reduce the number of service stations in the overall network by around 30%. Furthermore a re-branding programme is underway to re-brand Texaco branded sites to the Shell brand, which will be largely completed by mid-2004.

The purchase of Pennzoil-Quaker State Company was completed in October 2002 after regulatory clearance. The transaction has a total equity value of \$1.8 billion and debt of \$1.1 billion. This acquisition will make the Group a leader in both passenger car motor oil and diesel engine oil in the USA. This acquisition (with pre tax benefits expected to be \$140 million by 2004) aligns with the Group's strategy to become a leader in the Global lubricants market.

In 2002 Shell Oil Company sold its pipeline assets in West Texas including the Permian Basin gathering system and the Basin and Rancho pipelines to Plains All American Pipeline, L.P.

In February 2003 Shell Oil Company announced the proposed sale of the majority of the company's onshore crude pipeline systems. The assets to be sold are the Ozark pipeline, the W. Tulsa 10-inch pipeline, the Cushing Tank Farms, Poplar pipeline and the Powder River and Baker gathering systems. In addition, Shell Pipeline's ownership interest in the Capline, Capwood, Woodpat, Osage and Little Missouri pipeline systems will be sold.

**Canada** Shell Canada (Group interest 78%) owns 3 refineries in Alberta, Ontario and Quebec, with a total refinery capacity of 0.3 million barrels per day and a network of some 1,800 service stations. Under a joint agreement Shell Canada holds 60 per cent interest in the Athabasca Oil Sands Project in Northern Alberta. This includes the Muskeg River mine and the Scotford upgrader. Bitumen production started late in 2002, with synthetic crude oil production coming soon after.

The synthetic crude feedstock from the upgrader will be processed at the Scotford refinery, which was ranked as "Best-in-Class" (first out of 132 refineries in North America) in the 2000 Solomon benchmarking study.

#### **Shell Europe Oil Products (SEOP)**

SEOP has a presence in 37 countries. Group companies have 11 refineries with a total capacity of 1.6 million barrels per day. In addition, associated companies have 8 refineries with a capacity of 1.1 million barrels per day (Group interest 0.3 million barrels per day). There are a total of some 13,000 service stations, in particular growth has been realised in recent years in Central and Eastern Europe.

Differentiated fuels have now been launched in 20 countries.

A Group company entered into a refining and marketing joint venture (50:50) with RWE-DEA in Germany, the largest oil products market in Europe, in January 2002 and took ownership of 100% of the venture in July; the cash consideration of \$1.3 billion will be paid in July 2003. The acquisition will lead to expected benefits of \$150 million by 2003 and the Group will be looking to increase this benefits delivery in 2004.

The acquisition of 86 service stations from Agip in Italy was announced in 2002 strengthening Shell's network in the north of the country. In two linked transactions 56 sites in Germany and 35 sites in France were sold to AGIP in order to comply with regulatory requirements relating to the purchase of RWE-DEA. In the first quarter of 2003, the Group announced its intention to seek buyers for the shares in AB Svenska Shell, a 100% owned subsidiary. It is expected that the sale will be completed during 2003. It is the intention to retain the lubricants, LPG and Marine Products businesses in Sweden.

#### **Shell Oil Products East (SOPE)**

SOPE, encompassing the Middle East and Asia Pacific, operates in 36 countries. At the end of 2002 Group companies have 6 refineries with a refinery capacity of some 1.0 million barrels per day. Furthermore, associated companies have 8 refineries with total capacity at the end of 2002 of 1.0 million barrels per day (Group interest 0.3 million barrels per day).

There are a total of some 10,000 service stations in retail markets. Differentiated fuels are now available in 7 countries.

In quarter 3, the Group initialled a draft Joint Venture Contract with China Petroleum and Chemicals Corporation (Sinopec Corp.) for the establishment of an oil products marketing joint venture in Jiangsu Province. The joint venture is for the development of a network of 500 service stations in that province. Discussions towards full agreement are progressing.