

ROYAL DUTCH SHELL PLC SUSTAINABILITY REPORT 2008

# RESPONSIBLE ENERGY SUSTAINABILITY REPORT





## SHELL AND THE ENERGY CHALLENGE

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### ADDITIONAL WEB CONTENT

This Report is supported on the Shell website with additional environmental, social and financial performance data and more detailed information on our approach to sustainable development and related issues. Web links on each page show where to find this information.

### KEY PERFORMANCE INDICATORS

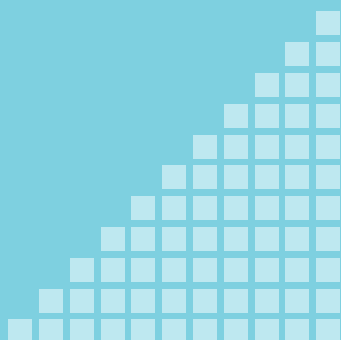
We have key performance indicators that were developed with our stakeholders. These enable us to track our performance, and help us better manage efforts across our operations for these key global environmental and social impacts. These are the same indicators we use internally when we assess our sustainable development performance in our Shell Scorecard.

### DON'T JUST TAKE OUR WORD FOR IT

A committee of external experts has once again reviewed the balance, completeness and responsiveness of this Report.

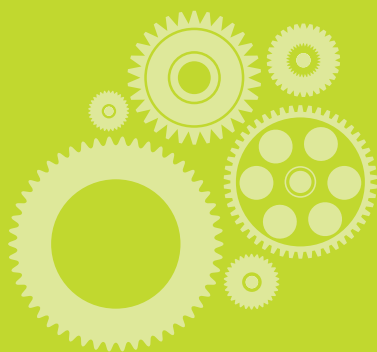
### GRI

We continue to use the Global Reporting Initiative's G3 guidelines. Information is available on [www.shell.com/gri](http://www.shell.com/gri).



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### EXTERNAL RECOGNITION



### CARBON DISCLOSURE PROJECT

Included in the Carbon Disclosure Project's Carbon Disclosure Leadership Index.



**"WE MUST STAY ON COURSE. CRITICAL THINGS LIKE SAFETY... ENERGY EFFICIENCY AND SOCIAL PERFORMANCE NEED CONSTANT FOCUS. AND WE MUST KEEP THE LONG-TERM VIEW. THE ENERGY CHALLENGE IS HERE TO STAY."**

Welcome to the 2008 Shell Sustainability Report. It describes our efforts to contribute to sustainable development in what was, for all of us, an exceptionally turbulent year.

The financial crisis and the economic recession it triggered affected people around the world. The downturn is expected to bite deeper in 2009. Oil prices plunged by more than \$100 from a record high of around \$145 a barrel in July.

Our response has been to intensify our drive to reduce costs while continuing to improve our performance and invest in the big projects that will deliver more energy and growth. We have learned from past recessions how important it is to do all three. We must stay on course. Critical things like safety, which is always our first priority, energy efficiency and social performance need constant focus. We must also keep the long-term view. With rising greenhouse gas concentrations and more than 3 billion more energy users by 2050, the energy challenge is here to stay. The world will need much more and much cleaner energy in the decades to come, and supplies will struggle to keep up. Meeting that challenge will require steady investment in new production capacity and new technologies. Stopping and starting at each phase of the business cycle will not work.

In 2008, we invested a record \$32 billion net of proceeds from divestments, and expect to maintain these levels in 2009. We pressed ahead steadily with our major growth projects. They will help meet energy needs for many years to come. For example, Sakhalin II began commissioning year-round oil production and was preparing to start exports of liquefied natural gas (LNG) in 2009. Construction moved ahead on the Pearl GTL project in Qatar, on the expansion of the Motiva Port Arthur Refinery in the USA, on the Shell Eastern Petrochemicals Complex in Singapore, and on the expansion of the Athabasca Oil Sands Project in Canada. Progress on these projects has depended on mitigating environmental impacts and earning the trust of local communities.

The same is true in Nigeria, where conditions remained difficult. Security and funding problems meant we were unable to make significant further progress on our programme to end continuous flaring onshore in the Niger Delta. Despite the difficulties we did manage to start up the AFAM VI power plant. It will increase the country's electricity supply by a fifth.

Our focus on managing CO<sub>2</sub> emissions remained strong. We continued to reduce the greenhouse gas emissions from the facilities we control or operate. These emissions have fallen by more than 30% since 1990, largely because of operational improvements like reduced flaring. We are involved in a number of demonstration projects for technology to capture and store CO<sub>2</sub> safely underground, including the first research pilot in Europe to inject CO<sub>2</sub> onshore. We would like these projects to move ahead faster and are working with governments to help them put the policies and incentives in place to speed up the development of this critical technology. We also continued to roll out advanced lubricants and transport fuels, like Shell Fuel Economy (and in 2009 Shell FuelSave), that can help drivers improve their fuel efficiency.

While our primary focus continues to be delivering oil and natural gas responsibly, we also made progress developing renewable energy. Wind is currently our largest business in this area. In 2008, we increased our wind capacity by nearly a quarter to 550MW, enough to power nearly 250,000 households. We will now concentrate on continuing to operate our existing wind farms reliably and safely, rather than expanding our portfolio further. For the next few years, we will be stepping up our efforts in sustainably sourced transport biofuels with good CO<sub>2</sub> performance. This will be the area of focus for our renewable energy activities. In 2008, we continued rolling out our sustainable sourcing safeguards with our biofuel suppliers and increased our stake in advanced biofuels company Iogen Energy to 50%.

I would like to thank the members of the Report's External Review Committee for their valuable contributions. Their straightforward and insightful comments on early drafts of the Report again this year forced us to think more critically about the choices we make and how to report on them effectively to our stakeholders.

In mid-2009, after some five years as Chief Executive, I shall hand over to Peter Voser, currently our Chief Financial Officer. I wish Peter every success. I would also like to thank our people for the tremendous effort, dedication and passion they have shown. I am proud of the way they are embracing the sustainable development mindset and am convinced this will serve Shell well in the challenging times ahead.

**Jeroen van der Veer** CHIEF EXECUTIVE

# SHELL AND THE ENERGY CHALLENGE

**"TACKLING THE PROBLEMS OF THE FINANCIAL CRISIS IS AN IMMEDIATE PRIORITY. BUILDING A CLEANER ENERGY SYSTEM IS A PROJECT FOR DECADES THAT MUST BE STEADILY PURSUED."**

Jeroen van der Veer

## WHO WE ARE AND WHAT WE DO

### ABOUT SHELL

With approximately 102,000 employees in more than 100 countries and territories, Shell helps to meet the world's growing demand for energy, aiming to do so in economically, environmentally and socially responsible ways.

### UPSTREAM

Our Exploration & Production business searches for and recovers oil and natural gas around the world. Many of these activities are carried out as joint ventures, often with national oil companies.

Our Gas & Power business liquefies natural gas and transports it to customers across the world. Its gas to liquids (GTL) process turns natural gas into cleaner-burning synthetic fuel and other products. It develops wind power to generate electricity and is involved in solar power technology. It also licenses our coal gasification technology, enabling coal to be used as a chemical feedstock and to generate electricity more efficiently.

### DOWNSTREAM

Our Oil Products business makes, moves and sells a range of petroleum-based products around the world for domestic, industrial and transport use. With around 45,000 service stations, ours is the world's largest single-branded fuel retail network. Its Future Fuels and CO<sub>2</sub> business unit develops biofuels and hydrogen, and markets the synthetic fuel and products made from the GTL process. It also leads company-wide activities in CO<sub>2</sub> management.

Our Chemicals business produces petrochemicals for industrial customers. Its products include the raw materials for plastics, coatings and detergents used in the manufacture of textiles, medical supplies and computers.

Our Oil Sands business, the Athabasca Oil Sands Project, extracts bitumen – an especially thick, heavy oil – from oil sands in Alberta, western Canada, and converts it to synthetic crude oils that can be turned into a range of products.

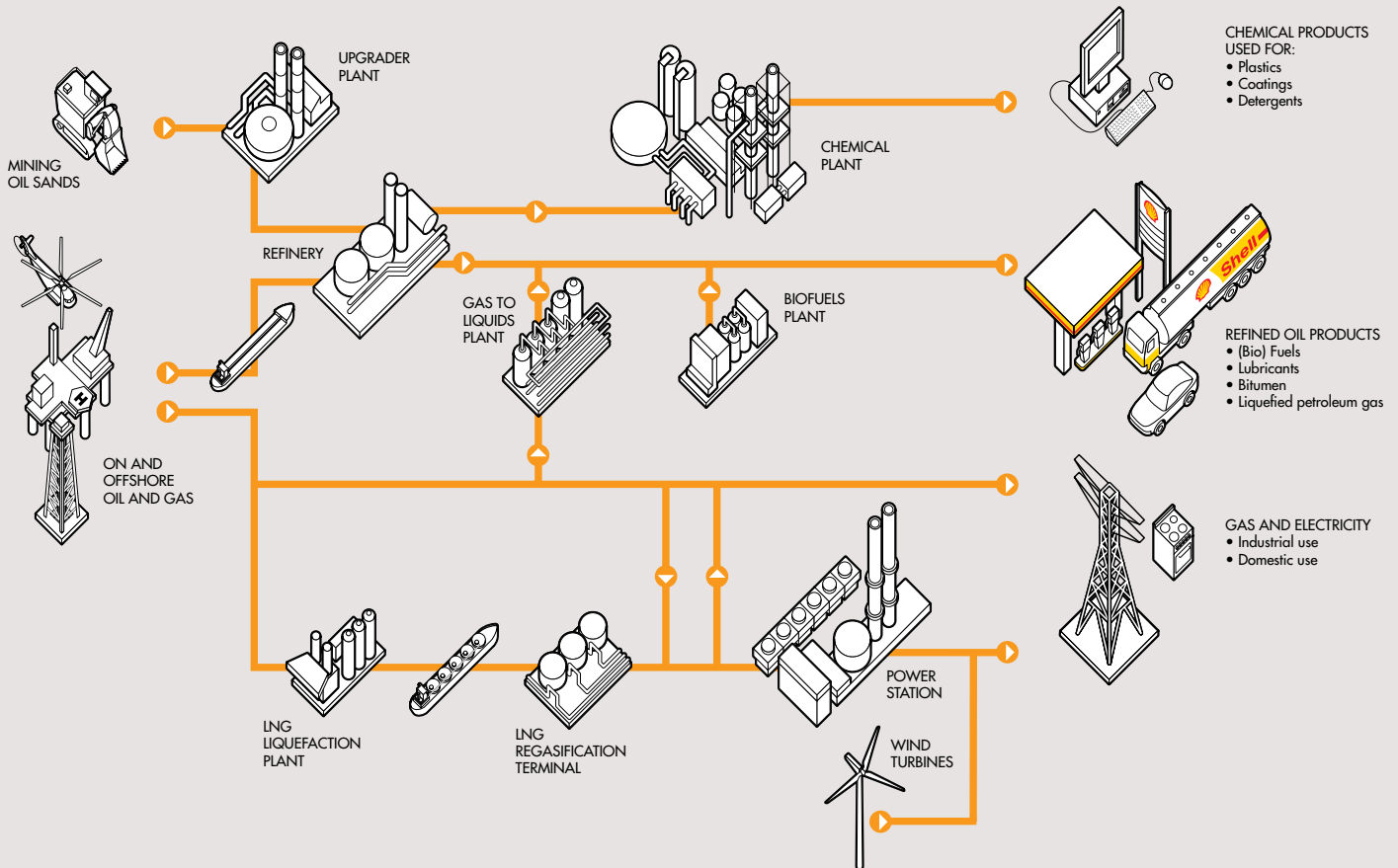




[www.shell.com/whoweare](http://www.shell.com/whoweare)

- More on our business
- Read about our history

## BUSINESS OVERVIEW



## KEY FIGURES 2008

	Income \$ million	Capital investment \$ million	Capital employed <sup>[A]</sup> \$ million	Employees <sup>[B]</sup>
Exploration & Production	20,235	24,718	55,274	18,000
Gas & Power	5,328	4,346	22,497	3,000
Oil Sands	941	3,124	6,200	1,000
Oil Products	446	3,917	44,171	58,000
Chemicals	(405)	2,097	9,904	6,000
Corporate (including Global Functions)	(69)	242	14,089	16,000
<b>Total</b>	<b>26,476</b>	<b>38,444</b>	<b>152,135</b>	<b>102,000</b>

[A] Consists of total equity, current debt and non-current debt.

[B] Rounded to the nearest thousand.

**The economic crisis is a powerful storm. It needs to be weathered without blowing either governments or companies off course in their long-term journey towards a bigger, cleaner energy system.**

## THE ENERGY CHALLENGE

In our 2007 Sustainability Report we described the need to build an energy system that produces more energy with less CO<sub>2</sub> as one of the biggest challenges facing the world this century. We talked about three hard truths that make this challenge tougher. The first is that demand for energy will rise over time as the population grows and the world gains 3 billion more energy users by 2050. The second is that energy supplies will struggle to keep up with this demand. The third is that stress on the environment from this growing energy use is set to rise.

Last year's Report also described two scenarios for the energy system between now and 2050. Our scenarios are not forecasts or predictions, but two plausible alternative ways the energy system could develop. One, which we called "Scramble", envisages a headlong rush by individual countries to secure more energy for themselves, whatever the consequences for others, or the planet. In this scenario, government responses to energy and climate problems are short-term and reactive. This leads to more economic volatility and brings wilder swings in energy price. The other scenario, "Blueprints", starts with a disorderly patchwork of local and national initiatives, but quickly settles down into a more orderly, co-operative transition. In this scenario, a global policy framework emerges for managing greenhouse gases within a decade. This encourages technologies like CO<sub>2</sub> capture and storage (CCS), biofuels, wind and solar power and, after 2020, a mix of plug-in hybrid, fully electric and hydrogen-powered vehicles to come on stream faster. Demand for energy grows more slowly than in "Scramble", though it still nearly doubles by 2050.

We made it clear we see "Blueprints" as a better response to the energy challenge than "Scramble", and would be a better world for Shell to do business in. We stated our determination to help develop the critical technologies needed and advocate the policies required to move in a "Blueprints" rather than in a "Scramble" direction.

## THE HARD TRUTHS JUST GOT HARDER

In many ways, the current economic downturn makes responding to the three hard truths more difficult. The drop in economic activity has temporarily reduced energy use and sent energy prices tumbling (see box page 5). Lower prices bring some relief in the short term for energy users, and may help reverse the recent sharp rise in the costs of producing oil and gas. However, they store up problems for later, since they reduce the funds companies have to invest in new energy projects. The credit crunch also makes it harder for some energy companies to raise funds. As a result, worldwide investment in energy projects is dropping at a time when it needs to be rising to meet future growth in demand. In 2008, the International Energy Agency warned that oil demand might outstrip supply as early as 2013, once the

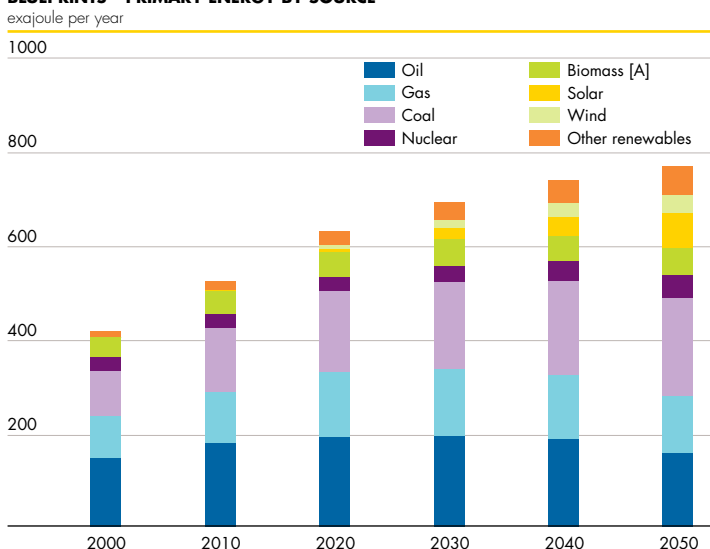
world economy recovers and energy demand picks up. Governments, understandably, are focused on the immediate economic crisis in the lead up to the Copenhagen climate change conference, a critical time for building the international policy frameworks that are urgently needed to address greenhouse gas emissions.

## OUR CONTRIBUTION

We are being prudent during the current downturn and keeping our long-term view. We are intensifying our drive to reduce costs and continuing our work on projects and technologies that the world will need to address the energy challenge. For example, we are continuing to invest steadily in the big long-life projects and in the upgrades of our mature operations that together could increase our oil and natural gas production by 2–3% over the period 2009 to 2012. In 2009, we expect to invest about as much as we did in 2008. Our 2008 investment level was higher than that of all other international oil companies, according to their annual reports. So was our more than \$1.2 billion investment in research and development into new technologies that will be needed to produce more energy and cleaner fuels.

We continue to build on our strong position in liquefied natural gas, helping more markets get access to cleaner-burning natural gas (see page 17). Our LNG capacity increased by a quarter in 2008 and early 2009. We are increasing the availability of advanced transport fuels and lubricants that can help customers improve their fuel efficiency and reduce emissions (see page 22), and are working to develop a substantial transport biofuels business (see page 23). We have also stepped up our call for government policies to address climate change (see page 13) and our own work to build our capabilities in carbon capture and storage (CCS) and improve the way we manage the environmental and social impacts of our operations (see pages 26–31).

### BLUEPRINTS – PRIMARY ENERGY BY SOURCE







[www.shell.com/scenarios](http://www.shell.com/scenarios)  
• More on our energy scenarios

[www.iea.org](http://www.iea.org)  
• International Energy Agency, reports on energy supply and demand



Earth at night

### WHY PROVIDING MORE ENERGY MATTERS

Economic growth and the quality of life in the developed world depend critically on reliable, affordable energy. It drives industrial production and the information economy. Access to it is also vital for lifting people out of poverty. Motorised transport brings people to where the jobs are and goods to market. Electricity is essential for cooling medicines in fridges, making study possible after nightfall, and pumping and cleaning water. Access to electricity also makes use of mobile phones, computers and the Internet possible, allowing people to tap into the world's knowledge, markets and relationships. It enables communities to reach out, speak out and work with others on common issues of importance to them.

Today, up to 2 billion people lack access to reliable modern energy. The world's population is expected to grow by another 3 billion by 2050, mostly in areas without access to modern energy today. So when our scenarios, or the International Energy Agency, talk about the need to provide approximately twice as much energy by 2050, what is at stake is the economic growth that is needed to maintain the quality of life in the developed world, and meet the aspirations of billions of new energy users.

### VOLATILE ENERGY PRICES

Oil and gas prices in 2008 saw some of their biggest swings in history. In July they were at their highest levels ever in nominal terms. By year end they were at their lowest in five years (though still above their 25-year nominal average). The sudden and severe economic downturn explains the sharp drop. Lower levels of economic activity mean less energy is used. However, it is the rise in prices in the past five years, and the big price swings, that matter more for the long term. Energy prices are likely to remain more volatile, and, on average, higher than they have been in the past.

This is mainly because of our second hard truth: that energy supplies will struggle to keep up with growing demand. That struggle is new. In the past, a number of countries had extra capacity in reserve. They could quickly bring it into production to respond to unexpected jumps in oil demand, even at points when economic growth was strongest. This moderated volatility and demand-driven price rises. However, that reserve capacity got used up over the last decade. It was needed to meet

rapid growth in demand and to make up for a faster than expected decline in production from mature fields. At the moment, there is some extra capacity again because of the recession. However, the buffer is depleted so that when growth returns to the global economy even minor changes in demand will move prices.

Nor is there much chance of building up a new buffer of reserve capacity. As the International Energy Agency has shown, even before the recession investment activity industry-wide was struggling just to keep up with the long-term growth in demand. A doubling of production costs across the industry in the last five years has added to the challenge. The current lower oil prices are reducing investment across the industry at a time when it needs to be rising to prepare for the return of economic growth.

Shell, with 2% of the world's oil and 3% of its natural gas production, cannot influence global energy prices. Like everyone else, we are preparing for a world of more volatile and on average higher prices.



### WHAT OTHERS SAY

"As Administrator of the US Energy Information Administration from 2002 to 2008, it became clear to me that projected population increases, continued economic growth and rising living standards in emerging economies together present serious long-term energy and environment challenges. Shell has captured those challenges accurately and succinctly in this Report – highlighting the 'above-ground' challenges rather than resource constraints. Governments need to work collaboratively to promote efficient energy use and to facilitate the huge investments required to develop all forms of energy in an environmentally responsible way. International and nationally owned energy companies need to make these investments and develop and apply new technologies on an unprecedented scale."

**Guy Caruso** SENIOR ADVISOR, CENTER FOR STRATEGIC AND INTERNATIONAL STUDIES

**We are sticking with our business strategy: More Upstream, Profitable Downstream.**

## MORE UPSTREAM

More upstream means concentrating the bulk of our investment in oil and natural gas production, where returns are typically higher than in the downstream. In 2009, we again expect around 80% of our capital investment to be in upstream projects (including oil sands). Cleaner-burning natural gas will be an increasingly important part of our upstream portfolio, and could grow from 45% of our production in 2008 to more than half in 2012. We expect production from oil sands to grow as well, though more slowly than we had anticipated due to sharp increases in construction costs for new projects (see page 16). We invest in large, integrated projects that will produce oil and gas for decades and will benefit both the countries holding these resources and countries dependent on oil and gas imports. These giant projects take a long time and a lot of money to build. They cannot be stopped or started quickly in response to short-term changes in energy prices or costs.

Competition for access to oil and natural gas resources will remain intense. We believe we can differentiate ourselves through our technology, our operational excellence and our ability to manage these complex and difficult projects in socially and environmentally responsible ways.

## PROFITABLE DOWNSTREAM

Profitable downstream means focusing on generating cash from our existing Oil Products and Chemicals assets and continuing to adjust our downstream portfolio so we can contribute to growth in emerging markets. Helping our customers with advanced fuels and lubricants, building our capacity in carbon capture and storage, and working to develop a substantial transport biofuels business are also part of this strategy.

## SOURCES OF DIFFERENTIATION

As energy projects become more complex and more technically demanding, we believe our technical expertise will be a deciding factor in the growth of our business. So will our Shell brand and our ability to deliver operational excellence. We also recognise that our ability to deliver our strategy heavily depends on operating safely, reducing the environmental footprint of our operations and products, and building strong relationships, based on trust and mutual benefit, in the places where we operate.

## OUR PEOPLE AND OUR STRATEGY

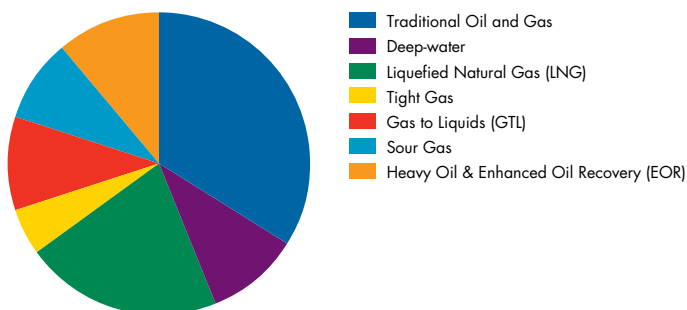
Achieving this business strategy also critically depends on our people: their project management abilities, their financial and relationship skills, their technical innovations and their dedication and values.

In 2008, we recruited more than 5,500 new staff from more than 90 countries, more than half from technical disciplines. We recognise the business value a diverse workforce brings. Nearly 30% of the professionals we hired in 2008 were women, including nearly a fifth of those we hired for technical roles. By the end of 2008, 13.6% of the most senior leadership positions were filled by women, up from 12.9% in 2007.

We are serious about investing in the development of our staff. We provide a full range of technical, operational and compliance training. Through Shell Learning, we also offer targeted leadership programmes for staff at key points in their career. In addition, the Shell Project and Commercial Academies provide focused programmes for project managers, project engineers and commercial deal makers to develop their skills. Approximately 2,000 staff participated in Academy courses in 2008. Increasingly, our programmes use our “blended” learning approach, which combines classroom teaching with computer-based e-learning, and hands-on practice on the job. This approach both increases the training’s impact and reduces costs. We have set up the online Shell Open University, to make it easier for Shell people around the world to find our learning programmes. Our Shell General Business Principles, including contributing to sustainable development, form an important theme in these programmes.

## OUR OIL AND GAS RESOURCES

% of total resources on-stream or under construction, March 2009







[www.shell.com/strategy](http://www.shell.com/strategy)

- Our latest strategy update
- Our major projects

[www.shell.com/ourpeople](http://www.shell.com/ourpeople)



## KEY PROJECTS

Start-up	Project	Country	Shell share %	Peak production kboe/d <sup>[A]</sup>	LNG 100% capacity mtpa <sup>[B]</sup>	Shell operated	Category
2008–2009	Afam gas and power <sup>[C]</sup>	Nigeria	30	67		■	Traditional
	BC-10	Brazil	50	100		■	Deep-water
	NW shelf LNG T5/Angel <sup>[C][D]</sup>	Australia	22.4	170	4.4		LNG
	Pinedale growth	USA	Various	140 <sup>[E]</sup>		■	Tight gas
	Sakhalin II/LNG T1-2 <sup>[C]</sup>	Russia	27.5	395	9.6		LNG
	Ursa Princess Waterflood <sup>[C]</sup>	USA	45.4	30		■	Deep-water
2010–2011	AOSP Expansion 1	Canada	60	100		■	Heavy oil/EOR
	Corrib	Ireland	45	58		■	Traditional
	Gbaran Ubie PH 1	Nigeria	30	280		■	Traditional
	Gjoa	Norway	12	107			Traditional
	Halfdan PH 4	Denmark	46	23			Traditional
	Harweel	Oman	34	44			Heavy oil/EOR
	Pearl GTL	Qatar	100	320 <sup>[F]</sup>		■	GTL
	Perdido	USA	35.4	130		■	Deep-water
	Pluto LNG T1 (Woodside) <sup>[D]</sup>	Australia	30.8	124	4.3		LNG
	Qarn Alam EOR	Oman	34	44			Heavy oil/EOR
	Qatargas 4 LNG	Qatar	30	280	7.8		LNG
	Schoonebeek	The Netherlands	30	20		■	Heavy oil/EOR
2012+	Shell Eastern Petrochemicals	Singapore	100			■	Downstream
	Bonga NW	Nigeria	55	54		■	Deep-water
	Forcados Yokri IP	Nigeria	30	70		■	Traditional
	Gumusut-Kakap	Malaysia	33	135		■	Deep-water
	Kashagan PH 1	Kazakhstan	16.8	300			Sour
	Port Arthur Refinery Expansion	USA	50	325			Downstream

[A] Thousand barrels of oil equivalent per day.

[B] Million tonnes per annum.

[C] On-stream, March 2009.

[D] Shell direct and indirect position via Shell 34.27% shareholding in Woodside Petroleum Ltd.

[E] Shell share.

[F] Pearl GTL is expected to produce 140,000 b/d of GTL products.

**Our Shell General Business Principles define our approach to our business, as they have done for more than 30 years.**

## **CONTRIBUTING TO SUSTAINABLE DEVELOPMENT**

Our Business Principles include contributing to sustainable development, which for us means helping to meet the world's growing energy needs in economically, environmentally and socially responsible ways. This is about our products: producing more cleaner-burning natural gas, for example, or working to build a transport biofuels business. It is about our operations: building projects, running facilities and managing our supply chain safely, and in ways that mitigate environmental impacts and create benefits in the societies where we operate. It is about our people: using their expertise, creativity and skill so we can compete successfully and help meet the energy challenge. It is also about our relationships: with customers, business partners, governments, academic institutions, non-governmental organisations, and our neighbours.

Contributing to sustainable development means consciously balancing short- and long-term interests; integrating economic, environmental and social considerations into business decisions; and regularly engaging with our many stakeholders.

## **HUMAN RIGHTS**

Our Business Principles include support for fundamental human rights. We review the human rights risks faced by our projects and operations in high-risk countries. Where we identify risks, we systematically develop action plans so that we avoid violating the rights highlighted. Our Shell-wide security standards define how we protect our people and assets, while respecting the rights of others, including local communities. These standards set strict guidelines on the use of force and armed security, and incorporate the Voluntary

Principles on Security and Human Rights, which are a guide for companies in extractive industries and the energy sector.

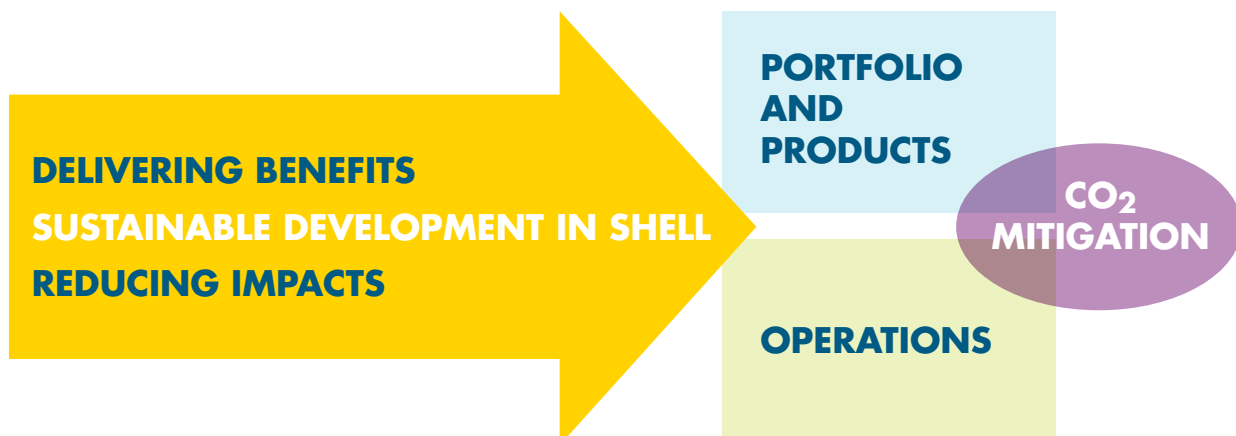
## **HELPING STAFF AND PARTNERS LIVE BY OUR PRINCIPLES**

Our Code of Conduct gives staff more detailed instructions on the behaviour our Business Principles require. All staff must complete training that explains what our Code of Conduct requires of them. We also provide staff with online and face-to-face training in specific areas, including combating bribery and corruption, and complying with competition laws, as the Business Principles require. Our global helpline and supporting website allow staff and business partners to report concerns confidentially and get advice on suspected infringements of the law, our Code of Conduct or our Business Principles. We report violations of our Code of Conduct, including proven cases of bribery and fraud, to the Audit Committee of the Board of Royal Dutch Shell plc. In 2008, 204 violations of the Code of Conduct were reported (361 in 2007). As a consequence, we ended our relationship with 138 staff and contractors (151 in 2007).

## **STANDARDS AND REQUIREMENTS**

To translate our Business Principles into action, we have a range of mandatory Shell-wide standards, including our Health, Safety, Security and Environment (HSSE) standards. They include requirements for biodiversity, managing greenhouse gas (GHG) emissions, health management, road and process safety, and respecting the human rights of our neighbours when providing security.

We also have a series of requirements for integrating environmental and social factors into the way we plan, design and take investment decisions on major new projects. For example, since 2002, we have considered the expected future costs to a project from its CO<sub>2</sub> emissions when making all major investment decisions. We include these costs in the base





[www.shell.com/howwework](http://www.shell.com/howwework)

- Our Business Principles and Code of Conduct
- Our company-wide environmental and social standards

[www.shell.com/humanrights](http://www.shell.com/humanrights)

- Human rights tools, guidelines and training

economics of the project. As a result, projects with lower CO<sub>2</sub> costs get a boost and those with higher emissions have an incentive to alter their design to reduce emissions. An environmental, health and social impact assessment is required before we begin significant work on major projects or existing facilities. It identifies the concrete steps needed to mitigate significant impacts on the environment or people. To ensure these changes are made early and effectively enough, we now check progress as part of the normal project review process in our upstream business. Additional checks are done twice a year on the 70 largest early-stage exploration and production projects.

## GOVERNANCE

Our Corporate and Social Responsibility Committee assesses our policies and performance with respect to our Business Principles, Code of Conduct, Health, Safety, Security and Environment (HSSE) and major issues of public concern on behalf of the Board of Royal Dutch Shell. The committee is made up of three Non-executive Directors.

Management responsibility for sustainable development rests with our Chief Executive. He chairs Shell's HSSE and Social Performance Executive Committee, which reviews performance and sets priorities, key performance indicators and targets. We have a Director of Corporate Affairs and Sustainable Development, who is a member of our Executive Committee and reports directly to the Chief Executive.

Each business is responsible for complying with Shell's environmental and social requirements and achieving its own specific targets in this area – based on the concept of top quartile (see box).

Sustainable development is also part of how we assess our performance and pay our people. It counts for 20% of the Shell Scorecard that we use in determining bonuses (see fact sheet inside back cover).



Winner of the Shell staff photo competition

## AIMING FOR TOP QUARTILE OPERATIONAL PERFORMANCE

We aim to be among the top 25% of our industry in all areas of our business: costs, the value we add and the environmental and social performance of our operations. We are translating this aim into concrete, operational targets for our individual facilities and businesses. Our refineries, for example, are benchmarked against each other on their performance and costs and against equivalent facilities run by competitors. Operational targets (which can include absolute reduction targets) are then defined for each facility. Facilities then work to meet or exceed those targets. If achieved, these targets, which include safety performance and energy efficiency, will move us to top quartile. Our oil and gas facilities, retail and distribution networks, even our company-wide functions like legal, communications or finance are all moving to this approach. We believe it is a better way to improve our operations than the absolute company-wide targets we have used in the past. The people running our facilities understand it; it results in targets and actions that are challenging and relevant to the facilities involved; and if achieved across the company, it will lead to significant improvements in our performance both compared to our competitors and in absolute terms.



Shell Dialogues webchat on emissions trading

## TALKING ABOUT SUSTAINABILITY

Contributing to sustainable development is integral to who we are and what we do. So we talk regularly about sustainability in our engagements with investors, governments and communities and in our company advertising. We aim to do so honestly, using our definition of sustainable development. This definition is in line with the Brundtland Commission's. It includes not only sustainability's environmental dimensions, but its economic and social aspects as well. It underlines the need to maintain economic growth and reduce poverty by providing more energy. That can lead to debate, since there are different views about what "sustainability" or "sustainable development" means, and about what an energy company's contribution should be. In 2008, one of our advertisements was challenged in the UK by an environmental NGO for calling several of our investments to meet growing energy demand "sustainable" that, in their view, were not. Their complaint was upheld by the UK Advertising Standards Authority.

# INTERVIEW WITH OUR CHIEF EXECUTIVE

Aron Cramer, President and CEO of Business for Social Responsibility, interviews Shell Chief Executive Jeroen van der Veer about Shell's role in securing a responsible energy future.

**"WE'RE IN THE MIDST OF THE WORST GLOBAL RECESSION IN DECADES. WHAT DOES THAT CHANGE ABOUT SHELL'S APPROACH TO SUSTAINABLE DEVELOPMENT?"**

**Aron Cramer** PRESIDENT AND CEO OF BUSINESS FOR SOCIAL RESPONSIBILITY (BSR)



**We're in the midst of the worst global recession in decades. What does that change about Shell's approach to sustainable development?**

It certainly doesn't change our commitment. Sustainable development is part of our Business Principles, and we don't rewrite our principles just because there is a downturn in the economy. Since we made that commitment in 1997, sustainable development has gradually become a mindset throughout Shell. Our people understand that it is part of the way we do business. Nor does the recession change the business case for sustainable development. If you look to the medium term, and not just to the short term, supplies of "easy oil and gas" will struggle to keep up with demand. We will increasingly invest in large, complex projects that can reliably deliver big supplies for decades. These new projects are often found in more complex political, social, geographic and geological environments than the "easy oil" projects we developed in the past. So if we are going to win access to these projects and deliver them successfully we will have to make certain that sustainable development is at the very heart of our thinking when we plan, build and manage them.

We are in a long-term business, with projects that get designed and built over a decade and run for many more. The global economic downturn risks reducing the international community's focus on the energy and climate challenge, and clearly makes financing projects in our sector more challenging; but when the world comes out the other side, that challenge will return ... and with a vengeance. We must be prudent during the recession, continuing to reduce our own costs and adjusting our planning so we can benefit from downturns in the investment cycle. However, we cannot lose the long-term view.

**But surely some things will change? Aren't you worried about delays in investment in CO<sub>2</sub> capture and storage (CCS) technology for example, as a result of the recession and low oil prices?**

CCS is one of the few technologies the world possesses that can have a big impact on the CO<sub>2</sub> problem in a relatively short time. CCS needs large-scale demonstration projects, so that people can go through the learning curve and develop business models that can be commercially successful.

**And won't we see slower investment in renewables, for instance, if oil is fetching \$100 less per barrel?**

That is a risk. During an economic downturn there is less private capital available for investment. And, everything else being equal, renewables projects are at a relative disadvantage because they have relatively high costs and slow payback time compared to oil and gas projects.

Having said that, we made our decision to work to build a substantial renewables business when oil was \$26 a barrel – currently it's a little less than twice that price, even after the dramatic drop last year. The decision still stands because the reasons behind it haven't changed. We still recognise that a much higher share of the world's energy must in the future come from non-hydrocarbon fuels. We have always said we planned to focus, once we had identified where Shell ought to be in renewables. We have looked very seriously at wind, solar, biofuels and hydrogen, and decided that, for the next few years, our priority will be on transport biofuels. They are closest to our fuels business, which means we can add real value. So we are focusing our renewables spending during the recession. We do not expect to be reducing it.

The long-term challenge remains: to make renewable energy cheaper through technology breakthroughs. Government support is needed to encourage that technology development. Remember, they choose a country's energy mix. But even governments cannot afford to subsidise the global energy system by subsidising the roll-out of today's renewable technologies on the scale needed to change the world's energy mix.

**Why is there such a gap between what the public thinks Shell should invest in renewables, and what you think makes sense?**

Over the last five years, we have spent about \$1.7 billion on renewable energy sources and CCS. In such small markets, that is a lot of money. Still, people say it is a small share of our total capital expenditure.

I understand that reaction. But I think it is important to understand how different cost levels for research and development are compared to building and operating large-scale commercial projects. R&D projects, which is what much of the renewables and CCS activities are, cost millions, or perhaps tens of millions of dollars. When a technology becomes cost-competitive and is commercialised on a large scale, like oil and natural gas development today, only then are we talking about big commercial projects and billions of dollars.





**"IF WE ARE GOING TO WIN ACCESS TO PROJECTS AND DELIVER THEM SUCCESSFULLY WE WILL HAVE TO MAKE CERTAIN THAT SUSTAINABLE DEVELOPMENT IS AT THE VERY HEART OF OUR THINKING."**

**Jeroen van der Veer** CHIEF EXECUTIVE

Also, people often do not realise that we constantly have to reinvest billions just to maintain production in existing oil and natural operations. And we have a lot of existing fields around the world.

#### **How are you ensuring that social performance gets the attention it deserves in all projects?**

Good social performance is one of the reasons most of our projects never make the news in a negative way. And where we improve our social and environmental performance after a difficult start, projects gradually disappear from the front pages. Sakhalin II is a good example.

When we have had problems in this area on our projects, they were mainly caused in the very early stages. We have learned, in Alaska for example, that sometimes you have to move more slowly in the early stages of projects to get where you want to be faster in the end.

Nowadays I see more awareness and better procedures to include non-technical issues early on. I'm talking about things like the needs of communities and the interests of government and non-government organisations. This doesn't always come naturally to business people. We're building these skills and competences into our learning programmes, such as the Project Academy and the Commercial Academy.

#### **Aiming to be "top quartile" at your facilities gives your employees a clear operational goal they can work towards in many aspects of your business. But I'm struggling to see how you can also use it to enable people outside the company to judge your environmental and social performance.**

The top quartile approach is, indeed, primarily an internal management and not an external reporting tool. Its main aim is to help improve operational performance, including environmental and social performance. It makes clear to the people operating our facilities what is expected of them, and what success looks like: simply "do it as well as, or better than, our competitors".

Top quartile compares apples with apples. With a portfolio as diverse as ours, it makes sense to break it down into different categories of business and set challenging social, environmental and operational performance goals for each category, compared to the best being achieved by our peers.

Reporting to our external stakeholders is also important. We do that by describing our progress clearly and providing performance data in our key areas of environmental and social impact, and doing it in increasingly standardised ways, for example by using our industry's reporting standards and the Global Reporting Initiative. This will help readers to compare between companies.

#### **You've spent a lot of time in the last 12 months using Shell's "Blueprints" scenario to call for bold changes to the energy system. What have you learned?**

Our scenarios are playing out as we speak. The short-termism and narrow national self-interest envisaged in "Scramble" are obvious right now, partly due to the recession. But I can also see the seeds of a "Blueprints" world being sown, particularly with the United States signalling its desire to take a lead on energy and climate issues.

The paradox is that, as the recession progresses, and people get distracted from the three hard truths, the need for "Blueprints"-style collaboration becomes more urgent. The longer society delays, the bigger the problems will be. In that context, it is important that the Copenhagen climate conference produces good progress on CO<sub>2</sub> pricing, support for CCS and renewables, and clarity about performance standards in transport, housing and appliances. I have been trying to make the urgency of this clear to governments both as Shell's Chief Executive and as leader of the European Round Table that represents Europe's 50 largest companies.

#### **As you look back on your time as Chief Executive, what stands out for you in Shell's social and environmental performance?**

I feel we have made big increases in awareness around safety. I like the Goal Zero programme. Its purpose is simple: zero accidents, zero fatalities. Our people on the front line can work well with it. We still need to do more to improve safety performance. One death really is too many. But I feel we have made an important step.

I am pleased by the top quartile concept. It helps our people to understand how they can make an active contribution to sustainable development and to sustaining our business at the same time. Also, I see a realisation in Shell people that the need for CO<sub>2</sub> emission reductions and energy savings is a business opportunity. It isn't something to be scared of or run away from. Our people increasingly see we can be part of the solution, and that is important.

**Efforts to manage greenhouse gas (GHG) emissions must be speeded up despite the recession. We remain determined to help.**

## A GROWING CHALLENGE

The Intergovernmental Panel on Climate Change (IPCC) confirmed in 2007 that, to reduce the risk of global temperatures rising dangerously, emissions of greenhouse gases need to peak in the next 10–20 years and then fall substantially. It said concentrations of greenhouse gases eventually needed to stabilise at 450 parts per million (ppm) or below.

Our “Blueprints” scenario demonstrates the scale of that challenge. In it, governments aggressively promote fuel efficiency, lower CO<sub>2</sub> fuels and CCS. An internationally recognised price for emitting GHGs emerges. As a result, energy efficiency improves twice as fast as it has ever done before. By 2050, 90% of all coal-fired and gas-fired power stations in the Organisation for Economic Co-operation and Development (and 50% of those in today’s developing world) are equipped with CCS.

In this scenario, approximately 50% of the world’s power is produced from renewable energy. But even this amount of change (combined with rapid reductions in the emissions of other GHGs like methane from agriculture) isn’t enough to bring greenhouse gas levels down as fast as the IPCC scientists are calling for. This was confirmed by the Massachusetts Institute of Technology (MIT) Joint Programme on the Science and Policy of Global Change. At our request, MIT ran our scenarios through its latest energy and climate change model.

Their work emphasised the importance of annual GHG emissions falling within the next 10–15 years. It made clear how critical the next 5–10 years are for developing the technologies and policies the new energy system will need. MIT estimated that waiting out the current recession before making a big policy and technology push would mean 30 ppm of greenhouse gases more in the atmosphere in 2100.

There is much to be gained from channelling government spending in response to the recession towards energy projects. Investing in CCS, renewables and other clean energy technologies would generate employment in the short term, and help address the three hard truths in the longer term. So would upgrading energy infrastructure, particularly improving power grids so that they can handle more and a wider range of energy supplies.

## OUR ROLE

We were one of the first energy companies to recognise the climate change threat and to call for action. We understand we have a role to play in helping address this challenge: firstly, by managing emissions from the operations we control or operate, which were approximately 75 million tonnes of GHGs in 2008 (see page 29). Secondly, by helping customers manage their emissions from the use of the transport fuels and other energy products we provide. These emissions are typically more than 690 million tonnes of CO<sub>2</sub> a year or approximately 2.4% of the annual CO<sub>2</sub> emissions from fossil fuels (and approximately 1.5% of annual man-made GHG emissions). And thirdly, by advocating the wide-ranging policy changes needed from governments.



Ice field, Alaska

## SHELL’S SIX CO<sub>2</sub> PATHWAYS

**We have identified six main ways in which we are determined to make a difference.**

**In our own operations, we aim to:**

1. **Work to use energy more efficiently.** This includes making the operational changes and investments needed so that our refineries and oil and gas production facilities run more efficiently, including further reducing the amount of gas they flare.
2. **Build our capability in CCS.** As the IPCC showed, despite its costs, CCS is one of the critical technologies needed to buy time in the race to prevent emissions from rising too far, too fast. We are involved in a number of research-scale projects and met our aim of having at least one project storing CO<sub>2</sub> underground during 2008 (see box opposite). We are also doing early preparatory work for larger-scale demonstration projects, like the Quest project in Canada. If it were to go ahead, Quest would capture and store underground around one million tonnes of CO<sub>2</sub> a year from our oil sands upgrader. We are also working on a project in the Netherlands to store up to 400,000 tonnes of CO<sub>2</sub> a year from our Pernis refinery in depleted gas fields.
3. **Continue to invest in fundamental research and development to deliver new, breakthrough technologies that will further increase energy efficiency and reduce emissions from our operations.**

**To help our customers reduce their emissions we aim to:**

4. **Develop lower CO<sub>2</sub> sources of energy, including increasing supplies of natural gas and developing transport fuels, including biofuels, that have lower CO<sub>2</sub> emissions on a “well-to-wheel” basis (see pages 22–23).**
5. **Help transport and industrial customers use less energy and emit less CO<sub>2</sub> for example by providing advanced Shell Fuel Economy formula and Shell FuelSave fuels and lower friction lubricants, and encouraging them to change their driving habits (see pages 22–23).**

**To influence the policy debate, we aim to:**

6. **Continue to work with governments, industry, and non-governmental organisations (NGOs) to build support for effective policies for CO<sub>2</sub> that will speed up the pace of change in the energy system.**





[www.shell.com/climate](http://www.shell.com/climate)

- More on our efforts to manage emissions
- The carbon footprint of our products

[www.shell.com/reducingco2](http://www.shell.com/reducingco2)

- Our research and development on lower CO<sub>2</sub> technologies (CCS, biofuels)

## CALLING FOR CHANGE

In 2008, we stepped up our advocacy efforts, calling for governments to introduce effective measures to reduce CO<sub>2</sub> emissions.

We have the same message for governments everywhere as they prepare for Copenhagen. Firstly, that a stable, long-term regulatory framework, including an international cost of emitting CO<sub>2</sub>, is urgently needed. Secondly, that different types of energy users will require different policy instruments: emissions trading systems, for example, for power stations or industrial facilities; measures for transportation that encourage greater vehicle efficiency; more efficient modes of transport; and fuels that emit less CO<sub>2</sub> on a “well-to-wheel” basis. Thirdly, that renewable power sources like wind and solar need simple, stable and credible targets for their share of electricity supply. Finally, that these changes need to happen fast. They cannot be delayed by the current recession.

CO<sub>2</sub> Capture and Storage (CCS) is a critical area where governments need to provide support for demonstration projects. In 2008, we helped build and lead an ad hoc coalition of companies, NGOs and think tanks to encourage the European Union to find an effective way to fund the 10–12 CCS demonstration projects it aims to have in operation by 2015. In December, the EU agreed to grant these projects credits in the EU Emissions Trading Scheme (ETS).

In other policy areas, we are also helping build the coalitions of companies, governments and non-governmental organisations (NGOs) needed to support effective change. For example, we are supporting the efforts of the Global Legislators Organisation (GLOBE) in the run-up to Copenhagen and remain part of the US Climate Action Partnership.

We are also providing input to regulators in California as they develop a Low Carbon Fuel Standard to regulate “well-to-wheel” CO<sub>2</sub> emissions from vehicles. In 2008, we collaborated with a number of environmental NGOs and consultancy McKinsey & Company on a global study of different GHG measures to reduce GHG emissions. By showing how many different measures will be needed and the significant costs of many (including CCS), it underlines the need for political commitment and an international policy framework now. The study is being discussed with policy makers in the lead-up to Copenhagen.



Checking storage tanks, Ketzin, Germany

## CO<sub>2</sub>SINK – EUROPE’S FIRST ONSHORE CCS PROJECT

If CO<sub>2</sub> Capture and Storage (CCS) is to be ready for large-scale commercial use by 2020, a lot of detailed field work is needed now. That is why, as well as promoting several large CCS demonstration projects, we are working with governments and industry partners on smaller research-scale projects.

One of these is the CO<sub>2</sub> storage pilot project (CO<sub>2</sub>SINK) at Ketzin in Germany. In 2008, it became Europe’s (and our) first project to inject CO<sub>2</sub> underground onshore. It will store up to 60,000 tonnes of CO<sub>2</sub> in a saltwater aquifer over the next two years. The project gives researchers the chance to see first hand how much CO<sub>2</sub> is absorbed in an aquifer and where, and how best, to monitor the movement of the CO<sub>2</sub> over time. It will help companies find the most cost-effective ways to store CO<sub>2</sub> in aquifers. It will also help governments to design effective safety regulations for this technology.



## WHAT OTHERS SAY

“Shell’s strategic thinking and vigorous advocacy has played a crucial role in making the development of CCS technology a priority within EU strategy to reduce global warming emissions. Continuing encouragement is needed to ensure that sufficient financial support is provided and that regulatory mechanisms work effectively, while a firm commitment to significant investment in CCS projects will be welcome.”

**Chris Davies MEP** EUROPEAN PARLIAMENT CCS RAPPORTEUR

# BUILDING A RESPONSIBLE ENERGY FUTURE

WE ARE WORKING ON PROJECTS AND TECHNOLOGIES THAT WILL HELP PROVIDE MORE AND CLEANER ENERGY IN THE DECADES TO COME.

## MORE UPSTREAM OIL

Conventional sources of oil alone will struggle to meet growing demand. In addition to developing conventional fields in countries such as Brunei, Malaysia and Oman, where we have been for many decades we are increasing production from more difficult-to-reach sources.

### STILL DEEPER WATER

Shell pioneered deep-water exploration and production in the 1970s, when “deep” meant producing in 450–500 metres of water. Today, “deep” means producing in more than two kilometres of water, where the pressure is more than 200 times higher than at sea level. We are producing in deep water in the Gulf of Mexico and off the Norwegian coast and remain at the technological and commercial forefront in this area.

The Perdido development in the Gulf of Mexico, for example, will connect three fields over a 50-kilometre radius and include the world’s deepest undersea wells. Production is expected to begin early in 2010. BC-10, off the Brazilian coast, will use a floating production storage and offloading (FPSO) vessel rather than a platform, to extract, store and offload the oil. It will produce from several fields that lie in waters nearly two kilometres deep. We are also developing the Gumusut-Kakap field, our first deep-water project off the coast of Malaysia. Together, these three projects are expected to contribute more than 140,000 barrels a day (more than 4%) to our production capacity after 2012.

### THE ARCTIC FRONTIER

We are working in the Arctic and sub-Arctic regions of Alaska, Canada, Norway and Russia. These are some of the world’s harshest



The 50,000 tonne Perdido spar en route in the Gulf of Mexico, USA



[www.shell.com/projects](http://www.shell.com/projects)  
 • Our main deep-water projects  
 • Developing Canada's oil sands

[www.shell.us/alaska](http://www.shell.us/alaska)  
 • Our search for oil and natural gas in the Arctic

operating conditions and most fragile environments. The experience we have gained on projects such as the Salym joint venture in Western Siberia (see page 34) and Sakhalin II (see page 19) in Russia's far east has helped us develop many of the technologies and skills needed to operate safely and environmentally responsibly in these areas, and build effective relationships with local communities.

### **SQUEEZING MORE FROM EXISTING FIELDS**

Today, only 30–40% of the oil contained in most reservoirs can typically be extracted economically. Technology is helping us to extract more. In Oman, for example, the joint venture we are part of is investing to increase production from mature oil fields by injecting steam into one field, gas into another and a chemical polymer into a third field. We are also injecting water to sweep out more oil at the Ursa and Princess fields in the US Gulf of Mexico, keeping those fields producing for an extra decade. We estimate that, by 2030, enhanced recovery using techniques like these could account for about 20% of the world's oil production, up from 3% today.

Shell's Smart Fields® technology is another option for producing more from existing fields. It uses underground sensors to get real-time information about conditions in a producing field, allowing operators to quickly react to circumstances and better plan and steer production. With this information, combined with the latest drilling and reservoir-monitoring techniques, we expect to be able to increase the total amount of oil recovered from reservoirs by 5–10%. By the end of 2009 we plan to be using Smart Fields® technology in more than 50 new and mature fields worldwide.



Smart Fields® technology control centre in Miri, Malaysia



The Chukchi Sea, Alaska

### **ALASKAN OIL**

Large amounts of recoverable oil and gas could lie beneath the Beaufort and Chukchi Seas off Alaska: energy sorely needed to address the energy challenge.

In 2005, we were awarded leases to explore offshore in Alaska and carried out initial seismic work in 2006. In 2008, we were awarded a further 275 exploration leases in the Chukchi Sea.

If exploration were to be successful, these positions could one day lead to big projects. But it will take time. They are in waters that are home to whales and seals and are central to the way of life of the local Inupiat people. We have learned, sometimes the hard way, that building relationships and trust with these communities cannot be rushed. In 2007, several environmental and community groups challenged in court the environmental impact assessments that the federal government carried out before granting us our permit to explore in the Beaufort Sea. We have suspended all plans for exploratory drilling there in 2009, while the court finalises its decision.

We remain determined to move with caution and work with local communities. Over the last three years, we have spent more than \$40 million on scientific baseline studies and impact assessments. These studies are helping us get a good understanding of the region's ecology and how we can reduce our impact on it. Together with the communities, we are developing ways of conducting our exploration that aim to respect their traditions, and generate economic development in an area where it is urgently needed.



## UNCONVENTIONAL OIL

The oil sands in Canada's province of Alberta constitute the second largest oil resource in the world, after Saudi Arabia. With only 2% developed so far, they clearly have the potential to provide more of the world's energy over the coming decades. To realise that potential, the costs of building and running oil sands operations will need to come down. So will their environmental and social impacts so that the cumulative effects of further growth can be responsibly managed. This will depend on further improving the technology and on finding a pace of development that is sustainable for Alberta's labour market and local communities.

Our first minable oil sands operation, the Athabasca Oil Sands Project (60% Shell share), was built between 1999 and 2003. The labour market in Alberta was tightening even then, and has become much tighter since. So we have had to work hard to keep costs down. The current operation has capacity to produce 155,000 barrels of oil a day, at an average operating cost in 2008 of \$38 a barrel. We also produce around 25,000 barrels a day (Shell share) from a number of smaller in situ oil sands operations that use conventional wells and heat to extract oil too deep to be mined.

According to an independent study for National Resources Canada, petrol from minable oil sands emits on average approximately 15% more CO<sub>2</sub> than petrol refined from conventional oil when measured from "well-to-wheel" (so including the emissions when drivers use the fuel). We have a voluntary target to halve our current operation's GHG emissions by 2010, compared to the original project design. We are on track to meet it through a combination of buying offsets and making operational improvements in the project.

Mining oil sands requires a lot of water. However, our current withdrawals are less than 0.2% of the river's average annual flow. As more oil sands operations are built over the coming decades, the importance of making production less water intensive will grow. We limit the amount of fresh water we take from the river, and minimise withdrawal of water at periods of low river flow. We also recycle water from the "tailings" – the mix of sand, clay and water left over after the bitumen has been removed. In 2008, we completed construction of a nearly \$100 million pilot project at the mine to test a new technology for extracting more water from tailings. If successful, it would help increase the amount of water we extract, slow the growth of our tailings ponds (which in 2008 covered approximately 12km<sup>2</sup>) and speed up reclamation of the mine site. We are also supporting the development of new regulations to restrict cumulative water withdrawals from oil sands operations and protect the Athabasca River during sensitive low-flow periods.



Truck at the Muskeg River Mine, Canada

## PACING DEVELOPMENT

The long construction boom in Alberta has more than doubled the cost of new oil sands projects over the past five years. Faced with this cost escalation, and uncertainties about the new fiscal regime, we decided to slow the pace of our investment in oil sands.

We will complete the current expansion of our oil sands mine and bitumen upgrader, of which construction began in late 2006. Production is expected to start ramping up in 2010–2011, adding 100,000 barrels a day of capacity (up to 60,000 barrels a day Shell share).

However we have delayed any decision on a further expansion of our mine. We have permits to expand bitumen production by a further 215,000 barrels a day, which would bring total capacity to 470,000 barrels a day (Shell share up to 280,000). We have also applied for approval for a further 300,000 barrels a day of capacity (Shell share up to 180,000).

Slowing down now makes business sense. It could also help the labour market for skilled tradespeople in Alberta cool off and help give local governments and communities more time to prepare to manage future growth in the oil sands region. Longer term, we continue to believe the world will need the oil sands and that they can be developed economically, even in a world with CO<sub>2</sub> pricing. We remain determined to operate our oil sands projects in economically, environmentally and socially responsible ways.

# CLEANER FUEL FOR POWER

MORE UPSTREAM OIL 14  
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PEARL GAS TO LIQUIDS 25



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**Three times more electricity by 2050 and with significantly lower emissions. That is the long-term challenge. Despite the recession, we invest to increase our production of cleaner-burning natural gas and maintain our leadership position in LNG.**

## MORE NATURAL GAS

Natural gas is the cleanest burning fossil fuel and a direct competitor to coal for power generation. A natural gas-fired power plant emits on average half the CO<sub>2</sub> of a modern, coal-burning plant to produce the same amount of electricity. It also generates significantly less local pollution.

In 2008, we produced enough natural gas to supply nearly 190 million homes with electricity. We continued to develop a range of big, integrated projects, which we expect to boost our natural gas production further. Projects like Ormen Lange off the coast of Norway, which alone will provide 20% of the UK's gas needs; Sakhalin II, our share of which will provide enough energy to power 6.5 million homes (see page 19); and Qatargas 4, our joint venture with Qatar Petroleum. In 2008, we also signed a preliminary agreement to set up a joint venture that would gather and market natural gas in southern Iraq.

## LEADERS IN LIQUEFIED NATURAL GAS (LNG)

Cooling natural gas down to around minus 160°C liquefies and shrinks it to 1/600th of its original size. This LNG can then be shipped cost-effectively to places too far away from the gas field to be reached by pipeline. When the LNG reaches its destination, the process is reversed: the LNG is warmed, becomes a gas again and is fed into the local natural gas grid. LNG technology allows more remote gas fields to be developed, lets more countries use cleaner-burning natural gas (see box) and gives users a wider choice of gas suppliers.

Directly or indirectly, we owned approximately 9% of the world's LNG capacity as of March 2009. That is more than any other international energy company, and enough to meet the natural gas needs of around 40 million households. In 2008 and early 2009, we increased our capacity by nearly 25% compared to 2007 with Sakhalin II in Russia coming on line (see page 19) and the fifth LNG unit at the North West Shelf project in Australia. Qatargas 4 and Woodside's Pluto Train 1 in Australia (both under construction) will add the same amount of capacity again when they come on stream.



Hazira terminal, India

## LNG TO INDIA AND CHINA

Between now and 2050, China and India are each expected to add more new power-generating capacity than the USA has in operation today. Both have large coal reserves and little domestic natural gas. So importing more natural gas to India and China to meet some of this power demand will be important for tackling local air pollution and slowing the rapid growth of their CO<sub>2</sub> emissions. LNG is part of the answer. In 2008, we increased our LNG sales and supply commitments to both countries.

In India, the Hazira LNG terminal, where we are the majority shareholder, is only the second facility in the country for receiving and regasifying LNG. It began operating in 2005.

In China, we made two new long-term agreements in 2008 to import LNG. The first involved Qatargas, Shell and PetroChina. It was to supply 3 million tonnes of LNG per year to China from the Qatargas 4 LNG project for 25 years. Shell and PetroChina made another agreement to supply up to 2 million tonnes of LNG a year to China for 20 years, mainly from Shell's interests in Western Australia. Together these agreements will supply enough natural gas to meet the power needs of more than 20 million households a year in China. We also participate in the Australian North West Shelf joint venture. It already supplies 3.3 million tonnes a year of LNG to China and delivered China's very first cargo of LNG in May 2006. Another project in which we are a shareholder – Malaysia LNG Tiga – is expected to begin supplying 3 million tonnes a year of LNG to China during 2009.



## **TIGHT GAS**

“Tight” (hard to extract) gas offers another source of growth. In these fields, either long horizontal wells or hundreds of closely spaced vertical wells must be drilled to release gas trapped in tiny pores in the rock. In recent years big improvements in drilling techniques have made more of these projects economic. We are putting these new techniques to work at the Pinedale field in the USA and at the Changbei field in China. The Changbei project reached its full production level of around 50,000 barrels a day oil equivalent in 2008. Also in 2008, we acquired production and significantly increased our tight gas acreage in western Canada by buying Duvernay Oil Corp.

## **COALBED METHANE**

Natural gas (methane) is also found in coalfields. Drilling wells lowers the underground pressure, releasing the methane that is chemically attached to the coal. We have acquired rights to a number of coalbed methane fields in Canada, Australia, China and Germany. In 2009, as part of a wider alliance with Arrow Energy, we completed a deal to buy 30% of its coalbed methane acreage in Queensland, Australia.

## **COAL GASIFICATION**

Nearly 40% of the world’s electricity currently comes from burning coal. In India and China coal provides approximately 80% of power. So the potential benefits from cleaner coal technology could be huge. Shell scientists have developed proprietary coal gasification technology that converts coal into a cleaner-burning synthesis gas, which can then be used for power generation or to make chemicals or fertilisers. Gasification results in lower local air emissions and water use than conventional coal technologies. The process also creates a concentrated, high-pressure stream of CO<sub>2</sub> that can be captured and subsequently sequestered underground. By the end of 2008, we had sold 26 licences worldwide to use our coal gasification technology, making us an industry leader.

## **RENEWABLE ELECTRICITY**

We have been a wind-power developer for a decade. In 2008, the 264MW Mount Storm onshore wind power project in the USA (50% Shell share) was brought into operation. With Mount Storm now fully operational, we have an interest in wind projects with an overall capacity of about 1,100MW (Shell share 550MW). This share is enough to power nearly a quarter of a million homes. In 2008, we withdrew from the London Array offshore wind project in the UK due to concerns about the costs and economic viability of the project. We are also an investor in the AVANCIS joint venture working on advanced thin-film solar technology.



**Mount Storm, USA**





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## SAKHALIN

Sakhalin II is a massive, integrated oil and liquefied natural gas (LNG) operation in Russia's far east. It began commissioning its year-round oil production facilities in 2008. In March 2009, LNG production began adding around 5% to the world's total LNG capacity. Shell owns 27.5% of Sakhalin Energy Investment Company Ltd (SEIC), the joint venture company that built and will now run the project.

At its peak, the construction effort required 25,000 workers, who built two offshore platforms, more than 1,800 kilometres of pipelines, the LNG plant and the export terminal.

The project's wide-ranging efforts to mitigate its environmental and social impacts continued throughout the final phase of construction and during start-up. An independent Western Gray Whales Advisory Panel of scientific experts continued to advise SEIC. SEIC also remained an active supporter of the Sakhalin Indigenous Minorities Plan. In 2009, SEIC's efforts were recognised by its industry peers. It won a distinguished achievement award at the 2009 Offshore Technology Conference for the project's accomplishments, including its environmental, social and safety performance. In 2008, Sakhalin II won the Russian Ministry of Resources Environmental Project of the year award.



Lunskeye-A platform, Sakhalin, Russia

## CORRIB

At peak production, the Corrib natural gas project in Ireland will provide up to 60% of the country's natural gas needs, reducing the country's dependence on imports. The Shell-operated project will bring natural gas from wells 80km off the west coast onshore in County Mayo to be processed and fed into the national gas grid. In 2008, the project's construction activities moved ahead. By the end of the year, five offshore wells had been finished. The onshore gas terminal was more than two-thirds completed. We continued to consult with local communities to increase understanding of the project, address as many of the remaining concerns as we can and develop ways for a wider range of people in the community to benefit from the project.

The process of approving a new route for the onshore pipeline is an important example. The route was changed to address stakeholder concerns that the original was very close to several houses. After community consultations, land surveys, technical assessments, and environmental assessments, a new route was chosen that would double the distance to 140 metres between the pipeline and occupied nearby houses. The formal planning review for the new route is underway. The process allows all interested parties, including any members of the community still opposed to the route, to participate and be heard.

In response to another local safety concern, we have limited the maximum allowable pressure for the onshore pipeline to less than half of what had been originally agreed in the permits.



Community open day, Corrib, Ireland

The local economy is benefiting from the project. At year-end 2008, over 900 people, almost half from County Mayo, were working on the gas terminal site. Twelve local towns are being connected to the natural gas grid for the first time. In early 2009, the project launched the Corrib Natural Gas Erris Development Fund to support community-based social investment activities over the life of the Corrib operation.

**Nigeria's enormous oil and gas resources will be needed to help meet growing demand for energy in the country and around the world. We are working closely with the government to help realise Nigeria's energy potential and support development.**

These are difficult times for Nigeria. The country depends on the oil industry for 95% of its export earnings and 80% of government revenues. Yet since early 2006 its energy production has fallen. This is mainly because of the security situation in the Niger Delta, the country's oil producing region, which has forced oil companies to reduce or suspend production to protect their staff and facilities. The drop in oil prices will make things harder, reducing the revenues available to government for development.

Nigeria is important for us. We have been there for over 50 years and the country is one of our biggest sources of oil and gas production. Despite the difficulties, we aim to stay and to help the government expand the energy sector. We support its efforts to bring peace and development in the Niger Delta.

## SUPPORTING ECONOMIC DEVELOPMENT

Our operations are an important source of employment and of government income. The government and the national oil company together receive about 95% of the revenues after costs from the oil and gas that the SPDC-operated joint venture produces onshore in the Delta. In total, we paid \$4.1 billion (Shell share) in royalties and taxes to the Nigerian government in 2008.

In 2008, Shell-operated companies awarded more than 90% of their contracts by number [A] in Nigeria (worth more than \$900 million) to Nigerian companies.

We continue to work closely with the Niger Delta Development Commission, the government body charged with coordinating development efforts in the Delta. In 2008, ventures we run contributed \$158.2 million (\$56.8 million Shell share) to the Commission, as required by law.

[A] The first printed edition of this report gave an incorrect figure of '90% by value'.

In addition, the SPDC-operated joint venture spent \$84 million (\$25.2 million Shell share) on its own community development programmes. In 2006, it introduced Global Memoranda of Understanding (GMOUs), to improve its engagement with communities and the effectiveness of these programmes. With GMOUs, the SPDC-operated joint venture provides communities with secure multi-years funding for development projects and access to experts. The communities, grouped together into clusters, decide how to spend the money. By the end of 2008, the joint venture had funded a total of 80 projects using the GMOU model. For example, in March 2008, one cluster used the GMOU process to set up a micro-financing and business training scheme targeted mainly at women working in the local markets. By the end of 2008, more than 150 women had already received support from the scheme with loans totalling around \$130,000.

## SECURITY CHALLENGES

The security situation in the Niger Delta remained tense. It improved in the western Delta, where we re-started production at 26 sites that had previously been shut down because of violence. But in the eastern Delta and offshore conditions got worse. The Shell-operated floating production storage and offloading (FPSO) vessel at the Bonga field was attacked in June 2008; the first time militants reached offshore operations in deep-water. In November, SPDC temporarily shut down the Soku gas plant to repair damage from fires and spills caused by criminal gangs stealing condensate from its pipelines. Soku supplies 40% of all the gas used by the Nigeria Liquefied Natural Gas Company (NLNG). Security conditions meant average oil and natural gas production levels onshore in 2008 were lower than in 2007, and about half the levels in 2005, before the current unrest began.

## FUNDING AND FLARING

Since 2000, the SPDC-operated joint venture has spent approximately \$3 billion on projects to gather and use associated natural gas (gas that is extracted along with the oil during production). Between 2002 and 2008, these projects had reduced associated gas flaring by more than 30%. Including the impact of reduced production due to the security situation, the joint venture's flaring was down approximately 60%.

## SHELL'S MAIN ACTIVITIES IN NIGERIA

### The Shell Petroleum Development Company of Nigeria Ltd (SPDC)

- Operates Nigeria's largest oil and gas joint venture on behalf of government-owned Nigerian National Petroleum Corporation (55%), Shell (30%), Total (10%) and Agip (5%).
- At full operation, the joint venture can produce approximately 40% of the country's oil from over 1,000 onshore wells in the Niger Delta, an area nearly the size of England. Since spring 2006, approximately 50% of its production has been shut in because of the security situation.

### Shell Nigeria Exploration & Production Company Ltd (SNEPCO)

- Operates and is 55% owner of the offshore Bonga oil field, Nigeria's first deep-water project, and owns part of the Erha field.

### Nigeria Liquefied Natural Gas Company Ltd (NLNG)

- Joint venture (Shell 26%) representing over 10% of the world's LNG capacity at end 2008.



Projects costing a further \$3 billion or more will be needed to meet our commitment to end all remaining continuous flaring in Nigeria. In 2008, work continued on those projects where funding and safe access were available.

Some progress was made on securing short-term funding for the joint venture's operations. Partners fund the joint venture based on their ownership share. Since the government-owned NNPC owns 55%, the joint venture's funding critically depends on the government's ability to provide this share. In 2008, and early 2009, Shell and the other international partners in the joint venture agreed to provide substantial loans (in the form of bridging loans and Modified Carry Agreements) to NNPC. The money is to be used to complete important projects the joint venture has under way, to do critical repairs to equipment and to continue some of the gas-gathering and supply projects needed to complete the joint venture's "flares out" programme. A longer-term solution to the funding problem is still needed.

SPDC reduced staff levels in 2008 in response to its lower levels of production and the shortfall in partner funding.

### CLEANING UP SPILLS

Despite the security situation, SPDC's programme to clean up old (pre-2005) oil spills moved ahead. In 2008, it completed the clean up and remediation of seven more sites. By year-end, 68 of the 74 remaining old spill sites had been completed. Between 2003 and the end of 2005, SPDC had dramatically reduced its operational spills thanks to better pipeline monitoring and maintenance. Unfortunately progress then stalled as the security and funding problems took their toll. In 2008, some operational improvements were made, despite the security situation. Operational spills in areas where the joint venture had access (and so where reliable information was available) were lower than in the previous two years. Wherever SPDC has been forced to withdraw because of the current security situation, it has fully shut down the production facilities to limit spill damage if those sites are vandalised. Unfortunately spills caused by sabotage remained a serious problem, with their volumes rising again in 2008 for the fourth consecutive year (see page 31).



Transformer station at Afam Power Plant, Nigeria

### THE AFAM INTEGRATED GAS AND POWER PROJECT

In October 2008, SPDC started up the 650MW Afam VI gas-fired power plant in the western Niger Delta. It uses natural gas supplied by the SPDC-operated joint venture's recently completed Okoloma gas plant. The project took three years to construct, and at its peak involved 3,000 local workers. When it is operating at full capacity, which is expected around the middle of 2009, the plant will be able to supply the Power Holding Company of Nigeria (PHCN) with electricity equivalent to about 20% of Nigeria's current power production. That offers consumers a cleaner, more reliable alternative to the diesel and petrol generators now widely used. The project also includes the supply and installation of equipment to connect 16 local communities near the plant to the electricity grid for the first time.



### WHAT OTHERS SAY

"I'm a member of a committee representing 16 communities. Shell is doing what we agreed in the GMOU. As a result we are building a town hall, a water system and a school. We've had problems in the past but Shell is doing what we expected of them now. Our communities need social amenities and Shell is trying. My advice now is that Shell needs to empower young people, give them opportunities to acquire skills that will help them find useful jobs and stop disrupting Shell's operations. And Shell should empower traditional rulers, community development committees and youth leaders, who are always on hand when problems arise, to help them respond even more effectively."

**Richard Nwulu** COMMUNITY DEVELOPMENT COMMITTEE CHAIRMAN OF AFAM-NTA COMMUNITY



# MORE SUSTAINABLE TRANSPORT

**We are helping more customers use less energy and lower their emissions when they drive.**

## RAISING FUEL ECONOMY

Our Shell Fuel Economy formula fuels contain blends of advanced additives and cleaning agents that help drivers improve their fuel efficiency. We launched Shell Fuel Economy fuels in three more countries in 2008. By year-end, they were available in main grade Shell petrol in 21 countries and in main grade diesel in nine of these, including India and Mauritius, helping more than a million drivers save fuel. We will be continuing to roll out and update advanced main grade fuels under the Shell FuelSave brand.

When these fuels are combined with changed driving habits, the results are impressive, as our Shell FuelSave Challenge conducted over two years shows. Participants in the Challenge drove for a month using standard techniques, and fuel from a competitor. Instructors then trained them to use Shell FuelSave tips. For the following month, drivers used these tips, together with Shell Fuel Economy formula fuels. As a result, approximately 40% of participants improved their fuel economy by more than 5%, and nearly a third improved by more than 10%. We have trained more than 2,200 drivers in ten countries in Asia and Europe since the programme was first piloted in 2007 and intend to extend the programme further in 2009.

## LOCAL AIR POLLUTION

More stringent fuel and vehicle regulations, combined with investments in technology, will continue to reduce the amount



Rush-hour traffic in Bangkok, Thailand

of local pollutants a vehicle emits. This will make an important contribution to reducing smog, particularly in the fast-growing cities of the developing world. In the early 1990s, we were one of the first companies to produce ultra-low sulphur diesel on a commercial scale (in Sweden). We have invested more than \$1 billion at our refineries over the last ten years to produce the lower sulphur fuels that many governments and modern engines require. The sulphur levels of the fuels we sell today vary, depending on what is available from local refineries. These differences will narrow, as more governments in developing countries (often the owners of the main local refineries) can afford the costs of desulphurisation. We continue to work with governments to promote the introduction of lower sulphur fuels and the modern engines needed to get the benefits from these fuels.



Shell service station, Canada

## FILLING UP AND PLUGGING IN

Will the world's vehicles be running on liquid fuels or electricity in 2050? The likeliest answer is: a lot of both. With more than a billion extra vehicles expected on the road (more than double the total today), there will be room and need for a range of different energy sources for transportation. The "Blueprints" scenario, for example, envisages internal combustion engines burning liquid fuels (petrol, diesel and biofuels) continuing to provide the majority of transportation energy in 2050. In this scenario, plug-in hybrid, fully electric and hydrogen-powered vehicles eventually overcome their current technical and cost barriers. The first of these take off after 2020. It is possible that different combinations of fuels and vehicles will be adopted in different regions, depending on local conditions.

Engine and vehicle makers will have a critical role to play in building this more diverse transport future. For our part, we are working on the petrol and diesel formulations needed for future generations of advanced internal combustion engines, with partners like Ferrari and Volkswagen. We are working on advanced biofuels (see opposite). And we have six demonstration refuelling stations for hydrogen fuel-cell powered vehicles in Asia, Europe, and North America.



[www.shell.com/fuels](http://www.shell.com/fuels)

- Cleaner transport fuels today
- Sustainably sourcing today's biofuels
- Working on advanced biofuels
- Shell biofuels report

## CHANGING THE OIL

Thanks to new technologies and their advanced friction-reducing additives, our premium motor oils can help cars, buses and trucks reduce their fuel consumption. For example, in 2008, truck manufacturer Daimler set the Guinness World Record for the most fuel-efficient 40-tonne truck, using the new Shell Rimula R6 LME heavy-duty engine oil and New Shell Diesel. We are also voluntarily phasing out the least energy-efficient lubricants from our motor-oil selection worldwide. In this way, customers are encouraged to buy more energy-efficient lubricants that help them improve mileage and reduce their vehicle's CO<sub>2</sub> emissions.

## BIOFUELS

Biofuels currently provide 1% of the world's road transport fuels. Petrol and gasoline supply nearly all the rest. We believe biofuels could grow to as much as 7–10% of the fuel mix in a few decades. For this reason, because they could deliver substantial reductions in CO<sub>2</sub> and because of their close fit with our fuels business, transport biofuels will increasingly be the priority area for our renewable energy spending.

We are serious about trying to build a substantial business in biofuels. This involves both building capacity in sustainable current generation biofuels and investing in technologies that, if they turned out to be commercial, could help overcome the remaining hurdles to large-scale use of more advanced biofuels.

Building capacity in today's biofuels will help us meet current government mandates and develop the know-how and market leadership that would be needed to introduce more advanced fuels. To help provide

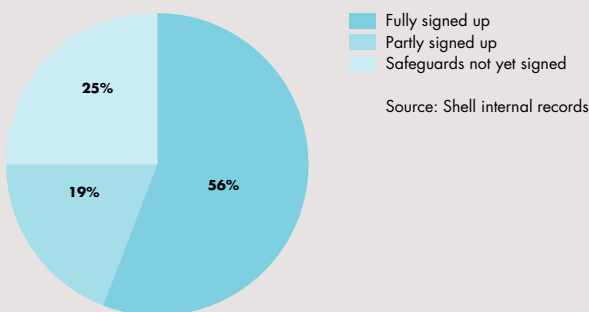
today's biofuels responsibly, we are building social and environmental safeguards into contracts with our biofuels suppliers and working to raise sourcing standards across the industry (see box). As part of our advocacy work (see page 13), we are calling for government policies that promote the lowest CO<sub>2</sub> and most sustainable biofuels currently available, instead of only setting targets for the total amount of biofuels sold. Ethanol from Brazilian sugar cane, for example, can already reduce CO<sub>2</sub> emissions by up to 90% on a "well-to-wheel" basis, compared to petrol.

Advanced biofuels, made from things like straw and algae, do not compete with food or threaten rainforests. And, unlike some of today's sources such as corn-based ethanol, they can offer significant CO<sub>2</sub> savings on a "well-to-wheel" basis compared to petrol or diesel. In 2008, we increased our stake in the Canadian company Iogen Energy to 50%. It uses enzymes to turn straw into ethanol, which can be blended into gasoline. Like Brazilian sugarcane, Iogen's technology offers "well-to-wheel" CO<sub>2</sub> emission reductions of up to 90% compared with conventional diesel or petrol. In early 2009 we deepened our collaboration with technology company Codexis to develop better enzymes for use in advanced biofuels. As part of the agreement, Codexis will work closely with Iogen.

We are also working with Codexis and Virent on ways to convert biomass directly into fuels similar to gasoline and diesel. Work continued through a joint venture called Cellana in Hawaii to turn marine algae into a biofuel feedstock.

We are also involved with six academic institutions, including universities in China and Brazil, both on advanced biofuels and on better ways to make today's biofuels.

**BIOFUEL SUPPLIERS SIGNED UP TO SHELL SUSTAINABILITY SAFEGUARDS**  
 % of our total volume



## SOURCING TODAY'S BIOFUELS MORE SUSTAINABLY

We have become one of the world's largest distributors of biofuels, mainly to fulfil a growing number of governments' requirements that transport fuels include a certain share of biofuels. We buy from approximately 100 suppliers worldwide, who in turn rely on a large network of growers, processors and traders. In September 2007 we introduced a sustainable sourcing policy to help us provide these fuels responsibly. It includes environmental and social safeguards. They require suppliers, for example, to ensure that production is not taking place in areas of high biodiversity or knowingly linked to human rights violations. We are gradually adding these safeguards when we sign or renew contracts. We are also working with suppliers to build the needed commitment and skills to follow the requirements fully. By end 2008, more than 50% of our volumes came from suppliers who had agreed to all these safeguards (see chart). We have started a global assurance programme which will include both measures to build suppliers' capacity and checks by independent, external auditors on the sustainability performance of certain supply chains. We are also advocating international standards for sustainable sourcing. We are participating in voluntary initiatives like the Roundtable on Sustainable Biofuels to provide industry guidelines and raise standards across this complicated supply chain.



**The recession has not slowed down our efforts to develop and market products that give our industrial and business customers better environmental and social performance.**

## INDUSTRIAL LUBRICANTS

Our advanced industrial lubricants can help machinery to use less energy. In 2008, we launched Shell Tellus® EE (Energy Efficiency) lubricant, which is designed to increase the energy efficiency of hydraulic equipment. Its patented additive technology reduces friction, so hydraulic systems can move with less resistance and hence lower energy losses. In customer trials, machinery using Shell Tellus® EE lubricant used up to 8% less energy than those using conventional mineral oils.

## INDUSTRIAL FUELS

We have developed a number of fuels for our industrial customers that can help them improve their environmental performance. One example is our Fuel Oil Plus, which is burnt for heat or steam in factory boilers, ovens and other industrial equipment. Compared to standard fuel oil, it can reduce emissions of particulates by up to 80%, and can lower fuel consumption by up to 3%.

## PAVEMENT

In 2008, we launched Shell Floraphalte, our first asphalt binder made almost entirely from plant-based ingredients. A binder is the glue that holds the small stones (aggregate) together to make a paved surface. Floraphalte can be used for lightweight paving like sports fields or bicycle paths. It is mixed at temperatures up to 40°C lower than traditional asphalt, reducing energy use and CO<sub>2</sub> emissions by approximately a fifth when the asphalt is mixed.

We offer Shell Instapave Systems, a long-lasting and more affordable alternative to gravel or concrete roads in the developing world. We will be doing a joint trial of Instapave in 2009, with the National Rural Road Development Agency and the National Institute of Technology in India. The trial aims to show how Instapave can be used to improve road access in rural areas. We also offer Shell WAM Foam Solution, which can be laid at lower temperatures than traditional asphalt to make roads, reducing energy and CO<sub>2</sub> emissions by more than 30% when the asphalt is mixed.

## CHEMICALS

Our chemicals help leading manufacturers make everyday products that save energy. For example, we make critical ingredients for washing detergents that clean clothes at lower water temperatures, and for the plastics used in lighter car parts. Our products are also used to make insulation materials for buildings.



Grains of recovered sulphur

## NEW USES FOR SULPHUR

Removing more of the sulphur from petrol and diesel is an important way to cut local air pollution from vehicles. However, doing so means that more sulphur becomes available than markets need for traditional uses (such as making fertiliser and chemicals). So Shell Sulphur Solutions, created in 2007, is looking for profitable and environmentally friendly new ways to use this extra sulphur. For example, it has developed technology to make concrete that uses sulphur, Shell Thiocrete™. It can be produced without water and avoids much of the CO<sub>2</sub> emitted when making traditional Portland cement. Products made from Shell Thiocrete are expected to be on the market in 2009. Shell Sulphur Solutions has also found a new way to add sulphur to asphalt (Shell Thiopave™) to create more durable roads that can be laid at lower temperatures, saving energy and CO<sub>2</sub> emissions. A successful road trial of Shell Thiopave took place at the end of 2008. As a result, it is being considered for use on a commercial scale to pave roads for the 2010 Vancouver Winter Olympics. A sulphur-enhanced fertiliser technology, Shell Thiogro™, is already in commercial use.



# PEARL GAS TO LIQUIDS

## SUSTAINABLE DEVELOPMENT IN PROJECTS

**The Pearl project in Qatar includes construction of the world's largest gas to liquids (GTL) plant and development of part of a large offshore natural gas field.**

Pearl GTL is expected to produce 140,000 barrels per day of GTL products: low sulphur fuels, high quality baseoils for making lubricants and chemical feedstocks. It is also expected to produce 120,000 barrels per day of natural gas liquids and ethane.

The project is 100% funded by Shell under a development and production-sharing agreement with the Government of Qatar. Construction began in 2006 and is expected to be complete around the end of 2010.

This is one of our biggest integrated investments. With more than 40,000 workers, the GTL plant is also one of the largest construction projects in the world at present.

Sustainable development has been part of the project from the start.

We put a dedicated sustainable development advisor in place early on. The project team brought hands-on experience from other big projects, like the Malampaya offshore gas project in the Philippines and Sakhalin II in Russia. This helped ensure that environmental and social factors were considered when decisions about the technical design and commercial conditions for the project were being made.

The main sustainability issues and opportunities for the project were identified in the environmental, social and health impact assessment completed during the design phase. They included energy efficiency (and hence CO<sub>2</sub> emissions), water use, the safety and welfare of construction workers and knowledge building in Qatar.

### ENERGY AND WATER

The plant's design includes a number of energy-saving features. For example, waste steam will be used to power compressors in the air separation unit and to generate some of the plant's electricity. We are continuing to look for ways to further lower energy use and CO<sub>2</sub> emissions.

The GTL plant will produce at least as much water as GTL products, mainly through the chemical reaction that is the first step in turning the natural gas into GTL products. The water will be purified to such a high level that it can be reused by the plant, for example for steam and cooling water. As a result, the plant will take no fresh water from this largely arid region.

### WORKER WELFARE

Our approach to worker welfare and safety was laid out in the project's social performance plan. The plan includes concrete actions that address the project's specific challenges in this area. One

challenge is that most of the workforce is made up of temporary foreign workers, who are away from their families for long periods of time. So we designed Pearl Village, where most workers live, to be a community, not just a housing facility. There is a village mayor responsible for organising community events – over 80 a month – using the village soccer, cricket, baseball and basketball facilities, and the 750-seat outdoor cinema. More than 70 volunteer counsellors, supported by a psychologist, are available to address personal concerns and provide counselling to workers.

A second challenge is that the construction boom in the region has made it difficult to attract qualified workers. So before construction began, we sat down with the leaders of our contractor companies and together agreed on a common manifesto for worker welfare, training and safety. By mid-2009, these leaders had made four full-day visits to the site, to show their personal commitment to this manifesto and to underline the importance for them of their employees' safety and well-being.

### PROMOTING TECHNICAL KNOWLEDGE IN QATAR

We have established a 10-year, \$100 million research programme at the Qatar Science and Technology Park. Its work focuses on finding the best ways to use Qatar's natural resources. At Qatar University we are funding an academic chair in sustainable development. We have also launched Intilaqaah, an Arabic version of Shell's international LiveWIRE programme, to build young people's business skills. We work closely with a committee that guides our approach to sustainable development in Qatar. It includes senior officials from Qatar Petroleum and Government ministries.



**Welding at the Pearl GTL project, Qatar**

## RESPONSIBLE OPERATIONS

**OUR EFFORTS TO IMPROVE OUR SAFETY, ENVIRONMENTAL AND SOCIAL PERFORMANCE CONTINUE. IN THE LONG AND THE SHORT TERM, WE CANNOT DELIVER OUR STRATEGY WITHOUT THEM.**

## OUR NEIGHBOURS

**In these tough economic times, our business success depends more than ever on winning and maintaining our neighbours' trust.**

Without that trust, we will not be able to do the big, complex new energy projects our strategy requires or achieve top-quartile performance in our facilities.

Trust depends on relationships. And relationships are only built over time: by listening to the many different points of view in a community; by responding to the concerns that matter to our neighbours; by delivering on what we promise and by working with communities to create local benefits.

We have a structured company-wide approach for listening to our neighbours, for working with them to reduce negative impacts from our operations and produce local benefits, and for raising the skills of our staff in this area.

All our refineries and chemicals facilities, as well as all upstream operations where impacts on the community could be high, have social performance plans in place. Staff in these facilities work with their local stakeholders to implement these plans. At our major refineries and chemicals facilities, the implementation of these plans is reviewed every three to four years by experienced social performance staff from other locations. We also do social performance reviews at depots in our distribution business (where petrol, diesel or other products are stored before being delivered to customers).

Social performance professionals in our central Social Performance Management Unit and in our businesses support people in critical positions, like refinery managers or major project leaders. Between 2006 and 2008 management teams at all but three of the refineries and chemicals plants we operate received coaching from social performance professionals through our social performance plan and review process. Social performance has also been given a more prominent role in our Project Academy.

We also work closely with external experts, through a series of strategic collaborations. In Alaska, for example, Living Earth Foundation, a non-governmental organisation (NGO) we have worked with for many years, is setting up a community-based dialogue network called "the big conversation". It is a way for communities near our planned exploration activities in the Beaufort Sea to discuss amongst themselves their concerns about oil and gas development, their priorities and the way forward.

We continue to learn in this area and to refine our approach. At present we are working on improving the assessment of social risks in our due diligence process, so that we better understand these risks in projects we acquire. We are also focused on fully implementing the



[www.shell.com/society](http://www.shell.com/society)

- Working with our neighbours
- Reporting against the Millennium Development Goals
- Supporting EITI

[www.shellfoundation.org](http://www.shellfoundation.org)

- The six main Shell Foundation programmes

changes in our project development process so that project teams start early enough with social performance in new projects, and take the time needed to build relationships.

## HIRING AND BUYING LOCALLY

Using local contractors and suppliers, and hiring local staff are particularly important ways to create local benefits and build trust. We have programmes to use local companies and to attract and train local staff in more than 90% of the low and medium income countries where we operate. These programmes include local recruiting efforts, education and skill building programmes, and training to help local companies meet our standards and compete successfully for contracts. A few of these programmes are required by governments. Most are voluntary. From our financial systems around the world we estimate that we spent \$19 billion on goods and services from locally owned companies in these countries in 2008, up from \$17 billion in 2007. In 2008, according to our human resources system, more than 90% of our staff worldwide were locals.

## SOCIAL INVESTMENT PROJECTS

We support community development projects, indirectly, through the independent Shell Foundation (see page 28) and directly, in programmes run by Shell operations in individual countries. In these country programmes we aim to work with the community on projects that address issues directly linked to our business, like access to energy or education. We also seek to give local people control of the project, and wherever possible, to involve development experts from NGOs. In 2008, our country operations spent a total of approximately \$148 million on social investment, according to our financial systems around the world, the vast majority on community development activities. We also support the United Nations Millennium Development Goals. Our contribution to these eight targets is described in a separate, online report.

## REVENUES FOR GOVERNMENTS

Our operations and products generate large amounts of revenues for governments. In 2008, Shell collected over \$94 billion in excise duties and sales taxes on behalf of governments on the fuel and other products we transported or sold. We paid another \$26 billion in corporate taxes and \$2.3 billion in royalties on the oil and gas we extracted.

While governments are responsible for using these funds to produce social benefits, we try to help them. We support governments' efforts to tackle corruption, for example through the Extractive Industries Transparency Initiative (EITI) whose board we sit on. The EITI asks mining and oil companies to publish their payments to host governments and encourages these governments to make such disclosures mandatory, and to be open and accountable themselves for how these funds are spent.



Schoonebeek, the Netherlands

## COMING BACK TO SCHOONEBEEK

For nearly 50 years, Nederlandse Aardolie Maatschappij (NAM), a 50:50 joint venture between Shell and ExxonMobil, operated an oilfield near Schoonebeek in the north-east of the Netherlands. It recognised the importance of maintaining the community's trust. It actively hired local people and local businesses. It worked hard to keep an open line of communication between itself and the community and to act responsibly if any incidents happened. In 1996, when it no longer made economic sense to extract the remaining oil, the field was shut down safely and the area restored, consulting with the local community.

When advances in oil recovery technology made re-opening the field possible in 2003, the relationships it had previously built helped NAM to restart the dialogue with its old neighbours quickly, and to work effectively with local community groups throughout the approval process for the new project. Concerns at community meetings and open days focused on noise and impacts on people's views of the countryside. So NAM held "noise evenings" at local homes to demonstrate to local inhabitants the actual noise levels the project would produce. It also re-routed a pipeline to move it out of sight by following natural lines in the landscape. As a result it was able to complete the approval process in a reasonable time and start construction on schedule, in late 2008.

## MORE ABOUT SCHOONEBEEK:

- Project to re-activate the Schoonebeek oilfield in the Netherlands, the largest onshore oil field in western Europe.
- Will use steam injection to produce an average of 14,000 barrels of oil a day over the next approximately 20 years.
- Production expected in 2010.
- Funded by NAM (60%) and Energie Beheer Nederland (40%).

## OUR REQUIREMENTS

- Environmental, health and social impact assessment before we develop a major new project or facility, or make major modifications to existing ones.
- Social performance plans at refineries, major chemicals facilities and upstream operations where impacts could be high.
- Social performance skills in leadership training programmes and the curriculum of our Commercial and Project Academies.





Shell volunteers building new homes near Tabangao, the Philippines



Breathing Space, tackling indoor air pollution

#### TABANGAO

By 2008, more than 150 families were living informally on land leased by Shell next to our Tabangao refinery and adjacent gas plant near Batangas City, in the Philippines. Many had been employed by contractors working on our site.

We have worked with the settlers to find them permanent new homes, and have enlisted the help of Gawad Kalinga (GK), a social organisation that mobilises corporate and private support to help build homes for the disadvantaged. By end 2008, over 100 homes had been built in new villages, on land donated by the same company that owns the land we lease. We have provided funding and more than 300 of our staff have volunteered their time and funds to help build the homes. More building is planned for 2009 to relocate the remaining settlers.

In addition, the Pilipinas Shell Foundation, a Shell-endowed development organisation, has set up programmes to help settlers develop business skills.

#### MORE ABOUT TABANGAO:

- Refinery first opened in 1962 near Batangas City and 100% owned by Pilipinas Shell Petroleum Corporation (PSPC).
- Capacity to process 110,000 barrels of oil a day, enough to meet 30% of the Philippines' demand for transport fuels.
- One of Shell's most energy-efficient refineries.



**SHELL**  
FOUNDATION

#### ENTERPRISE SOLUTIONS TO POVERTY

The Shell Foundation takes an "enterprise-based" approach to social investment, applying business thinking to solve development problems. Its flagship programmes include the ASPIRE funds for African entrepreneurs, EMBARQ to reduce congestion and pollution in developing world mega-cities, and Breathing Space to tackle indoor air pollution through the sale of improved cooking stoves. In 2008, the Foundation opened a new office in the Shell Headquarters in The Hague. It helped launch a new ASPIRE fund, the largest of its kind, to support Africa's "missing middle". These are companies too big for microfinance but too small for large company finance. By the end of 2008, the Foundation's four "missing middle" funds, with a total of \$250 million in capital, had created more than 3,000 jobs.

#### MORE ABOUT SHELL FOUNDATION:

- An independent registered charity established in 2000 with an initial \$250 million endowment from Shell, and an additional \$160 million to cover its costs until 2010.
- It focuses on addressing poverty and environmental challenges linked to globalisation and the use of energy.



#### WHAT OTHERS SAY

"Shell's work with Gawad Kalinga is an example of big business going beyond traditional charity to use its presence and its business activities for sustainable development. Shell Philippines was one of the first companies here to respond to poverty by addressing its root causes. The work goes beyond charity, not only providing homes but enriching business skills. Shell's work with Gawad Kalinga signalled a deliberate effort to make sustainable development relevant to the aspirations of people to rise from poverty, to protect the environment, to improve health and education, and to provide livelihood and a better quality of life for our citizens."

**Antonio Meloto** FOUNDER, GAWAD KALINGA



[www.shell.com/climate](http://www.shell.com/climate)

- Reducing greenhouse gas emissions
- Increasing energy efficiency in our operations

[www.shell.com/envdata](http://www.shell.com/envdata)

- More detailed greenhouse gas data
- More detailed data on our environmental performance

**We are working steadily to mitigate the environmental impacts of our operations.**

## REDUCING OUR GREENHOUSE GAS EMISSIONS

We have already reduced the direct greenhouse gas (GHG) emissions from the facilities we operate by approximately 30% compared to 1990. (See page 36 for a description of our GHG measurement and reporting). More than two-thirds of this drop has come from performance improvements.

Our biggest reductions have come from our multi-billion dollar programme to end the continuous venting and flaring of natural gas at oil production facilities. We ended the continuous venting of natural gas in 2003. By 2008 we had effectively ended continuous flaring everywhere outside Nigeria. Only five sites outside Nigeria (representing less than 0.5% of our total CO<sub>2</sub> emissions) still continuously flare for technical or safety reasons.

Our total upstream flaring (including the non-continuous flaring which is needed for safety reasons) has dropped by more than 70% since 2001. This has lowered our CO<sub>2</sub> emission levels by 18 million tonnes per year. More than half the drop in total flaring in this timeframe has come from programmes to tackle continuous flaring around the world, including Nigeria. The rest is a result of reduced production since 2006 in Nigeria (see page 20).

Energy efficiency improvements at our chemicals plants and refineries have also contributed to the reduction in our GHG

emissions over time. Energy efficiency at our chemicals plants has improved by almost 8% since 2001. Their energy performance slipped back slightly in 2008, mainly because of unplanned shutdowns in big plants in the USA caused by Hurricane Ike. Starting up plants after a shutdown requires a lot of extra energy.

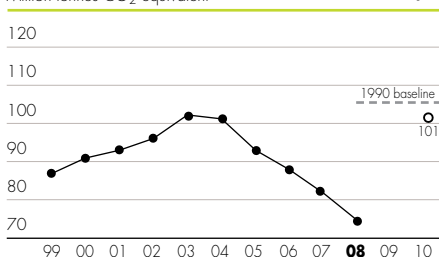
At our refineries, energy efficiency worsened in 2008, according to the Solomon Associates Energy Intensity Index (EII™) (see [A] below), though it is still better than 2002 levels. The 2008 result was partly because we had more unplanned shutdowns. It was also due to refineries running below their full production capacity, hence less efficiently, as demand for their output dropped during the year. In addition, we were unable to sustain some of the gains from our 2002–5 Energize efficiency programme.

These energy efficiency results are disappointing. We are stepping up our efforts to improve energy efficiency in our refineries and chemicals plants. For example, we are rolling out Energy Management Systems that allow plant operators to spot energy losses faster and make small corrections quickly to stop the losses. These systems have already improved efficiency by more than 8% at our Geismar chemical plant in the USA. They were implemented at four more plants in 2008. We plan to roll them out at a further five plants in 2009.

[A] Solomon Associates changed their proprietary Energy Intensity Index calculation methodology in 2006. Reported historical values have been recalculated based on this revised methodology.

### GREENHOUSE GAS EMISSIONS [A]

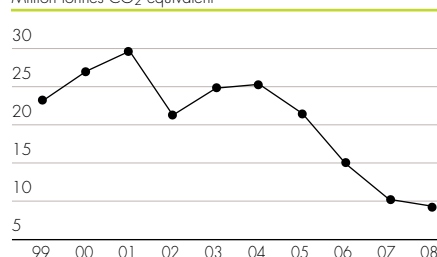
Million tonnes CO<sub>2</sub> equivalent



[A] Target and baseline adjusted to reflect portfolio changes.

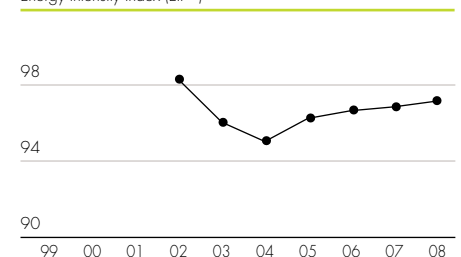
### FLARING – Exploration & Production

Million tonnes CO<sub>2</sub> equivalent



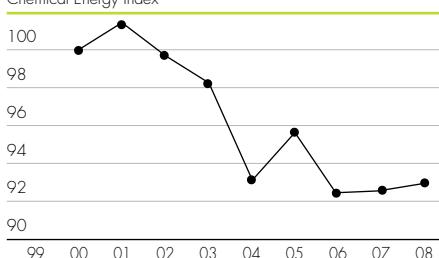
### ENERGY INTENSITY – Refineries

Energy Intensity Index (EII™)



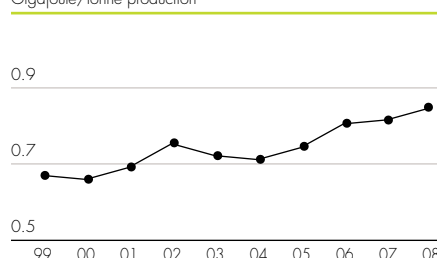
### ENERGY INTENSITY – Chemical Plants

Chemical Energy Index



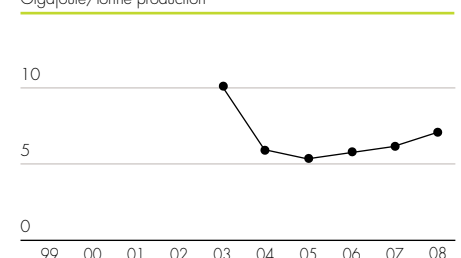
### ENERGY INTENSITY – Exploration & Production

Gigajoule/tonne production



### ENERGY INTENSITY – Oil Sands

Gigajoule/tonne production





#### SAVING ENERGY AND REDUCING CO<sub>2</sub> EMISSIONS AT PERNIS REFINERY

Raising industrial steam with the waste heat from electricity production significantly improves energy efficiency. This is what is now happening at Shell's Pernis refinery in the Netherlands. In late 2008, a new natural-gas fired combined heat and power (CHP) plant started providing steam to the refinery and electricity to the refinery and the grid. It replaces steam boilers that burnt residual heavy fuel oil and a small, older gas-fired cogeneration unit. Built and operated by Air Liquide, the new plant will produce over 400 tonnes of steam an hour, meeting almost half the refinery's needs and producing 50MW of power for the refinery. As a result, emissions of sulphur dioxide and particulates from power and steam production at the refinery are expected to drop by more than 90% and CO<sub>2</sub> emissions to be reduced by 300,000 tonnes per year. In addition, the plant will supply 250MW of electricity to the grid, enough to meet the needs of around 500,000 Dutch households.

Across the upstream industry, energy intensity continues to rise as existing fields age and more oil comes from heavy and harder-to-reach deposits. We are no exception. The energy intensity of our oil and natural gas production activities has risen by nearly a quarter since 2001. To help slow that rise, all our upstream operations are putting energy management plans in place. These 5-year plans include a range of operational steps that the facilities commit to take to improve their energy efficiency, including optimising their processes and equipment use.

Our current oil sands operation was the most energy efficient in the industry in 2007, according to a critical study of the oil sands by the Pembina Institute and WWF. We believe it remains so, even though the energy intensity in our operation rose slightly last year, due to plant shutdowns, maintenance, and construction activities.

In 2008, we also launched an energy efficiency drive in the buildings we own worldwide. It builds on a range of local initiatives that have been running at Shell locations for many years. Though the CO<sub>2</sub> emissions from our buildings are tiny compared to those from our operations, we wanted to send a message to all employees: that using energy efficiently and reducing GHG emissions must always be part of how we work.

#### BIODIVERSITY

As our biodiversity standard requires, we had biodiversity action plans (BAPs) in place at all of our eight major operations that are located in areas of high biodiversity value during 2008. These plans define the specific operating practices we use to respect these sensitive areas, and include measures to monitor, conserve and enhance local biodiversity. The plan in place for Ameland Island in the Netherlands, for example, includes a programme to monitor the possible effects of gas production on the biodiversity of this fragile salt marsh ecosystem. The programme is independently run by stakeholders including governments and NGOs.

In 2008, we did not explore or develop oil or natural gas in natural World Heritage Sites, in line with our protected areas commitment.

We have global partnerships with the International Union for the Conservation of Nature (IUCN) and Wetlands International to work together on biodiversity conservation. In 2008, the partnerships began research to find the best ways to conserve tundra ecosystems in the Arctic, to use wetlands along the flight paths of migratory birds; and to reduce the impacts of growing biofuels on biodiversity and local communities. During 2009, we expect these exploratory studies to generate concrete conservation projects on the ground. In 2008,



#### WHAT OTHERS SAY

"Humans depend on biodiversity as well as energy. IUCN has worked with Shell for more than 10 years to help the company conserve nature through changes in Shell's policy and practice. Together IUCN and Shell have delivered real conservation results in places as diverse as Russia, Qatar, China and Italy. Our collaboration continues to expand, and our aim remains the same: sustainable energy, healthy biodiversity, and better standards for Shell and the energy sector."

**Julia Marton-Lefevre** DIRECTOR-GENERAL, IUCN





[www.shell.com/environment](http://www.shell.com/environment)

- Working with others to promote conservation
- Our commitment to protecting biodiversity
- Using less fresh water
- Preventing oil spills

we co-authored a report with the IUCN called Building Biodiversity Business, which describes the benefits for business of biodiversity conservation. In 2009, we also signed a cooperative agreement with The Nature Conservancy.

### REDUCING OUR FRESH WATER USE

By 2025 two-thirds of the world's population could be living in areas where fresh water supplies are under serious stress. Our industry is not a big water user, compared for example, to agriculture. But growing crops to make biofuels and mining bitumen from oil sands can be water intensive; and some oil and gas operations use (and produce) quantities of water that can be significant in water stressed areas. In 2008, our operations used approximately 224 million m<sup>3</sup> of fresh water.

Much can be done to reduce our water footprint. Our Pearl GTL plant (see page 25), for example, has been designed to take no fresh water from its arid surroundings. The Schoonebeek project (see page 27) in the Netherlands will re-use municipal wastewater to make steam. In Oman, a project is moving ahead to plant reed beds that will clean up all the 45,000 m<sup>3</sup> a day of water brought to the surface when the joint venture we are part of produces oil. This will allow that water to be put to use.

### PREVENTING OIL SPILLS

Spills from oil tankers are thankfully rare. Ships that we manage carried nearly 40 million tonnes of cargo in 2008. There were no oil spills from these Shell-managed ships, reflecting our strict operating requirements. There was however, one large spill when a single-hulled barge we did not manage that was on short-term hire to Shell was hit by another ship. It lost approximately 300 tonnes of diesel into the Elbe River in Germany. To prevent this kind of spill in the future, we have been phasing in the hiring of double-hull barges on all rivers in Europe since 2006. We aim to complete this programme by the beginning of 2011, seven years ahead of European requirements for hiring double-hulled barges.

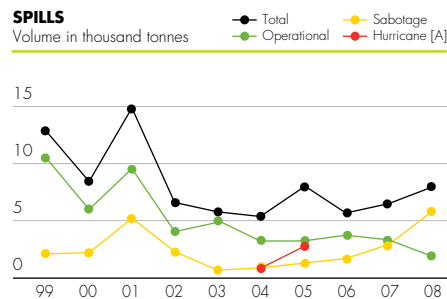
Reducing spills we can control in our facilities requires clear procedures, consistent compliance and a lot of hard work. The number and volume of these operational spills, for example from corrosion or operational failures, have fallen since 1998. This trend

continued in 2008 as our increased focus on process safety (see pages 32–33) appeared to be paying off.

It is more difficult to reduce spills caused by sabotage, hurricanes or other things we cannot control. About half the total volume spilled in 2008 was caused by one sabotage incident in Nigeria, where a large pipeline was damaged by explosives. As a result of that incident, our spills from sabotage rose, pushing total spill volume higher. At sites in Nigeria that were shut down by the security situation, reliable information about spills will not be available until we can return to repair and restart operations.

#### SPILLS

Volume in thousand tonnes



[A] Hurricane spill volume for 2005 corrected from 3.9 to 2.9 due to data error found after publication of the Annual Report and 20-F 2008 and Shell Sustainability Report 2008.

#### OUR REQUIREMENTS

- All operations must take a systematic approach to managing environmental impacts, using our HSSE management system.
- Global environmental standards define company-wide requirements in areas like responding to oil spills, energy efficiency, continuous venting or flaring of natural gas, air and water emissions from our facilities and handling of waste.
- Our biodiversity standard requires all our operations to respect protected biodiversity sites.



#### WHAT OTHERS SAY

“Billions rely on wetlands for health, well-being and livelihoods. Wetlands provide water, food, shelter and fuel, plus biodiversity, climate and other global benefits. But wetlands are under critical, increasing pressure. Since 2001, we have worked with Shell to build positive linkages between wetlands and business. In South East Asia, West Africa, Arctic and other key regions, our work together aims to enhance wetland sustainability and to raise standards in the energy sector, particularly at Shell.”

**Jonathan Anstey** GLOBAL CORPORATE RELATIONS MANAGER, WETLANDS INTERNATIONAL

# PERSONAL AND PROCESS SAFETY

**Safety is always our number one priority, in good economic times and bad.**

We aim to have zero fatalities and no incidents that put our people, neighbours and facilities at risk. We are making progress towards that aim, but still have some way to go.

## SAFETY PERFORMANCE

We are deeply saddened that 26 people (two employees and 24 contractors) lost their lives working for Shell in 2008. That was five more than in 2007, based on our updated scope of reporting (see page 36). Of these fatalities, nine happened on the road (see below). A further 10 occurred in Nigeria, where three people were killed as a result of security incidents and seven contractors died in one tragic incident when repairing a pipeline.

We continued to improve our injury rate (the number of incidents like slips, trips and falls per million working hours). We also reduced the number of process safety incidents.

We are maintaining our strong focus on safety and following through with our efforts to strengthen our safety culture. In July 2009, we expect to launch our 12 Life Saving Rules: clear and simple requirements covering the activities of highest safety risk. Following these rules is already mandatory for employees and contractors. The consequences for not following them – maximum appropriate disciplinary action for employees, or removal from Shell sites for contractors – will be strictly enforced at all our operations. We are also continuing to tighten the way we manage process safety, and reduce the number of deaths and injuries on the road.

## ROAD SAFETY

Getting road safety right has long been a priority for us, and a serious challenge. We have the largest network of service stations in our industry. We continue to take responsibility ourselves for the delivery of the oil and chemical products we refine in many countries, using a network of more than 18,000 contractor drivers. In 2008, Shell staff and contractors in our downstream business



Safely transporting workers, Qatar

alone drove over 1.6 billion kilometres, more than 100 times around the globe every day.

Many of the road safety programmes introduced over the last few years are starting to show results (see box opposite). In Nigeria, for example, over 3,500 vehicles were fitted with onboard monitoring systems by the end of 2008. The system lets us track behaviour directly and gives drivers detailed feedback on ways to improve their driving habits. We have already seen compliance with our road safety standards improve as a result.

A number of our big construction projects have successfully reduced the amount of travel needed. One way is to provide accommodation



### WHAT OTHERS SAY

"As Thailand's biggest local logistics service provider, we chose to be a haulier for Shell's packed lubricant products to learn from their approach to road transport safety management. This includes defensive driver training, physical checks and alcohol and drug testing for drivers; a vehicle inspection programme; and an incident classification, reporting and investigation process. Since working with Shell, we have implemented their practices not only with our 40 drivers who work with Shell but also with our fleet of over 10,000 drivers. Through these practices, we have been able to reduce accidents, improve our service and increase customer satisfaction."

**Chalut Wongsangan** MANAGER, CARRIER MANAGEMENT AND DEVELOPMENT, SCG LOGISTICS MANAGEMENT CO., LTD



[www.shell.com/safety](http://www.shell.com/safety)

- Our approach to safety, including our HSSE commitment and standard
- Improving road safety
- Strengthening our safety culture

on the project site, as we have done during construction at the Singapore chemical complex expansion (see page 35). Bussing in workers to reduce car journeys, as our oil sands project does, is another way. Using water or rail to get trucks off the road is a third way.

We are learning from these successes and spreading their use more widely across Shell. To help do that, we created a dedicated centre of road safety expertise in 2008. It is headed by a company-wide road safety manager. He is charged with implementing a standardised Shell-wide road safety programme, based on what we have seen work well in our successful local programmes.

We also continue to support local and national road safety programmes in many of the countries where we operate. In Brunei, for example, the “Tell A Friend” campaign to increase seat-belt wearing had reached nearly a fifth of the population within nine months of its launch in 2008.

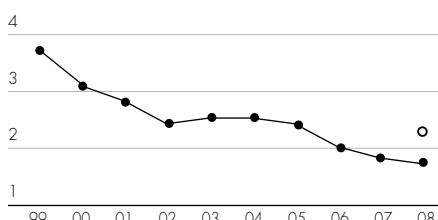
## PROCESS SAFETY

Process safety means making sure our facilities are well designed, safely operated and properly maintained. In 2008, we continued implementing our new company-wide process safety standards. Our upstream business finished a three-year long assessment of its facilities. Internal independent auditors reviewed sites in over 2,000 locations – from small pumping stations to large gas processing plants – to see how well equipment was being maintained. By the end of 2008, we had completed nearly three-quarters of the changes the review identified and closed out all of its high-risk findings.

## SMALL CHANGES, BIG DIFFERENCES

Our company-wide Safety Day in June 2008 showed how everyone in Shell has a role to play in improving our safety performance. All Shell employees and contractors who work with us were asked to make a personal pledge, committing to do at least one small thing in 2008 to help make Shell a safer place to work. Over 100,000 pledges were received and ranged from giving more safety talks on site and never compromising safety to reduce costs, to always being aware of emergency procedures and doing better route planning before driving.

**INJURIES – Total Recordable Case Frequency** ● Actual  
 Per million working hours ○ Target



Improving road safety is a top priority

## TRUCK ROLLOVERS

Our supply and distribution business delivers products like petrol and diesel to customers and service stations in some 70 countries. Much of this work is done by contractors driving heavy trucks carrying up to 36,000 litres of highly flammable fuel. Serious rollover incidents, where one of these trucks turns over on its side or roof, can result in fuel spills, injuries and deaths. Rollovers are usually preventable. They are most often caused by drivers turning too sharply or driving too fast. Since 2007 we have trained nearly 12,000 drivers to improve their driving skills and prevent rollovers. Posters and flyers at truck stop parking lots remind drivers to apply what they have learned. These efforts have started to show results. The number of rollover incidents has fallen steadily. In 2008, there were more than a third fewer rollovers compared with 2006.

## OUR REQUIREMENTS

- Shell HSSE policy and commitment define our goal: no harm to people.
- Company-wide health, safety, security and environment standards outline the requirements to get there.
- Process safety and road safety requirements set a consistent company-wide approach and allow us to check compliance.
- Standards apply to all operations we control or operate and to all staff and contractors at those operations. We expect operations we don't control and suppliers to apply these or equivalent standards.





**We are working with and learning from our joint ventures (JVs), contractors and suppliers, to continue to improve environmental and social performance in these difficult times.**

## WORKING THROUGH JOINT VENTURES

We conduct a big part of our business through JVs. This spreads risks and allows us to take a stake in more projects.

JVs we control are required to apply the Shell Control Framework or materially equivalent principles and standards. The Control Framework includes our Business Principles, Code of Conduct and company-wide standards, including our HSSE standards.

In JVs we do not control, we do not have the power to set the standards. So instead, we encourage the JV to operate in line with our values. We expect the JV to apply business principles and an HSSE commitment and policy materially equivalent to our own. We also share our experience in managing safety, environmental and social issues. This includes how we carry out integrated environmental and social impact assessments before beginning significant work on a project, and our approach to building transparent working relationships with external stakeholders.

If a JV cannot work in line with our values, principles and standards in this area within a reasonable time, we review the relationship. We last left a JV because of its incompatibility with our Business Principles in 2003.

## WORKING WITH OUR CONTRACTORS AND SUPPLIERS

We have approximately 102,000 staff, but more than four times as many people work for us as contractors or suppliers. This presents an enormous opportunity to create jobs and support development by hiring local companies (see page 27). It also poses a serious challenge: to ensure that more than 400,000 people in more than 100 countries who are not Shell staff work by our standards.

In 2008, we expanded the requirements that must be included in new contracts with contractors and suppliers to include following our Code of Conduct. Requirements to follow the Business Principles and our HSSE standards in the work they do for us were already in place. In many locations, we provide training to help contractors and suppliers build the systems and skills they need to comply with these principles. For example, we have a dedicated team to review and mentor contractors and suppliers in China. The team screens suppliers and contractors and helps them understand and follow our HSSE standards.

In 2008, our annual internal questionnaire of senior Shell country representatives identified that we cancelled 49 contracts due to failures to adhere to our Business Principles. Forty-five of the cases involved violations of our HSSE standards. Multiple contracts were cancelled in Guatemala and Pakistan.



Drilling rig operated by contractor KCA Deutag, Salym, Russia

## SALYM

The Salym project is developing oilfields in a remote, sub-Arctic area of Western Siberia. Production began in 2004 and was 150,000 barrels a day by March 2009. It is operated by Salym Petroleum Development NV (SPD) a 50:50 joint venture between Shell and OAO Evikhon.

Approximately 800 different companies have been involved in the project, ranging from construction companies building pipelines, to contractors doing drilling or providing services like catering or cleaning.

From the start, SPD has been determined to meet technical, environmental and social standards equivalent to our own. It holds regular seminars for contractors who wish to tender for work, in which it explains its HSSE and other standards and discusses with them the capabilities they must develop to comply. It is also committed to helping create local employment and to further developing technical service companies in the oil and gas sector in Russia. To date, 85% of the project's contracts (by value) have been awarded to Russian companies. Nearly 13% of companies used come from the local area.

Local companies' experience with operating in harsh, sub-arctic conditions and Shell's global technical skills have also proved to be a winning combination. For example, combining experience from our "Drilling the Limit" programme with local knowledge helped the project's Russian drilling contractors reduce the average time taken to drill wells from 30 days down to 11. A number of the Russian contractors who worked on Salym are now competing internationally. For example, Russian drill bits have been successfully tested on Shell JV projects in the Netherlands. They will also be used on projects in the USA and Middle East. Another Salym contractor is supplying pipes to oil and gas operations in both Oman and Nigeria.

# CHEMICALS IN SINGAPORE

## SUSTAINABLE DEVELOPMENT IN PROJECTS

**We are currently building one of the world's largest petrochemical complexes near our Pulau Bukom refinery in Singapore.**

The project is complex. Two new world-scale chemicals plants are being built on separate islands. They are then being integrated with the existing refinery on Pulau Bukom (Bukom Island), which will also require major modifications. Space is limited and the plants are spread across three islands. So getting materials and the more than 12,000 workers to and from the sites is a major logistical challenge.

In line with Shell policy, we carried out integrated Environmental, Social and Health Assessments (ESHA). They identified two main environmental and two social priorities for the project: improving energy efficiency and hence reducing greenhouse gas (GHG) emissions; avoiding waste cooling water from the plants warming up the surrounding sea when released; building the skills of Singaporean companies; and maintaining the health and safety of a large workforce during construction.

### **DESIGNING FOR LOWER ENVIRONMENTAL IMPACTS**

We are applying Shell's advanced OMEGA technology in one of the new plants. By using catalysts instead of heat, it reduces steam use by a fifth (and the amount of wastewater by nearly a third). To improve energy efficiency further, all the new plants are designed to re-use

much of the steam and heat they generate several times, in different parts of the process.

Cooling water will also be re-used in a closed-loop system using cooling towers, so no warm water will be sent back to the sea.

### **LOCAL SKILLS AND WORKERS' HEALTH AND SAFETY**

By end 2008, more than 90% of the project's construction contracts were with Singaporean companies. We have worked closely with the leaders of these companies to help them build their people's skills and make the changes needed to comply with our standards. Health, safety and environmental management have been particular areas of focus.

Clean, comfortable new dormitories, with good recreation facilities, have been built for the largely foreign construction workers. Two of the dormitories, housing 75% of the foreign workers, are situated on the islands. This reduces daily travel to and from the work sites. Quality meals are provided, respecting the dietary requirements of workers from more than 15 different nationalities on site. Each dormitory is equipped with a clinic, and a full-time "welfare officer" has been appointed. In 2008, government inspectors cited the project for setting a new standard for housing foreign workers in Singapore.



Lunch time at Shell Eastern Petrochemical Complex, Singapore



# MEASURING OUR PERFORMANCE

## PERFORMANCE DATA



### ABOUT OUR DATA

There are inherent limitations to the accuracy of environmental and social data. We recognise that our environmental and social data will be affected by these limitations and continue to improve the integrity of our data by strengthening our internal controls.

All non-financial data in this report are reported on a 100% basis, for companies and joint ventures we control, and those joint venture and associated companies not under our control but where we are the operator. It includes all significant facilities. Environmental data are for our direct emissions. We report this way because these are the data we can directly manage and affect through operational improvements. For greenhouse gas emissions we provide more detailed data on our website.

Operations acquired or disposed of during the year are included only for the period of time we had ownership. Other data are collected from external sources, staff surveys and other internal sources as indicated.

Previously, we also included in our data certain companies we did not control or operate but to which we provided operational services.

### ENVIRONMENTAL DATA

	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999
<b>Greenhouse gas emissions</b> million tonnes CO <sub>2</sub> equivalent [A]	75	82	88	93	101	102	96	93	91	87
<b>Methane (CH<sub>4</sub>)</b> thousand tonnes [B]	126	119	124	173	192	187	196	261	325	356
<b>Carbon dioxide (CO<sub>2</sub>)</b> million tonnes	72	79	85	89	96	97	92	87	84	80
<b>Flaring (Exploration &amp; Production only)</b> million tonnes CO <sub>2</sub> equivalent [C]	8.8	9.7	14.3	20.8	24.6	24.1	20.6	28.9	26.3	22.5
<b>Sulphur dioxide (SO<sub>2</sub>)</b> thousand tonnes	175	212	233	226	247	257	240	236	250	278
<b>Nitrogen oxides (NO<sub>x</sub>)</b> thousand tonnes	150	145	154	157	172	193	195	191	184	190
<b>CFCs/halons/trichloroethane</b> tonnes [D]	1.4	0.6	0.3	0.8	2.3	3.0	7.7	4.5	5.1	6.7
<b>Volatile organic compounds (VOCs)</b> thousand tonnes	135	173	185	199	213	226	324	309	442	414
<b>Operational spills</b> thousand tonnes	2.2	3.5	3.9	3.4	3.4	5.0	4.2	9.6	6.1	10.5
<b>Oil in effluents to surface environment</b> thousand tonnes	1.7	1.6	1.8	2.3	2.1	2.3	2.4	2.8	2.6	3.1
<b>Fresh water use</b> million cubic metres [E]	224	315	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C
<b>Waste</b> thousand tonnes										
Hazardous	688	907	716	631	714	675	781	N/C	N/C	N/C
Non-hazardous [F]	996	1,899	1,154	632	421	443	480	N/C	N/C	N/C
Total waste	1,684	2,806	1,870	1,263	1,135	1,118	1,261	N/C	N/C	N/C
<b>Energy intensity</b>										
In our refineries: Energy Intensity Index [G]	97.2	96.9	96.7	96.3	95.1	96.1	98.3	N/C	N/C	N/C
In our chemicals plant: Chemicals Energy Index	93.0	92.6	92.5	95.8	93.3	98.3	99.7	101.4	100.0	N/C
In our oil sands business (gigajoule per tonne production)	6.9	6.0	5.6	5.2	5.8	10.0	N/C	N/C	N/C	N/C
Exploration & Production (gigajoule per tonne production)	0.84	0.81	0.80	0.74	0.71	0.72	0.75	0.69	0.66	0.67
<b>External perception of environmental performance</b> [H]										
Special publics – % saying the best/one of the best/8–10 out of 10										
Shell [I]	38	36	26	27	27	36	N/C	N/C	N/C	N/C
Nearest competitor	24	22	23	29	22	33	N/C	N/C	N/C	N/C

**K** Key performance indicators.  
N/C Not calculated.

[A] Petroleum Industry Guidelines for Greenhouse Gas Estimate, December 2003, (API, IPIECA, OGP) indicate that uncertainty in greenhouse gas measurements can be significant depending on the methods used.

[B] Rise in 2008 reflects inclusion of an entity in Canada.

[C] Replaces million tonnes of hydrocarbon flared which is still available on our website.

[D] The increase in emissions in 2007 to 2008 was due to emissions from ageing equipment at one location. The equipment is scheduled for removal by end 2009.

[E] Restated to correct past inclusions of cooling water at some downstream locations.

[F] Decrease primarily due to completion of demolition work at a downstream location in 2007.

[G] Solomon Associates changed their proprietary Energy Intensity Index calculation methodology in 2006. Reported historical values have been recalculated based on this revised methodology.

[H] The Reputation Tracker survey is conducted on our behalf in 11 of our major markets, by the independent research firm Ipsos Mori. The exact mix of stakeholders and markets varies each year, to reflect Shell's business priorities. Previous years' data are re-analysed to take account of these changes and ensure like-for-like trend comparisons.

[I] The scale for the environmental performance rating was changed in 2007. Previous years' figures represent the closest comparison available.

[J] We were not able to restate this data prior to 2008.

[K] In our 2008 survey we combined the question to refer to both contractors and suppliers.

[L] Country income level as defined by the UNDP human development index 2007.

[M] Code of Conduct violations including incidents of bribery and fraud, gathered by our internal audit system.

This year, to align more closely with standard industry practices, we have removed these entities from our reporting. As a result, we have restated our safety and environmental data for the past 10 years (unless otherwise noted). Also to align with industry practice, we focus our reporting on the absolute number of fatalities we have, and no longer report a Fatal Accident Rate (the number of fatalities per 100 million working hours). We only include data that have been confirmed by the time this publication goes to print. If incidents are reclassified or confirmed after publication, the data are restated in the next year's publication.

Data marked **S** in the social data table come from an internal survey completed by the senior Shell representative in each country. Its accuracy is significantly lower than for data obtained through our financial systems. Data provided below are subject to internal controls. They have not been externally verified.

Unless otherwise noted, estimates of the number of homes served are based on the average electricity consumption of a European household. Conversions into US dollars are based on the average exchange rates for 2008.



[www.shell.com/performance-data](http://www.shell.com/performance-data)  
• Our environmental & social performance data  
• More GHG emissions data  
• Shell in the leading sustainability indices

## SOCIAL DATA

	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999
<b>Fatalities</b>										
Employees	2	1	2	3	2	5	8	2	4	3
Contractors	24	20	36	32	32	40	43	33	48	44
Total number	26	21	38	35	34	45	51	35	52	47
<b>K Total recordable case frequency (TRCF)</b>										
Injuries per million exposure hours (employees and contractors)	1.8	1.9	2.1	2.5	2.6	2.6	2.5	2.9	3.2	3.8
<b>Lost time injury frequency (LTIF)</b>										
Injuries per million exposure hours (employees and contractors)	0.6	0.7	0.8	1.0	1.1	1.1	1.1	1.3	1.4	1.5
<b>Total recordable occupational illness frequency (TROIF)</b>										
Illnesses per million working hours (employees only) [J]	1.2	1.5	1.8	2.0	2.1	2.0	2.0	2.3	2.2	3.5
<b>S Security % of countries</b>										
Using armed security	17	16	15	19	18	22	16	18	22	26
Using armed company security	1	2	2	2	2	2	1	2	2	2
Using armed contractor security	9	12	9	11	11	22	12	12	12	15
<b>Gender diversity % women</b>										
In supervisory/professional positions	24.7	24.6	23.2	21.8	20.7	19.5	18.9	17.7	17.1	15.4
In management positions	15.3	17.7	16.2	12.9	12.2	11.3	9.2	9.3	8.9	N/C
<b>K In senior leadership positions</b>	13.6	12.9	11.6	9.9	9.6	9.6	8.8	7.9	7.2	N/C
<b>S Staff forums and grievance procedures</b>										
% staff with access to staff forum, grievance procedure or other support system	100.0	100.0	99.2	100.0	100.0	99.9	99.9	99.9	N/C	N/C
<b>S Child labour % countries checking to ensure procedures in place</b>										
Own operations	100	99	95	88	83	78	86	89	84	82
Contractors [K]	99	98	89	69	61	57	56	57	51	46
Suppliers [K]		96	82	62	53	50	42	41	31	30
<b>S Contracting and procurement \$ billion</b>										
Estimated expenditure on goods and services from locally owned companies in low and middle income countries [L]	19	17	10	9	6	5	N/C	N/C	N/C	N/C
<b>S Contracts cancelled due to incompatibility with Business Principles</b>	49	35	41	63	64	49	54	100	106	62
<b>S Joint ventures divested due to incompatibility with Business Principles</b>	0	0	0	0	0	1	0	0	2	1
<b>Code of Conduct violations [M]</b>	204	361	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C
<b>S Social investment (equity share) \$ million</b>	148	170	140	127	106	102	96	85	85	N/C
<b>K Favourability [H]</b>										
With special publics										
Shell	46	46	45	39	38	52	N/C	N/C	N/C	N/C
Nearest competitor	32	36	43	45	41	50	N/C	N/C	N/C	N/C

**K** Key performance indicators.

N/C Not calculated.

**S** Social investment and contracting and procurement data collected via our financial system since 2007.

**S** Data obtained from an internal survey completed by the senior Shell representative in each country.

# EXTERNAL REVIEW COMMITTEE

**Aron Cramer (Chair)**  
PRESIDENT AND CEO, BUSINESS  
FOR SOCIAL RESPONSIBILITY  
(BSR)  
USA



**Rebecca Adamson**  
PRESIDENT AND FOUNDER,  
FIRST PEOPLES WORLDWIDE  
USA



**Philippa Foster-Back OBE**  
DIRECTOR, THE INSTITUTE  
FOR BUSINESS ETHICS  
UK



**Karin Ireton**  
DIRECTOR OF GROUP  
SUSTAINABILITY MANAGEMENT,  
STANDARD BANK GROUP  
SOUTH AFRICA



**Ligia Noronha**  
SENIOR FELLOW,  
THE ENERGY AND  
RESOURCES INSTITUTE (TERI)  
INDIA



**David Runnalls**  
PRESIDENT, INTERNATIONAL  
INSTITUTE FOR SUSTAINABLE  
DEVELOPMENT (IISD)  
CANADA



**Shell, for the fourth successive year, has invited an External Review Committee to assess the content and the process of producing its Sustainability Report.**

**This is our own assessment of Shell's 2008 Sustainability Report. We express our views as individuals, not on behalf of our organisations.**

## OUR FOCUS

We concentrated on three main questions, informed by the AA1000 standard:

1. Has Shell selected the most important topics for the Report?
2. How well has the report dealt with these topics and responded to stakeholder interest?
3. Did Shell provide sufficient information and access to do our job effectively?

## OUR PROCESS

In autumn 2008, we commented on Shell's initial choice of issues to include in the Report. We reviewed and commented on the report outline in late 2008, and on successive Report drafts in January and March 2009. The Committee met in person twice, including meetings with key Shell personnel, and held several teleconferences.

We did not verify the accuracy of performance data underlying the Report. We note also that our review of case studies included in the Report is not based on first hand observation, although we had full opportunity to speak with relevant company executives concerning them. In addition to our comments on the company's reporting, we have offered Shell our observations on the company's sustainability performance.

In recognition of our time and expertise, an honorarium was offered, payable to us individually or to a charitable organisation of our choosing. We were also reimbursed for the expense of our travel and accommodation.

## SHELL'S REPORTING

Shell's 2008 Report reflects the company's continued commitment to reporting on its most material sustainability opportunities and challenges. This year's Report again focuses extensively on the energy challenge that Shell – and the wider world – faces. While this reduces the Report's coverage of other important matters, we believe that Shell has prioritised issues well, and produced a report that includes the issues most material to its business and to stakeholders.

This year's Report is being published amidst fast-changing conditions, including the deep economic recession that took hold towards the end of 2008, extreme volatility in energy prices, and against the backdrop of leadership transitions, including the 2009 change in Shell's Chief Executive. The Report rightly emphasizes the importance of staying the course – continuing to address the long-term nature of the energy challenge, despite current economic conditions.



Again this year, Shell has demonstrated a very serious commitment to the Committee's review process. The company has been exemplary in providing us access to information, and to its senior executives, including the Chair of the Board's Social Responsibility Committee, the Chief Executive, and the Chief Executive-designate. Its reporting team has been very responsive to our comments, including on matters where members of the Committee had different perspectives on content than Shell. We note that our comments this year have again resulted in many changes – and in our view improvements – from initial drafts. There are also several areas where prior years' feedback has been addressed in this Report, including additional reporting on case studies from developing economies, information on joint ventures Shell does not control, and its approach to managing towards top quartile performance.

## THE ENERGY CHALLENGE

The 2008 Report, as last year's Report, is noteworthy in its clear statement of Shell's belief that immediate, decisive action is needed to address energy and climate change. The inclusion of "Shell's Six CO<sub>2</sub> Pathways" to progress on climate change provides a clear roadmap that enables readers to understand the company's strategy for contributing to mitigation efforts. This is a positive step that provides a much more explicit view than in past years about Shell's forward vision. We applaud Shell for its clear call for the establishment of an international price for emitting carbon, and for action at Copenhagen late in 2009. Shell has restated its commitment to coordinated action, as emphasized in the "Blueprints" scenario discussed in the 2007 report. We also welcome Shell's update on two substantial carbon capture and storage (CCS) projects, especially given the centrality of CCS to achievement of ongoing reductions in greenhouse gas emissions from its operations.

We also see several areas in which Shell can strengthen its reporting on the energy challenge, including two areas the Committee raised last year.

First, we would like to see more extensive reporting on Shell's future trajectory and performance on carbon emissions. While we welcome the increased insight into top quartile performance management in this year's Report, it is not yet clear how this approach, applied on an asset by asset basis, will enable measurement of emissions on a company-wide basis. As such, it remains unclear how Shell will communicate about its overall emissions performance once its last absolute target expires in 2010. Second, the report does not provide sufficient information to enable readers to gauge the anticipated increase in CO<sub>2</sub> emissions expected in the coming years, especially given that its strategy includes substantial investments in carbon-intensive fuel sources, including unconventional energy like oil sands, and increasing energy intensity of production.

In addition, the Report could have provided more detailed discussion of the company's decision to focus its renewable energy investments over the next few years in biofuels, rather than wind and solar energy.

Specifically, we would have liked to see more detail on: (1) the level of investment in renewables, and how this is sufficient to meet the stated urgency of addressing the energy challenge; (2) why Shell has chosen to prioritise biofuels over other forms of renewable energy and (3) the complexities involved in creating a truly sustainable source of biofuels, and Shell's efforts to achieve this result. Without this, there is a risk of furthering the divide between Shell's and stakeholder views of what constitutes a prudent level and nature of investment in clean energy.

In some cases, Shell provides factual data that do not provide enough context for readers to judge whether the speed and scope of its progress is sufficient. This arises, for example, in the section on cleaner transport fuels, where various pilots are described without a clear sense of whether they have the potential to be taken to scale. In addition, while Shell notes that it, and the energy industry as a whole, uses less water than industries such as agriculture, it would be useful to provide additional information in future reports on specific operations where water use is significant in local context.

In addition to our observations on Shell's treatment of the Energy Challenge section, we offer comments below on several other topics Shell addresses in the Report:

## INTEGRATION OF LEARNING ON SOCIAL PERFORMANCE

We encourage the company to report more fully in future years on how Shell integrates lessons from past experiences, particularly regarding operations in challenging environments, to ensure continuously improving performance.

## HUMAN RIGHTS

We believe that the decision not to include a dedicated human rights section in the Report is appropriate in light of developments in 2008, and because the subject is included in the treatment of topics such as Shell's Business Principles. We encourage further consideration of how best to report in future years on material human rights issues that may arise.

## SOCIAL DEVELOPMENT

We continue to seek more information and analysis of Shell's impact on the local communities where it operates. The Report provides data on Shell investments, but does not enable readers to understand how effectively these expenditures have improved community well-being or advancement.

## CONCLUSION

Shell has again demonstrated leadership in its reporting, providing its perspective on the issues of greatest relevance to the company and the wider world. We encourage the company to develop further its reporting on how it is meeting the energy challenge: providing needed energy while also helping make the transition to a lower-carbon energy mix. Doing so will, we believe, not only benefit Shell, but also catalyse others to act in ways that are essential for creating sustainable energy solutions.





[www.shell.com/sdreporting](http://www.shell.com/sdreporting)

- Reporting in line with the Global Reporting Initiative
- How we select the topics that matter most
- Assuring our sustainability reporting

**We have been reporting on our environmental and social performance since 1997 because we know it matters to our stakeholders and to our business success.**

## REPORTING FOR DIFFERENT AUDIENCES

We use our Sustainability Report, supported by our Responsible Energy website, to provide the general overview of our environmental and social performance worldwide. For customers, suppliers and staff, our Sustainability Review provides a short summary of this performance. For investors we report on our approach to managing environmental and social risks and opportunities in our Annual Report and 20-F. We also co-operate with the producers of the Dow Jones Sustainability Indexes, FTSE4Good and the Carbon Disclosure Project, and other organisations providing information on environmental and social performance to investors. Individual Shell operations may also report on local activities and issues.

## REPORTING ON WHAT MATTERS MOST

Good environmental and social reporting must focus on the issues that are most important to our stakeholders as well as to us; that is why we use an established and auditable content selection process (see below). We further refined our process in 2008 to include the feedback we received from our External Review Committee. We report on 10 Key Performance Indicators (KPIs), developed in consultation with external stakeholders, that measure and track our main environmental and social impacts.

## ALIGNMENT WITH EXTERNAL GUIDELINES

On the Shell website we describe our contribution to the Millennium Development Goals and our efforts to support the UN Global Compact.

We continue to use the Global Reporting Initiative's (GRI) G3 guidelines for our sustainability reporting. GRI confirmed our A+ level for the 2008 Report.

We also follow the guidelines of the International Petroleum Industry Environmental Conservation Association and are supporting the GRI's work on guidance for the oil and gas industry.

## ASSURING OUR REPORTING

We continue to use an External Review Committee of experts to check that our Sustainability Report is balanced, relevant and responsive to stakeholders. The Committee's wide-ranging challenges and advice are based on their extensive knowledge of the issues and their first-hand experience of working with us.

Over the years we have developed a range of internal controls to help assure the accuracy of the facts in our Sustainability Report. These controls include audit trails for all the data and statements included in the report, approved by senior managers. Senior business leaders must confirm the accuracy and reliability of their HSSE data, and we have statistical checks in place to detect errors. We have also begun working with Lloyd's Register Quality Assurance Limited, an external verifier, to develop further checks on our greenhouse gas emissions data.

## THE WAY FORWARD

With stakeholder requirements and cost pressures both continuing to rise, we are intensifying our search for ways to report better and to further streamline and simplify our reporting process.

**STEP 1** Ask readers what matters most to them, using surveys, interviews and media reviews. Also take account of topics that are important for society but attract less media attention.

**STEP 2** Use our internal risk management systems to determine which environmental and social issues most affect our business strategy.

**STEP 3** Combine the results. Allowing for legal restrictions, we include all the highest-priority topics in our report. Those at the next level of importance are covered on our website.

**STEP 4** Check with stakeholders, and our External Review Committee, that our coverage of these topics is balanced and complete.

External Review Committee opinion letter  
Global media review  
Reader surveys  
Shell public policy review  
Socially responsible investment reports and indexes  
Website hits



Shell strategy  
Shell risk management process  
Shell reputation management process

# SHELL FACT SHEET 2008

PRODUCING  
**2%**  
OF THE  
WORLD'S  
OIL ...

... AND  
**3%**  
OF THE  
WORLD'S  
GAS

OIL AND GAS  
PRODUCED  
**3.2**  
MILLION  
BARRELS  
A DAY...

... ROUGHLY  
**45%**  
OF IT IS  
NATURAL  
GAS

INCOME  
**\$26.5**  
BILLION

CAPITAL  
INVESTMENT  
**\$38.4**  
BILLION

INVESTMENT  
IN R&D  
MORE THAN  
**\$1.2**  
BILLION

SPENDING ON  
ALTERNATIVE  
ENERGY AND CCS  
**\$1.7**  
BILLION IN THE  
LAST 5 YEARS

SELLING  
TRANSPORT  
FUEL TO SOME  
**10**  
MILLION  
CUSTOMERS  
A DAY

SELLING  
**7.5%**  
OF THE  
WORLD'S LNG

GENERATING  
WIND POWER  
FOR NEARLY  
**250,000**  
HOMES

REFUELLING A  
PLANE EVERY  
**12**  
SECONDS

EMPLOYING  
**102,000**  
PEOPLE

OPERATING IN  
**100+**  
COUNTRIES

WITH AROUND  
**45,000**  
SERVICE  
STATIONS  
WORLDWIDE

RUNNING  
**25+**  
REFINERIES  
& CHEMICAL  
PLANTS



# MEASURING OUR PERFORMANCE

Shell uses a number of key performance indicators to evaluate the overall performance of Shell from a financial, efficiency, social and sustainable development perspective.

[www.shell.com/responsible](http://www.shell.com/responsible)

## SHELL SCORECARD

	2008	2007
1 Total shareholder return [A]	(33.5)%	23.8%
2 Net cash from operating activities (\$ billion)	44	36
3 Operational excellence:		
Oil and gas production (thousands boe/d) [B]	3,248	3,315
LNG sales (million tonnes)	13.1	13.2
Refinery availability	92.1%	91.6%
Chemical plant availability	94.3%	92.6%
4 Sustainable development (TRCF) [C]	1.8	1.9

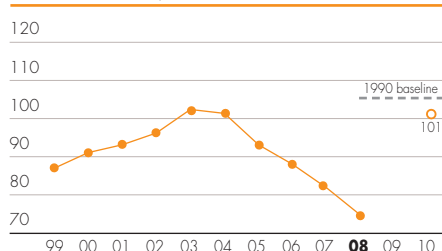
[A] Total shareholder return is calculated based on dividends and share prices in US dollars.

[B] Combined Exploration & Production and Oil Sands production.

[C] Shell's standard safety measure – total recordable case frequency (TRCF).

### GREENHOUSE GAS EMISSIONS [A]

Million tonnes CO<sub>2</sub> equivalent

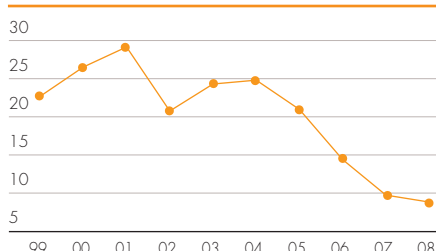


GHG emissions at Shell-operated facilities were about 30% below 1990 levels in 2008. Most of the reductions from 2007 to 2008 were due to changes in our portfolio and reduced flaring outside Nigeria in our Exploration & Production business.

[A] Target and baseline adjusted to reflect portfolio changes.

### FLARING – Exploration & Production

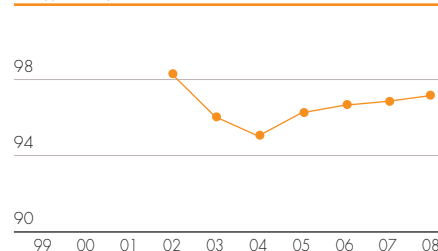
Million tonnes CO<sub>2</sub> equivalent



Since 2001, natural gas flaring has been reduced by more than 70%. Total flaring dropped again in 2008 as operational improvement programmes started showing results. In Nigeria, levels were the same as in 2007 as progress to end continuous flaring was largely blocked by ongoing government funding and security problems.

### ENERGY INTENSITY – Refineries [A]

Energy Intensity Index (EII™)

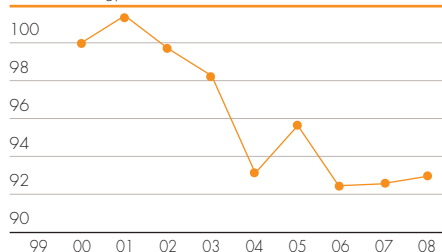


Energy efficiency at our refineries has improved slightly since 2002. But compared to 2007 it slipped back in 2008, partly due to unplanned shutdowns and running below capacity.

[A] Solomon Associates changed their proprietary Energy Intensity Index calculation methodology in 2006. Reported historical values have been recalculated based on this revised methodology.

### ENERGY INTENSITY – Chemical Plants

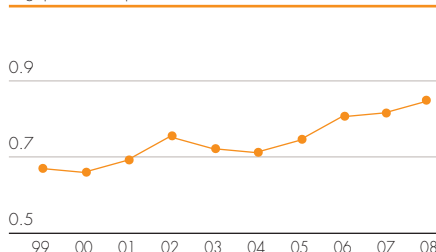
Chemical Energy Index



Energy intensity at our chemicals plants has improved by 7% since 2000. In 2008 we were not able to improve further mainly because of unplanned shutdowns in US plants resulting from Hurricane Ike.

### ENERGY INTENSITY – Exploration & Production

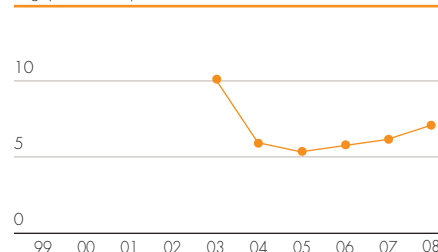
Gigajoule/tonne production



Our upstream energy intensity has risen by around 27% since 2000 as fields age and more heavy and harder-to-reach oil is produced. In response, all our upstream operations are putting five-year energy management plans in place, which set out operational steps to take such as optimising processes and equipment use.

### ENERGY INTENSITY – Oil Sands

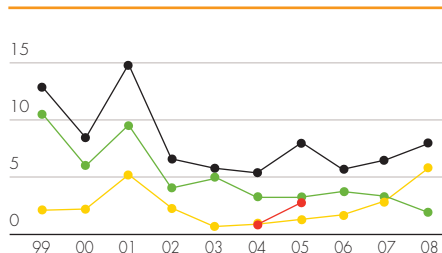
Gigajoule/tonne production



Producing petrol from oil sands requires more energy than producing it from conventional oil. Our current oil sands operation is the most energy efficient in the industry, according to a 2008 study by the Pembina Institute and WWF that was critical of oil sands activities. Energy intensity rose slightly in our oil sands business last year due to plant shutdowns, maintenance and construction activities.

### SPILLS

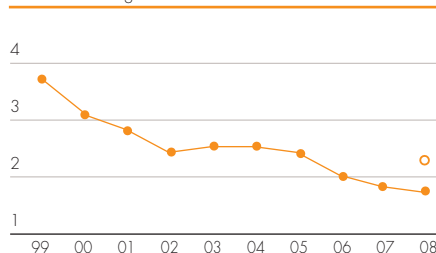
Volume in thousand tonnes



Since 1997, we have been reducing the amount of spills from our operations that occur for reasons we can control. We have done so through clear procedures, consistent compliance and a lot of hard work. However spill volumes from sabotage rose sharply in 2008 due to one sabotage incident in Nigeria, pushing up our total volume.

### INJURIES – Total Recordable Case Frequency

Per million working hours



Our injury rate has come down by approximately 50% since 1999. This reflects our efforts to build a safety culture where all employees and contractors must aim for "Goal Zero" – operating with zero fatalities and significant incidents.

### SAFETY

In 2008, 26 people (two employees and 24 contractors) lost their lives working for Shell. That was five more than in 2007, based on the updated scope of our reporting (see pages 36–37). Of these fatalities, nine happened on the road. A further 10 occurred in Nigeria, three of these as a result of security incidents and the rest in one tragic incident in which seven contractors died when repairing a pipeline after a sabotage incident.

## SHARE YOUR OPINION

Please let us know your views on this report, or any issues it raises, by e-mail to [sustainabilityreport@shell.com](mailto:sustainabilityreport@shell.com)

## PHOTOGRAPHY BY SHELL STAFF

Some of the photos in this report were taken by Shell staff who were invited to show what sustainable development meant to them in action around the world.

## PAPER SPECIFICATION

The paper used is made from 25% de-inked post-consumer waste, 25% pre-consumer waste and 50% virgin fibre under ISO 14001. All pulps are Elemental Chlorine Free. The use of the FSC logo identifies products which contain wood from well-managed forests certified in accordance with the rules of the Forest Stewardship Council.

Designed by Flag

Printed by Taylor Bloxham under ISO 14001



## CAUTIONARY NOTE

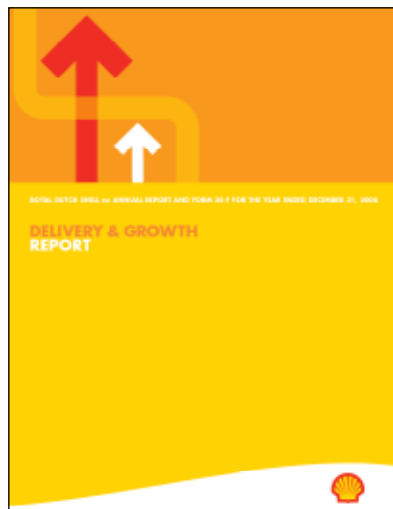
The companies in which Royal Dutch Shell plc directly and indirectly owns investments are separate entities. In this publication "Shell", "Shell group" and "Royal Dutch Shell" are sometimes used for convenience where references are made to Royal Dutch Shell plc and its subsidiaries in general. Likewise, the words "we", "us" and "our" are also used to refer to subsidiaries in general or to those who work for them. These expressions are also used where no useful purpose is served by identifying the particular company or companies. "Subsidiaries", "Shell subsidiaries" and "Shell companies" as used in this publication refer to companies in which Royal Dutch Shell either directly or indirectly has control, by having either a majority of the voting rights or the right to exercise a controlling influence. The companies in which Shell has significant influence but not control are referred to as "associated companies" or "associates" and companies in which Shell has joint control are referred to as "jointly controlled entities". In this publication, associates and jointly controlled entities are also referred to as "equity-accounted investments". The term "Shell interest" is used for convenience to indicate the direct and/or indirect (for example, through our 34% shareholding in Woodside Petroleum Ltd.) ownership interest held by Shell in a venture, partnership or company, after exclusion of all third-party interest.

This publication contains forward-looking statements concerning the financial condition, results of operations and businesses of Royal Dutch Shell. All statements other than statements of historical fact are, or may be deemed to be, forward-looking statements. Forward-looking statements are statements of future expectations that are based on management's current expectations and assumptions and involve known and unknown risks and uncertainties that could cause actual results, performance or events to differ materially from those expressed or implied in these statements. Forward-looking statements include, among other things, statements concerning the potential exposure of Royal Dutch Shell to market risks and statements expressing management's expectations, beliefs, estimates, forecasts, projections and assumptions. These forward-looking statements are identified by their use of terms and phrases such as "anticipate", "believe", "could", "estimate", "expect", "intend", "may", "plan", "objectives", "outlook", "probably", "project", "will", "seek", "target", "risks", "goals", "should" and similar terms and phrases. There are a number of factors that could affect the future operations of Royal Dutch Shell and could cause those results to differ materially from those expressed in the forward-looking statements included in this publication, including (without limitation): (a) price fluctuations in crude oil and natural gas; (b) changes in demand for the Group's products; (c) currency fluctuations; (d) drilling and production results; (e) reserve estimates; (f) loss of market share and industry competition; (g) environmental and physical risks; (h) risks associated with the identification of suitable potential acquisition properties and targets, and successful negotiation and completion of such transactions; (i) the risk of doing business in developing countries and countries subject to international sanctions; (j) legislative, fiscal and regulatory developments including potential litigation and regulatory effects arising from recategorisation of reserves; (k) economic and financial market conditions in various countries and regions; (l) political risks, including the risks of expropriation and renegotiation of the terms of contracts with governmental entities, delays or advancements in the approval of projects and delays in the reimbursement for shared costs; and (m) changes in trading conditions. All forward-looking statements contained in this publication are expressly qualified in their entirety by the cautionary statements contained or referred to in this section. Readers should not place undue reliance on forward-looking statements. Additional factors that may affect future results are contained in Royal Dutch Shell's 20-F for the year ended December 31, 2008 (available at [www.shell.com/investor](http://www.shell.com/investor) and [www.sec.gov](http://www.sec.gov)). These factors also should be considered by the reader. Each forward-looking statement speaks only as of the date of this publication, 08 May 2009. Neither Royal Dutch Shell nor any of its subsidiaries undertake any obligation to publicly update or revise any forward-looking statement as a result of new information, future events or other information. In light of these risks, results could differ materially from those stated, implied or inferred from the forward-looking statements contained in this publication.

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A comprehensive operational and financial overview of Shell.

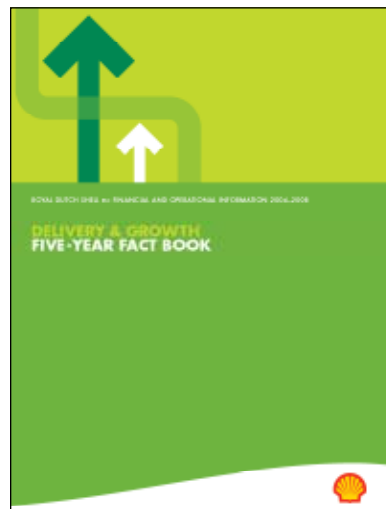


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## Shell Sustainability Review 2008

A summarised report on progress in contributing to sustainable development.

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