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THE INTERNATIONAL MAGAZINE OF THE BP GROUP

ISSUE 2 2013

BP MAGAZINE

36 SPOTLIGHT: AUSTRALIA

SOUTHERN PROMISE

BP Magazine reports from Australia where a major exploration programme off the south coast could open a new chapter for the company.

Welcome. The beginning of 2013 was a difficult time for BP. On Wednesday 16 January, an armed assault on the In Amenas joint venture gas plant in Algeria led to the deaths of 40 men. Four of them were BP employees, the others colleagues from partner and contractor companies. In this edition, we pay tribute to them (page 10) while BP's chief executive Bob Dudley shares his thoughts on how BP and its partners responded to the tragedy (page 6). He also discusses 2012's financial results and the completion of the deal to sell its stake in TNK-BP to Rosneft. Elsewhere, we take a look at some of the key facts and figures on the world's energy industry from the latest edition of the BP *Energy Outlook 2030* publication (page 16) and bring you the first of two special reports from Australasia. This one looks at the exploration programme in the waters of the Great Australian Bight (page 36) and includes an interview with the former minister for resources and energy and tourism (page 44). We also meet the BP retail teams in New Zealand who are rebuilding their livelihoods two years after a series of devastating earthquakes (page 52).

Lisa Davison > Editor

BP MAGAZINE

The international magazine of the BP Group – ISSUE 2 2013

BP Magazine is published quarterly for external readers around the world, as well as past and present BP employees. Its content does not necessarily reflect official company views.

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Cover image: Preparing streamer sections on board the Petroleum Geo-Services (PGS) *Ramform Sterling* seismic vessel, Australia. The offshore seismic study is one of the largest ever conducted in Australia. The vessel tows 12 'streamers' behind it, each eight kilometres long and equipped with hydrophones that pick up sound waves generated by popping bubbles of compressed air at the surface.

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BP Magazine reports on the work Castrol does with NASA to supply specialist lubricants for space exploration.



RUSSIA: BP AND ROSNEFT COMPLETE DEAL

BP has completed a landmark transaction with Russian oil giant Rosneft that will see it taking a stake of almost 20% in what is now the world's largest publicly traded oil company. Following completion, BP also announced it is to carry out a share repurchase, or buy-back, programme with a total value of up to \$8 billion.

Under the deal, Rosneft bought BP's 50% stake in TNK-BP – itself Russia's third largest oil and gas producer – as well as the remaining 50% formerly held by AAR.

With the acquisition, Rosneft's existing portfolio of upstream assets across all of Russia's major oil and gas producing regions will be enhanced by the addition of TNK-BP's operations, including major oil and gas fields in Siberia and the Yamal Peninsula. These include both mature 'brownfield' reservoirs and vast undeveloped 'greenfield' areas. Rosneft's Russia-wide network of refineries and service stations will be complemented by TNK-BP's downstream operations, including those serving the Moscow and St Petersburg areas.

Rosneft president and chairman of the management

board Igor Sechin said: "We are delighted to close this transaction ahead of schedule and would like to thank our partners in BP for their co-operation throughout the process. We look forward to working with BP and we are convinced Rosneft will benefit from BP's significant experience and successful track-record of applying best international practices in Russia."

BP chief executive Bob Dudley has been nominated as a candidate to join the Rosneft board of directors ahead of completion of the transaction. He is also a member of Rosneft's steering committee on TNK-BP integration. Other members include Sechin, first vice president and deputy chairman of the Rosneft management board, Eduard Khudainatov and Daniel Yergin, the Pulitzer Prize-



Russian terminal: the Nakhodka terminal in Primorsk Territory is used mainly for export of petroleum products from Rosneft's refinery at Komsomolsk.

winning author of *The Prize* and the founder of Cambridge Energy Research Associates (CERA).

During BP's involvement, TNK-BP's production rose by more than 40% over nine years, while proved reserves grew by more than 50%, partly due to the application of specialist BP technologies, such as enhanced oil recovery. BP plans to work in partnership with Rosneft as similar technologies are applied at brownfield assets, potentially achieving results on an even larger scale.

Meanwhile, BP's share buy-back programme is expected to return to BP shareholders an amount equivalent to that originally invested in TNK-BP.

Dudley said: "BP is moving on to the next phase of its business in Russia, becoming the largest private shareholder in Rosneft, Russia's leading oil company. In the process, we have also released cash, equivalent to at least six years of BP's anticipated future dividends from TNK-BP. We look forward now to working closely with Rosneft and together developing opportunities to create value for both companies."

BP intends to retain the additional cash consideration of \$4.48 billion received from the sale of its interest in TNK-BP to reduce BP Group debt as part of its continuing commitment to maintaining a strong balance sheet.

19.75%

BP's total stake in Rosneft, including the 1.25% stake it already owns, making it the second largest shareholder after the Russian state

4.1 million

The number of barrels of oil a day Rosneft will produce following the purchase of TNK-BP, making it the world's largest publicly traded oil firm

+21 million

The number of barrels of oil equivalent Russia produces every day, making it the world's largest producer of oil and gas combined

>\$28 billion

The total value of the deal to BP in terms of cash and Rosneft shares

NEWS IN BRIEF

Brazil

Well success

BP has completed a successful flow test of the Itaipu-1A discovery well offshore Brazil. The drill stem test was the latest activity in the ongoing appraisal programme at the BP-operated Itaipu discovery. The well test achieved flow rates of up to 5,600 barrels of oil a day for 32 hours through a 40/64 choke from a limited perforated interval.

Norway

Skarv start-up

BP and its partners announced the start of production at the Skarv field on 31 December 2012. The field is located approximately 210 kilometres (130 miles) offshore Norway in the Norwegian Sea. It was discovered in 1998 and has an estimated ultimate recovery of around 100 million barrels of

oil and condensate and over 1.5 trillion cubic feet of rich gas. It is one of a series of new major upstream projects that BP brought into production in 2012.

US

Refinery sale

BP has completed the previously announced sale of its Texas City refinery and a portion of its retail and logistics network in the southeast US to Marathon Petroleum Corporation for an estimated \$2.4 billion. This comprises approximately \$0.6 billion in cash, \$1.1 billion for the estimated value of hydrocarbon inventory and an earn-out arrangement payable over six years of \$0.7 billion (based on assumed future margins and refinery throughput).

Norway

Production start-up

BP successfully began producing oil from new facilities at the Valhall field

in the southern part of the Norwegian North Sea in January 2013. Production is expected to build up to around 65,000 barrels of oil equivalent per day in the second half of the year. The redevelopment includes a new production, utilities and accommodation platform mounted on a fixed steel jacket, an external system of bridges and walkways linking the new platform to the existing Valhall complex, a power-from-shore system, and an integrated operating environment linking onshore and offshore personnel.

Global

Grote retirement

Byron Grote (right) has retired from BP and stepped down from the board of directors following the Annual General Meeting on 11 April 2013. Paying tribute to his 33 years of distinguished service for BP, group chief executive Bob Dudley said: "Byron has played key roles at critical moments

of the company's history, most notably in the integrations of Amoco and ARCO, and more recently in guiding BP through the financial challenges following the incidents of April 2010. The company owes him a great debt of gratitude."



Angola

PSVM start-up

Production has begun at Angola's PSVM development located offshore in Block 31. BP is a partner and operator of the development. Initial production comes from three production wells in the Plutao field and is expected to ramp up to around 70,000 barrels of oil per day. PSVM is expected to build towards plateau rates of 150,000 barrels of oil per day over the coming year with the additional production from Saturno and Venus fields in 2013 and Marte in 2014.

A shared resilience

It was a difficult start to the year for BP. The attack at the joint venture gas plant in Algeria in January saw four members of staff and 36 colleagues from partners and contractor companies murdered. In February, a major trial into the 2010 Deepwater Horizon accident in the US began. However, the company continues to adapt for the future with the completion of a major divestment programme and a landmark investment in Russia. BP's group chief executive Bob Dudley shares his thoughts on the year's developments.

ALGERIA: in mid-January armed attackers killed 40 people working at the In Amenas gas production facility in Algeria – a joint venture operated by BP, Norway's Statoil and Algeria's Sonatrach.

How do you feel BP and others responded to the incident?

Like everyone, the news came as a dreadful shock to me, and my immediate concern was for everyone involved and their families. It was the start of an exceptionally difficult time. There was some debate at the time about the right response – there always is when difficult decisions have to be made quickly. But I think everyone in BP responded in an extremely professional way and that we did everything we could under the circumstances.



Immediately, we activated our standard crisis response system, with an incident management team in Algeria, a business support team at our Sunbury offices in the UK and an executive support team at our headquarters in London – all working 24/7 throughout the crisis. This is a system we have used to manage crises in the past and we regularly have training and drills to make sure everybody knows what to do. At each level, those teams brought together people from operations, human resources, safety and operational risk [S&OR] and other areas. The executive team was chaired by Bob Fryar – then our head of production and now head of S&OR – but I was also in the crisis response centre a lot of the time and we were in touch with our people in Algeria, our partners in Norway and Algeria, and the UK and Algerian Governments. We

Year so far: (main image) BP's group chief executive Bob Dudley (left) and Rosneft president and chairman of the management board Igor Sechin with journalists outside BP's London headquarters, 21 March 2013. Left (from top), view across Algerian desert; BP and Rosneft teams at BP's London headquarters on the day the deal between the two organisations was announced; the Samotlor oil field is Russia's largest. Rosneft will now operate the field following its acquisition of TNK-BP.



provided all the information we could about the situation, our people and the plant itself to the authorities and stayed in close contact throughout – and I want to thank everybody sincerely for the work they did to deal with the crisis and its aftermath.

What do you know about the men who lost their lives?

I have spoken to members of all the families of the BP employees who lost their lives and shared our grief at their tragic loss. In talking to their families and friends, I have learned a lot about our colleagues and how much of an impact they had on the people around them [see page 10 for a tribute to all those who lost their lives].

I actually met Seb John, who, at 26 was the youngest of our staff who died, at an event for new graduates in the Upstream

business in London last October. Seb, who came from Nottingham in the UK, stood out and I said to my wife later that night that I met a young man – not unlike myself at his age – who had great enthusiasm for seeing the world and for our industry. I also knew Carlos Estrada – he was one of our senior executives – originally from Colombia, a natural leader of people, who made such a great contribution to many of BP's businesses around the world. Then, there were the two gentlemen I hadn't met – Stephen Green and Gordon Rowan – but I feel I came to know a lot about them from talking with their families, from listening to their friends and many of their colleagues who paid their tributes. Stephen Green was a dedicated safety expert and Gordon Rowan was highly experienced operations professional from the US. We

will continue to mourn all those who lost their lives in the months and years to come, and we will never forget them.

How have people across BP reacted?

BP is like a very large international, multi-cultural family and across that community there has been a shared sense of loss and shock at what happened in January. In some ways, everyone feels helpless because our colleagues were taken in such a terrible way. We cannot possibly enter into the depth of grief and sadness that their families are experiencing and the void that has been left in their lives.

Nevertheless, there are things we can do. We can show practical support and we can assure those who have lost loved ones that people across the world are thinking of them. Hundreds of people across BP



Group chief executive>
Bob Dudley



“BP’s people are resilient... and we will go on. Ours is a challenging business and we need to manage the risks involved with great care, but energy is fundamental to the world’s progress and society’s wellbeing.”

have expressed their sadness by sending messages for the books of condolence we have created. They range from close friends and colleagues to people who never met these men and who come from very different cultures and backgrounds but feel their loss as members of the BP family.

Did BP do anything specific to commemorate those who died?

Yes, in March we held a remembrance service in Sunbury, the UK base of our North Africa team. It was attended by the families and friends of those men we lost, as well as representatives from our partners such as Sonatrach, Statoil and JGC. Hundreds of BP staff were also there and more than 8,000 around the world joined via a webcast. It was a collective act of thanksgiving for 40 individuals who died from 10 nations. It was a very moving and emotional event and a massive expression of the sympathy and compassion felt across BP. I came away from the incident with profound respect for BP’s people. The hundreds who were dealing with the situation were caring, calm and very professional. On a human level, people reacted with enormous compassion. It showed me how much people feel part of

one BP team and I am full of admiration and respect for the manner in which everyone involved responded under deeply distressing circumstances.

Do you think this is a game-changer for the way in which the industry as a whole views safety and its facilities?

Of course, after such an incident we reviewed our facilities and put some of them on a state of heightened alert – not only in North Africa and the Middle East but in a number of other locations around the world. I think it is something we need to review again, once the official investigation has been completed by the Algerian government. We will keep reviewing our safety measures with the aim of doing everything possible to protect our people and our contractor colleagues. Obviously, I cannot say exactly what we have done and plan on doing for security reasons but we are taking action.

What message have you had for BP’s staff in the wake of this tragedy?

I think the first message is to say thank you for the extraordinary outpouring of support, compassion and condolences. Then to say, please continue to support

each other. This has been a shock to our company and our industry. BP’s people are resilient, though, and we will go on. Ours is a challenging business and we need to manage the risks involved with great care, but energy is fundamental to the world’s progress and society’s wellbeing. Our task must continue if economic and social development is to progress.

FINANCIAL PERFORMANCE: in February, 2013, BP reported \$17.6 billion of underlying profit for 2012 along with operating cash flow of \$20.4 billion.

BP’s profits were down in 2012. Why was that?

The main reason is that we have undertaken a divestment programme in which we’ve sold or agreed to sell \$38 billion worth of assets. This was actually part of our planning. Those assets represent around \$5 billion of pre-tax earnings and approximately 500,000 barrels a day of production. We have sold around 15% of our production and around 10% of reserves – but those same divested assets represented around 50% of the upstream installations and 30% of the wells. So we’re concentrating our resources and investment on our best assets – the most profitable, high quality ones. Also, in the last quarter of 2012, TNK-BP was defined

as an 'asset held for sale' which meant we could only book 21 days' income from it, from October to December. This clearly had an impact on our financial results.

In other respects we performed well. We had a record performance in our Refining & Marketing business – with \$6.4 billion of underlying profit. Plant efficiency in our upstream assets improved, too.

Sadly, we had four fatalities in 2012. We deeply regret those deaths and our thoughts go out to the families of those who died. We are determined to learn and implement the necessary lessons from these incidents. Our overall safety record has improved, though, with fewer losses of primary containment and fewer serious process safety incidents. This is encouraging.

RUSSIA: March saw the completion of an agreement in which BP sold its share in joint venture TNK-BP to Rosneft, leaving BP with a 19.75% stake in Rosneft, along with \$12.3 billion in cash.

Why do you persist in working in Russia after all that has happened in the past 10 years?

The short answer is that Russia is not only the world's largest producer of oil and gas – but also has the largest oil and gas reserves. In my view, it also still has the largest potential. Russia has many undeveloped oil and gas fields and many mature ones where production can be increased through applying new technologies. So, there is a great prize there. BP has been the largest foreign investor in Russia over the past decade and TNK-BP represented a great investment for our shareholders. In 2003, we invested around \$8 billion in cash, shares and assets. In the following decade, we received a total of around \$19 billion in dividends from the joint venture. I believe that Russia will be central to the world's energy supplies throughout the 21st century. It hasn't been plain sailing but this business always presents some kind of challenge. We are now working with a partner in Rosneft that is committed to continually strengthening its governance and capability. Taking a long-term view, this is just the start of what I hope will be decades of partnership in Russia.

How is the agreement with Rosneft going to create real value for BP's shareholders?

This deal can bring value to BP shareholders in at least three ways. First, the value of BP's shareholding can grow if Rosneft grows and as a shareholder and partner we can help Rosneft to grow. Rosneft is about to absorb TNK-BP – which is itself a very large

business. The resulting enlarged Rosneft will be the largest listed oil producer in the world. BP has experience of these kinds of mergers, so we can help Rosneft integrate TNK-BP in a way that is most efficient and effective. Secondly, we will receive a dividend annually for our 19.75% shareholding, as well as account for a share of production and reserves. And finally, we can help Rosneft access new business opportunities in many ways, both upstream and downstream, and maybe internationally, too.

DEEPWATER HORIZON: as BP Magazine went to press, legal proceedings were underway in New Orleans where BP and other defendants are facing claims from the US government, Gulf States and other plaintiffs relating to the 2010 Deepwater Horizon accident.

Will BP ever really recover from the 2010 accident?

Yes, I think we will – but we will never forget it. It was a terrible tragedy but we have been determined to learn and emerge as a safer and a stronger company. We conducted an extensive inquiry which made 26 recommendations to further strengthen our safety and risk management in deepwater drilling. We're now implementing those recommendations around the world. We have set a powerful new safety and operational risk organization whose representatives work alongside operational teams, to advise, audit and, if needed, intervene. We have adopted new deepwater drilling standards in the Gulf of Mexico that exceed current regulatory requirements, and shared what we have learned with industry and regulators around the world. As we have said, we don't believe we were grossly negligent. This was an accident that resulted from multiple causes and involved multiple parties. However, we have acknowledged our role in the accident. We waived the statutory cap on liability and spent more than \$23 billion in response, clean-up, and payments on claims by individuals, businesses, and governments.

THE FUTURE: announcing BP's 2012 results, Bob Dudley said that 'we have re-positioned BP over the past two years for sustainable growth into the future.'

What are BP's major milestones for 2013? And what do you mean by 2013 being about getting 'back to business'.

With the settlement of some claims for

the Deepwater Horizon accident, and completing the sale of TNK-BP and agreeing a deal with Rosneft, we have completed some big steps forward which will allow more time for our executive team to strengthen its focus on our day-to-day operations. In 2013, we expect another four major projects to come onstream – two that we will operate – Na Kika Phase 3 in the Gulf of Mexico and the Chirag Oil project in Azerbaijan; and two in which we are partners but are operated by other companies – North Rankin B in Australia's offshore North West Shelf – operated by Woodside; and the Angola LNG project, led by Sonangol and Chevron. In the downstream business, a huge milestone will be the start-up of all the new plants at the Whiting refinery where we have carried out a massive, multibillion dollar modernisation programme, including providing capacity to process heavy oil from Canada.

What message have you been giving investors on the road-shows? What are you hearing from them?

We've been explaining that short-term profits have been affected by our \$38 billion of divestments and all the groundwork we've been doing to get BP into good shape for the future. Investors have been asking about the likely financial implications of what has been happening in Russia and the US. They also want to see real financial momentum with renewed growth in cash flow. We need to deliver, but the groundwork has to come first – reinforcing safety, reshaping and strengthening the portfolio and the organisation – and then the financial results will come through by 2014. Investors want us to get things right for the long term, and I think they understand the journey we are on. We have a great future if we lay the right foundations now.

What is your vision for BP's future?

I want this to be a company that delivers energy to customers and value to shareholders, safely and sustainably, decade after decade. In the past couple of years we have been working to make sure we have the foundations for that kind of long-term, quality business. That means being utterly systematic in the way we work, and getting better at driving risk out of the business. We also need a very strong portfolio. We have divested non-strategic assets and invested in our strengths – exploration, deepwater, giant fields, gas supply chains, our world-class downstream businesses, technology and relationships. I am sure that this approach will enable BP to be as successful in the 21st century as it was in the 20th. ■

“WE WILL ALWAYS REMEMBER THEM IN BP”



On Wednesday 16 January 2013, the In Amenas joint venture gas plant in Algeria was assaulted by heavily armed attackers. This was followed by action by the Algerian military to regain control of the site. A total of 40 people from 10 countries and 12 organisations (see panel) were killed in the attack, four of them members of BP's staff – Carlos Estrada, Gordon Rowan, Sebastian John and Stephen Green (see page 12 for tributes). The other 14 BP employees on site at the time escaped.

In Amenas is a remote desert site owned and managed by a joint venture consisting of the BP, Statoil and Sonatrach, the Algerian state oil and gas company. It has a large workforce – anywhere between 500-700 people – and BP generally had around 60 staff working in Algeria on any day.

The complex nature of the attack made it difficult to gather reliable information, but as the first details of the assault became clear BP mobilised its full emergency response system, placing teams on the ground in Algeria and the UK to liaise with the other companies and parties involved. As well as these incident management and business support teams, BP's most senior executives formed a third tier of response with board members, chairman Carl Henric Svanberg and chief executive Bob Dudley all involved. BP was in regular contact with the UK government, other relevant governments and its colleagues in Statoil, Sonatrach, the Algerian energy ministry and the companies that are contractors to the joint venture. BP and its partners also provided practical support for the families of those caught up in the attack, particularly those who lost loved ones.

As the situation in the desert developed, BP worked rapidly to bring people out of the country and over the course of two days around 400 people were evacuated on 36 flights. It also put in place the medical support that could be needed at the site and for those staff returning to

the UK. This included extensive medevac capability – working in close coordination with suppliers, Statoil and the UK and Norwegian governments. In total, around 300 people across the company helped support BP's response.

On Monday 11 March 2013, BP held a memorial service at its Sunbury-on-Thames site for all those who lost their lives. The service was attended by staff and families of the four BP men who lost their lives. Around 8,000 other members of staff joined the memorial via webcast.

During his tribute, Dudley said: "BP is a little like a very large international, multi-cultural family. Across that community there has been a shared sense of loss and shock at what happened in January. Those who lost their lives were part of that family and I hope that those who were close to them equally feel part of it, too. There will always be a welcome for you in BP."

In addition, BP set up physical and digital books of condolence, with messages flooding in from across the company. Dudley said: "It shows that no matter where you come from, everyone can understand what it means to lose a husband or a father or a son."

BP has also established the BP In Amenas Charitable Fund for staff in all locations. Donations will be matched by the BP Foundation and the proceeds will be divided equally among causes specially chosen by Sebastian, Carlos, Stephen and Gordon's families.

IN MEMORY

As well as the four BP employees, 36 people from partner companies and contractors lost their lives, and all were remembered at the memorial service held by BP on 11 March. Speaking at the memorial, Bob Dudley said: "[Many] died literally doing their jobs because they were employed to protect the workers at the site. They gave their lives to save others in extraordinary acts of bravery. We will always remember them in BP along with all of those who died at In Amenas."

Sebastian John BP British

Carlos Estrada BP Colombian

Stephen Green BP British

Gordon Rowan BP American

Fred Buttaccio Roevin & BP retiree American

German de Guzman ABB Filipino

Paul Morgan AFMC British

Yann Desjeux AFMC French

Garry Samuel Barlow IOTA British

Tadanori Aratani JGC Japanese

Wensler Garpino Caringal JGC Filipino

Chong Chung Ngen JGC Malaysian

Jon Jon Morgado Falogme JGC Filipino

Rokuro Fuchida JGC Japanese

Yasuji Goto JGC Japanese

Silvino Jr Robeniol Imanil JGC Filipino

Fumihito Ito JGC Japanese

Keisuke Kawabata JGC Japanese

Satoshi Kiyama JGC Japanese

Cesar Araos Lалан JGC Filipino

Julius Ceasar Caluza Madrid JGC Filipino

Hidemi Maekawa JGC Japanese

Bunshiro Naito JGC Japanese

Hiroaki Ogata JGC Japanese

Tan Ping Wee JGC Malaysian

Takashi Yamada JGC Japanese

Raffy Edubane Moody International Filipino

Illuminado Santiago ORION Filipino

Carson John Bilsland ORION British

Ionut Tiberiu Costache Profile Middle East Romanian

Angelito Jr Manaois Roevin Filipino

Mihail Marius Bucur Roevin Romanian

Victor Lovelady Roevin American

Kenneth Hugh Whiteside Roevin British

Tore Bech STATOIL Norwegian

Hans Bjone STATOIL Norwegian

Thomas Snekkevik STATOIL Norwegian

Alf Vik STATOIL Norwegian

Victor Sneberg STATOIL Norwegian

Mohamed Lamine Lahmar Sonatrach Algerian



Carlos Estrada

“Everyone loved Carlos, he was full of energy, passionate about what he did, incredibly smart and liked by everyone he met. He was a huge talent for the future. He was also a great personal friend of mine and of many others.”

Felipe Posada

Father of two young daughters – Isabela and Luciana – and husband to Claudia, Carlos Estrada was known to many people in BP thanks to a 17-year career with the company.

Carlos joined BP Colombia in 1995 as a geophysicist. When not working he enjoyed playing football and was part of a BP Colombia team. Fergus Addison was his boss at the time: “What struck me first in his interview was his intellect. He was very sharp, thoughtful and articulate.”

Having joined BP, it quickly became clear that Carlos was also highly capable. Within a decade, he moved from Colombia to take up a role in Angola, followed by a period in Egypt. From there he came to London to work as executive assistant to Andy Inglis and then another assignment in Egypt to work for Fergus a second time on the West Nile Delta project, before his most recent role as vice president OBO, gas projects.

Anyone who came into contact with Carlos met a positive, friendly man with a natural flair for connecting people. Fergus says: “I think Carlos’s greatest attribute was his ability to connect with almost everyone he met. He had a natural humility that crossed cultures and nationalities. I spoke with former Egypt colleagues who still remember with great fondness evenings sat in the harbour smoking shisha pipes.”

It is this quality, among others, that helped Carlos become an inspirational leader with a talent for managing multi-disciplinary teams. “He was always able to bring people with him in a conversation

and ensure everyone was connected with what was going on. And he did it in a very easy, calm manner.”

Carlos loved working for BP and very much saw his future continuing with the company. He had deep technical experience in exploration, appraisal and development operations, and was an expert in subsurface disciplines and project activities.

Carlos’s passion for his subject matter and easy smile made him very approachable. He always made time to help others better understand a challenge or an issue and was instrumental in helping many colleagues develop their own careers in BP.

BP North Africa president, and friend of Carlos, Felipe Posada says: “Everyone loved Carlos, he was full of energy, passionate about what he did, incredibly smart and liked by everyone he met. He was a huge talent for the future. He was also a great personal friend of mine and of many others. I will greatly miss him as I know will very many people in BP.”



Gordon Rowan

“Gordon loved his work and the people he worked with. He made many friends over the years, many of whom have reached out to us during this sad time. We can’t tell you how much it means to us to know he was loved and respected outside of his home as well.”

Dan and Richard Rowan

Gordon Rowan, known as ‘Gordo’ or ‘Gordy’ to some of his friends, was much loved by the many people who had the good fortune to work with him during his long career.

He was known for his professionalism and his care, not only for the job but for the people around him.

He had lost his dear wife several years ago, but spoke often of his love for her and his pride at the achievements of his sons Dan and Richard Rowan. He was grandpa to 18-month old granddaughter Leah, brother to Gerry and John and uncle to his nieces Samantha and Jessica.

In a tribute to their father, his sons wrote to BP saying: “Gordon loved his work and the people he worked with. He made many friends over the years, many of whom have reached out to us during this sad time. We can’t tell you how much it means to us to know he was loved and respected outside of his home as well. He will truly be missed.”

Colleagues remember a fun and caring man with a great sense of humour and an infectious enthusiasm. He was also incredibly gentle. Colleague George Griesedieck said when protecting his team he was like a ‘mother bear’. “What made him so special was his ability to relate to people so well – many people felt close to him,” he says.

“Every morning we would make coffee at 6am and solve the world’s problems. He was a wonderful guy and sorely missed.”

Gordon’s qualities made him incredibly

popular. His funeral service was attended by many people, some of whom had made the trip from as far afield as Austria, Germany and Algeria, with condolences sent from colleagues of all nationalities. Colleague Jim Crary says: “He was a great ambassador for BP in Algeria.”

The 58-year old golfer had been planning to retire to the small town of Sumpter, Baker County, Oregon where he could enjoy the mountains and rivers and fishing with his brother Gerry.

After graduating from high school in Oregon in 1973, Gordon joined the US Army, completing four years of active service and eight years of military reserve duty.

He resumed his studies after the Army and began a long career in the oil and gas industry. He had a Bachelor of Science in Petroleum Engineering from the University of Oklahoma in 1985 and joined ARCO in 1986. He has held a variety of positions in ARCO, and then BP after the companies merged, primarily in field production supervision, well work and project management. Since 1996, he rotated into Algeria on various assignments.

Many who remember Gordon say he simply stood out because of the care and respect he gave to others. People were drawn to Gordon and his qualities inspired many to follow his lead.



Sebastian John

Twenty-six-year-old Sebastian John was married to Nicola and had an eight-month-old son named Ralph.

Sebastian joined BP in 2012 as a Challenge hire civil and structural engineer and made an early impression on those who worked with him. He always greeted colleagues with a big smile, even on a Monday morning, according to his co-workers Andy McEwan and Charmaine Greig. “Sebastian was one of those people you met – maybe just for a moment – but he just made a lasting impression on you.”

Sebastian was first and foremost a family man and everything he worked for was in support of them,” says Charmaine. “He was someone who knew exactly what he wanted to do. Whether that was in life – such as meeting the girl of his dreams and knowing she was who he wanted to spend the rest of his life with or career wise, when he would set his goal and go after it.”

He had a passion for knowledge and would regularly seek advice from colleagues in order to develop his own skills, over and above the requirements of his job. Andy says: “If Sebastian wasn’t meeting someone to talk ‘career’, he had his nose in technical documents or diagrams so he could get up to speed and have discussions with the senior engineers and know exactly what the content was.”

Sebastian was a Norwich City fan – an

English football club known affectionately as the Canaries for their yellow kit – and he attended their Football Association (FA) Cup victory match over Peterborough United just a few days before he flew to Algeria. The club honoured Sebastian during a mid-week match against Tottenham Hotspur with a scoreboard message, public announcement and a mention in the match programme.

Sebastian attended Norwich School between 1997 and 2004, where he won the prestigious Arkwright Engineering Scholarship – a national award for promising work in design and technology. He also represented his school at rugby. Sport continued to play a role in Sebastian’s life and he enjoyed road cycling, golf, snooker and basketball.

He completed his studies at Loughborough University where he gained a first class honours degree in Civil Engineering. Before joining BP, he worked at Ove Arup in Solihull, West Midlands, and last year was named President’s Apprentice by the Institution of Civil Engineers, one of only six in the country.

Andy and Charmaine agree that: “Sebastian had a very dry sense of humour that would quite often make us burst into fits of laughter which brought a spark and energy to our region. There are no words that can describe how much Sebastian will be missed by us, his friends and colleagues.”

“Sebastian was one of those people you met – maybe just for a moment – but he just made a lasting impression on you. Sebastian was first and foremost a family man and everything he worked for was in support of them.”

Andy McEwan and Charmaine Greig



Stephen (Steve) Green

Stephen (Steve) Green was an HSSE specialist with more than 23 years' experience working on major international projects.

In his spare time, Steve, 47, was a musician who played guitar to an advanced level and enjoyed singing. He also enjoyed going to the gym and was studying for a masters in oil and gas engineering at Robert Gordon University, Aberdeen. His colleagues remember a kind, funny, intelligent and articulate man who worked well with everyone he met.

Steve had an international HSE career that included involvement in the management of the \$11 billion Kashagan one shore phase 1 project in Kazakhstan for Agip KCO.

Steve was recruited onto the In Amenas project in an agency capacity in 2011 and then transferred to the In Amenas site for the construction stage of the project in April 2012. His attention to detail and high standards stood out and he was later

recruited into BP in August 2012.

Colleagues remember his insistence on high standards which meant he would not only deal with the HSE representative in the site offices but would also get 'boots on' and go out to the plant to check work first-hand through inspection and talking to the construction team.

BP colleague Colin Browning says: "He was a diligent man who believed in looking after the people around him and doing what was right. He pushed for high standards of safety and our contractors respected him for his tough, but fair stance." His dedication to safety issues extended beyond BP and he

was a chartered member of the Institution of Occupational Health and Safety.

Agip KCO colleague Joe Hughes says: "Steve was a complete professional. I greatly admired his dedication, tenacity, breadth-of-knowledge and analytical capabilities. I am convinced that there are many people walking around right now who owe their lives, unknowingly, to this man and to the team that he influenced.

"Out of work, Steve had a great sense of fun. He was a bit of a dapper dresser and he was a relaxed and happy individual. It was a pleasure to be in his company. He is greatly missed."

"Steve was a complete professional. I greatly admired his dedication, tenacity, breadth-of-knowledge and analytical capabilities."

Joe Hughes



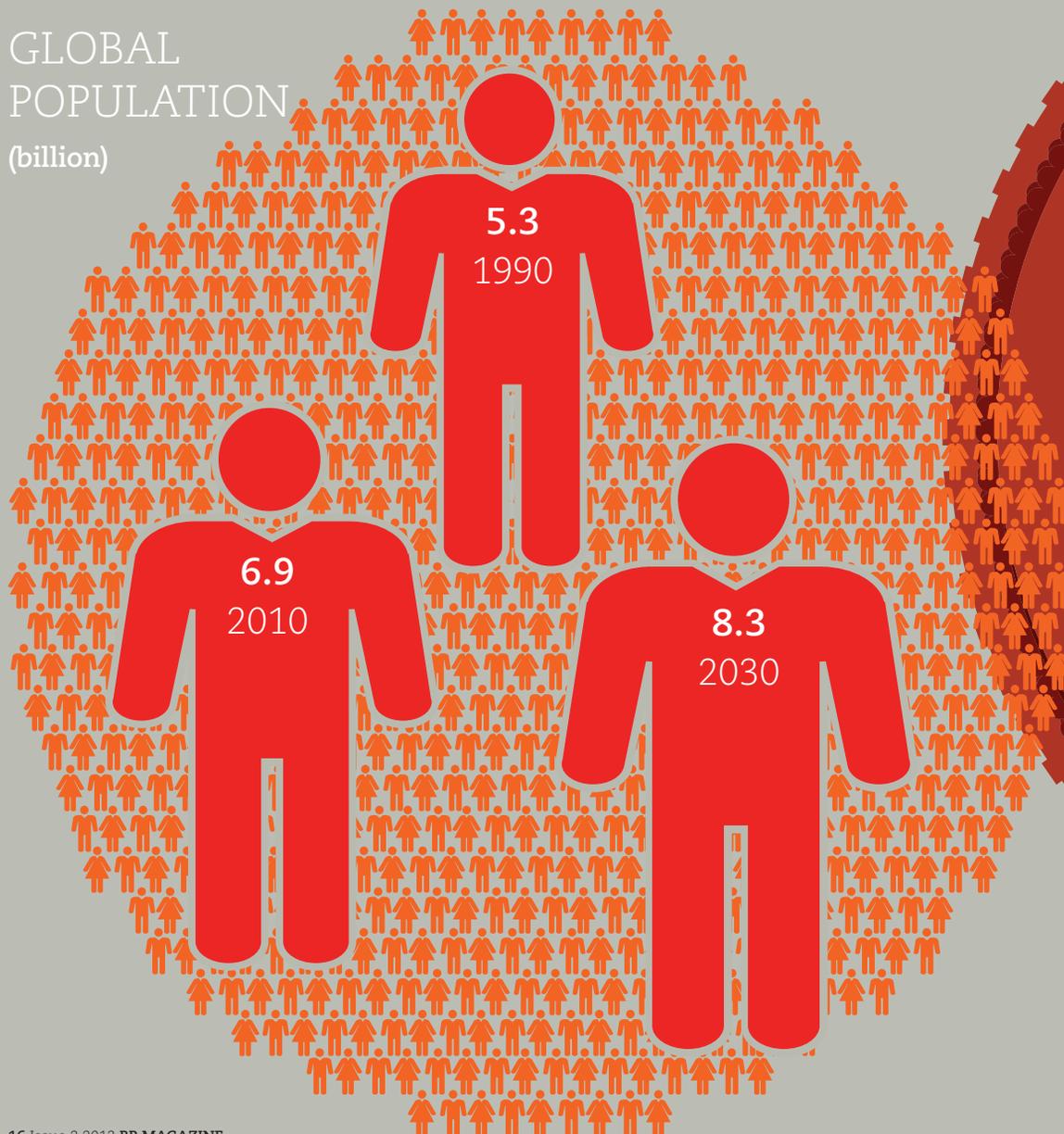
Fred Buttaccio

Among those who died at In Amenas was Fred Buttaccio. A contractor for Roevin, Fred previously worked for BP and its heritage companies Vico/ARCO, joining BP during the ARCO merger in June 2000. He worked in Indonesia where his family spent many happy years and eventually retired from BP in March 2010. Originally from Katy, Texas, Fred was well known throughout BP, particularly in the Asia-Pacific region and colleagues remember him as a family man. He was described by one as the 'strong patriarch of the family'. He was married to Rene and father to Freddie and Angela. Fred was also known for his love of golf.

The future of energy

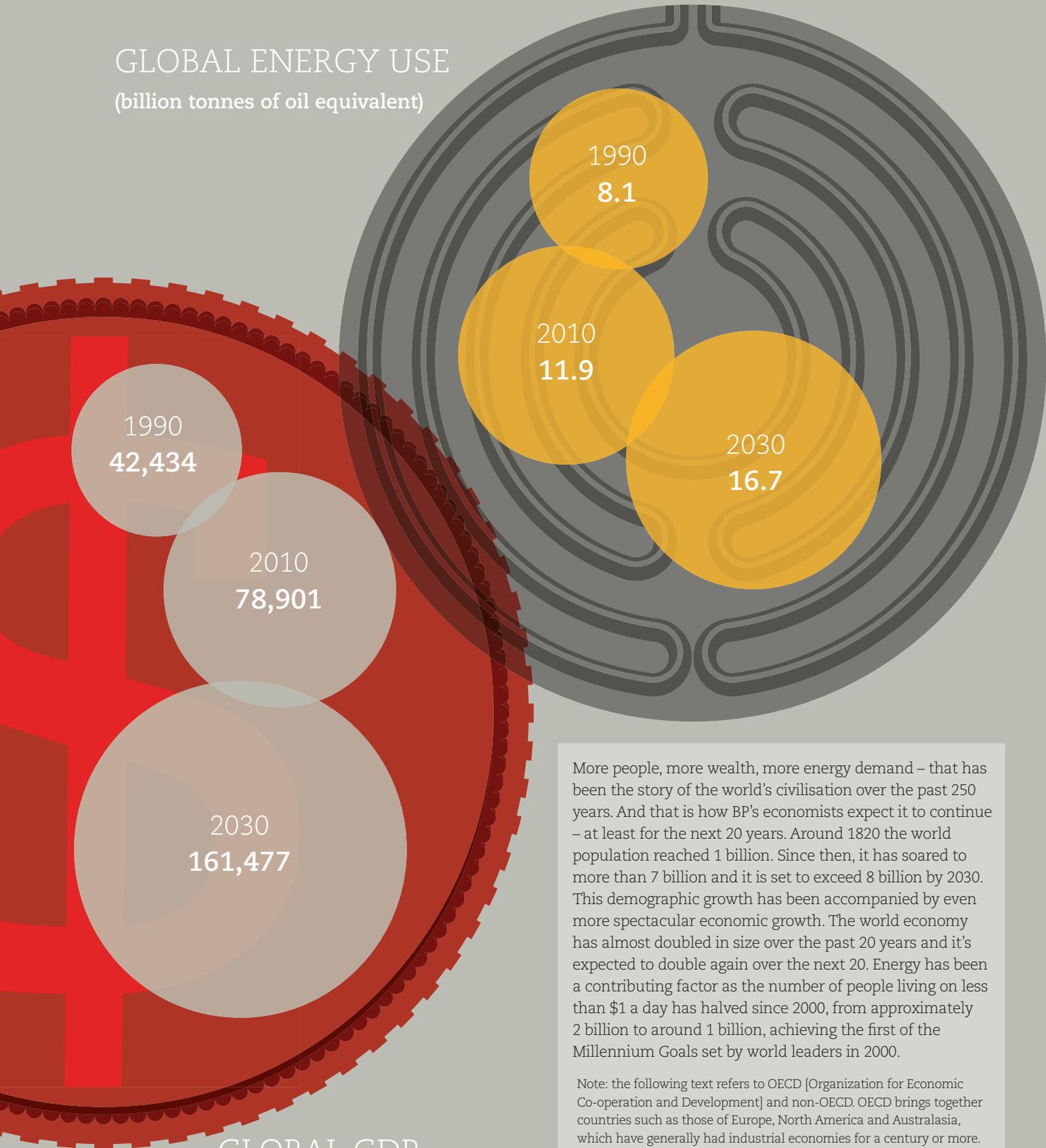
How much more energy will the world need in the future? Are there enough energy resources to meet growing demand? What role will different forms of energy play? And which countries will produce and consume the most energy? These are the kinds of questions BP's economics team sets out to answer in the company's annual *Energy Outlook* publication. Here, we review some of the highlights of the 2013 edition and ask BP's chief economist Christof Rühl for his thoughts.

GLOBAL POPULATION (billion)



GLOBAL ENERGY USE

(billion tonnes of oil equivalent)



GLOBAL GDP

(\$ billion adjusted to 2011 prices)

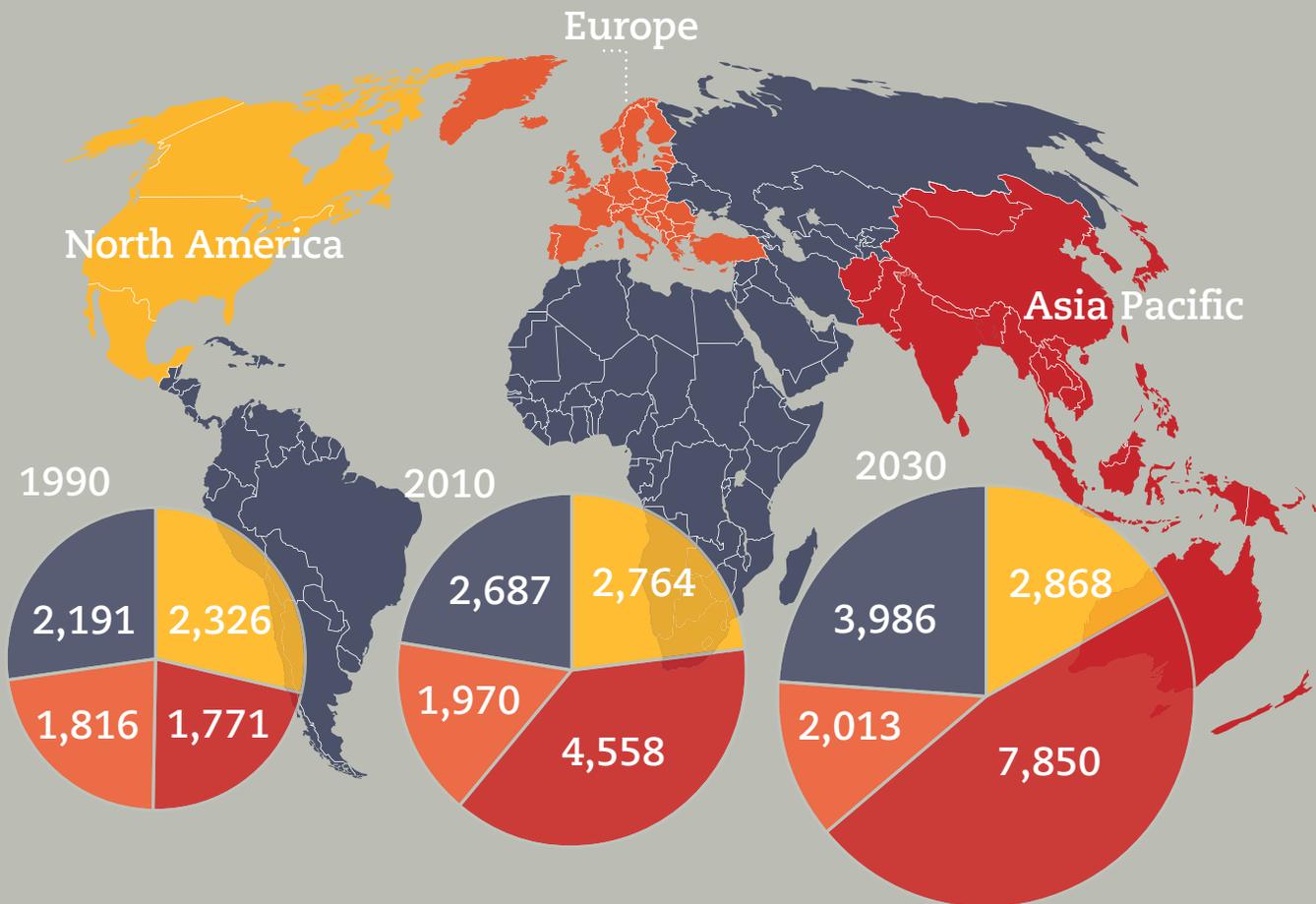
More people, more wealth, more energy demand – that has been the story of the world’s civilisation over the past 250 years. And that is how BP’s economists expect it to continue – at least for the next 20 years. Around 1820 the world population reached 1 billion. Since then, it has soared to more than 7 billion and it is set to exceed 8 billion by 2030. This demographic growth has been accompanied by even more spectacular economic growth. The world economy has almost doubled in size over the past 20 years and it’s expected to double again over the next 20. Energy has been a contributing factor as the number of people living on less than \$1 a day has halved since 2000, from approximately 2 billion to around 1 billion, achieving the first of the Millennium Goals set by world leaders in 2000.

Note: the following text refers to OECD [Organization for Economic Co-operation and Development] and non-OECD. OECD brings together countries such as those of Europe, North America and Australasia, which have generally had industrial economies for a century or more. Non-OECD stands for developing or emerging market economies. Growth rates quoted in text refer to the period 2011-2030.

Demand – who is using the

GEOGRAPHY

(million tonnes of oil equivalent)



As populations and economies grow, energy consumption is expected to rise by around 36% – a rate of around 1.6% a year. Emerging economies are set to account for more than 90% of that growth, over half coming from China and India alone, while demand from OECD countries is flattening out.

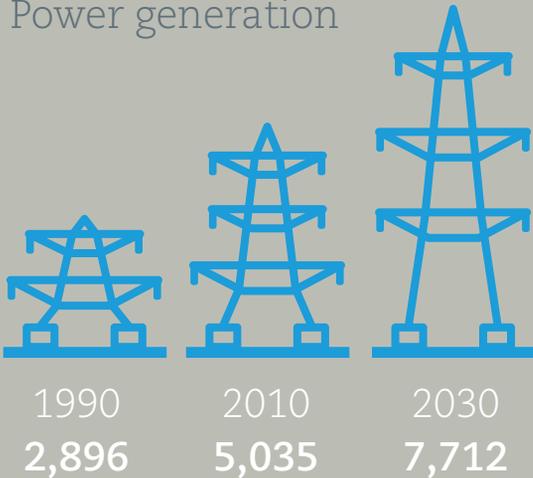
Christof Rühl says: “This projection is what we think is most likely to happen, not necessarily what we would most like to happen. It is based on current and anticipated trends in energy supply and demand, as well as what we see as the most likely path of policy and technological development. Things may not turn out this way if unexpected developments or game-changing technologies come along. As economies develop, their energy intensity falls – that is the amount of energy you need to generate every unit of income. For example, in the OECD countries, where ownership of energy-using appliances is already high, vehicles continue to cover more miles for every litre of fuel, homes will still become better insulated and industrial processes continue to become more energy efficient, often propelled by government regulations. Together with relatively slow population and economic growth, this explains why there already is so little growth in energy demand now coming from the industrialised countries.”

energy?

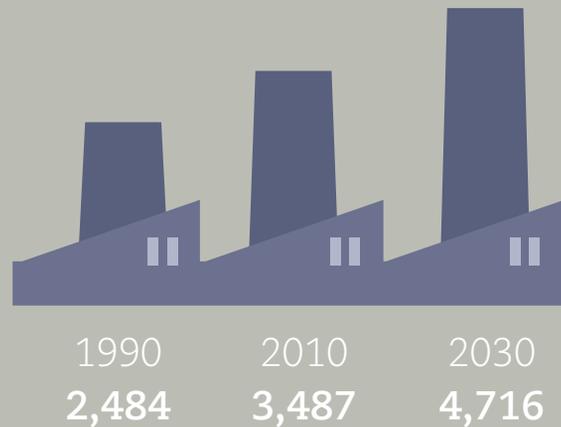
CONSUMPTION OF PRIMARY ENERGY BY SECTOR

(million tonnes of oil equivalent)

Power generation



Industry



Other



Christof Rühl says: “Electricity is the biggest growth area, with power generation expected to account for almost 60% of the rise in energy consumption to 2030, followed by energy used in industry. This, first and foremost, shows the scale of energy needed in emerging economies as they continue to build their industrial sectors and cities. Transport accounts for much less growth – around 10% – with vehicles becoming more efficient. BP expects the efficiency of the internal combustion engine to double by 2030, largely driven by continued hybridisation of the car fleet.”

Transport



Supply – reserves continue

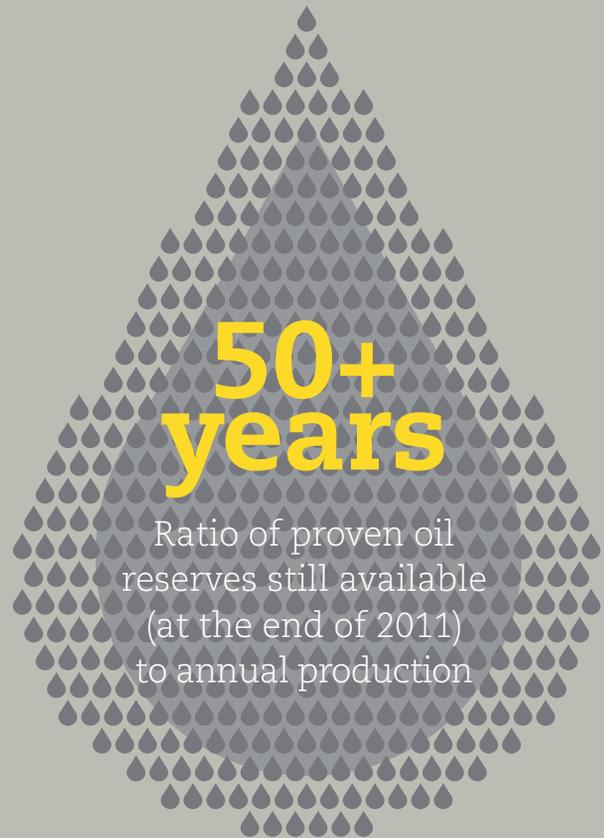
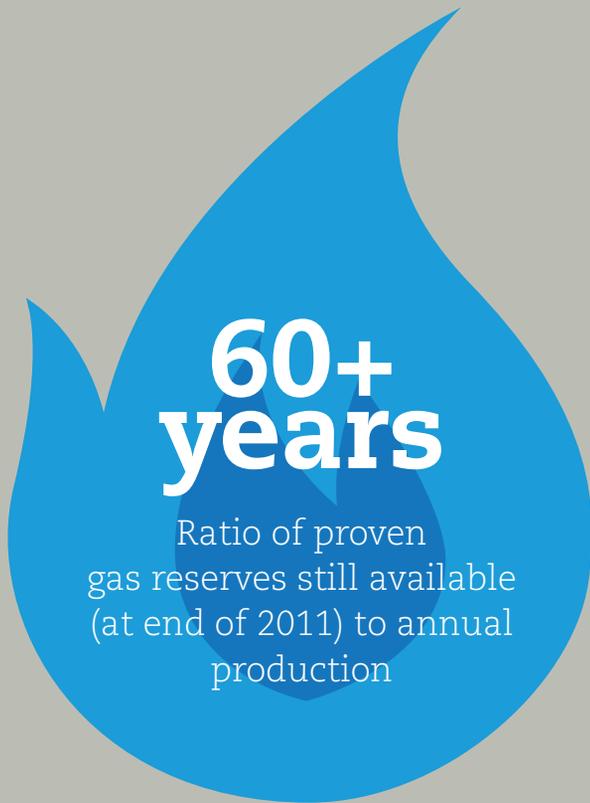
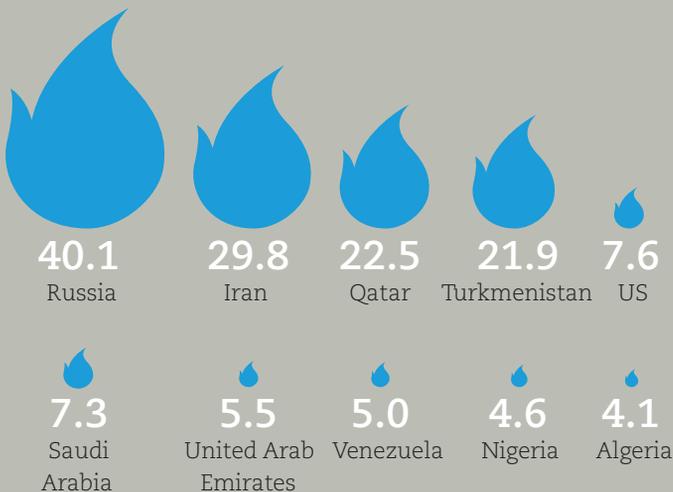
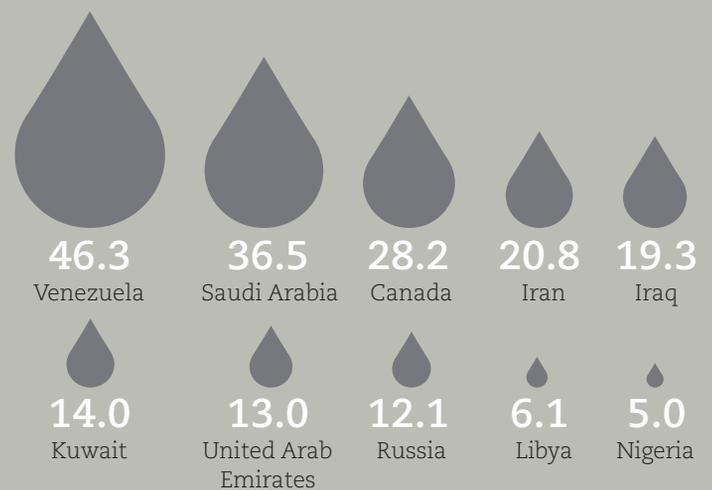


Table of leaders in oil and gas reserves in 2011:

Gas (billion tonnes of oil equivalent):



Oil (billion tonnes of oil equivalent):



Christof Rühl says: “Given the scale of demand, a perennial question has been whether the world has enough supply to meet it. The data collated by BP suggests it does – with the industry consistently finding more oil and gas than it produces over time. As a result, total reserves continue to go up, not down. In 1980, companies and governments collectively had proved reserves of just under 700 billion barrels of oil. Today, there are more than 1,600 billion, despite massive consumption over this period.”

to rise

TOTAL ENERGY PRODUCTION

As well as dominating the growth in use of energy, emerging economies also account for most of the growth in production:

(million tonnes of oil equivalent)

1990 Total global production: 8,217



OECD energy production: 3,442

Non-OECD: 4,775

2010 Total global production: 12,168



OECD energy production: 3,901

Non-OECD: 8,267

2030 Total global production: 16,841



OECD energy production: 4,882

Non-OECD: 11,959

Christof Rühl says: “Growth in production will be dominated by the non-OECD economies, which are likely to account for almost 80% of the increase in global production. We expect that non-OECD countries will supply 71% of global energy production in 2030, up from 58% in 1990. The dominance of the non-OECD group in growth of production is not as great as it is in consumption because several OECD countries, led by the US and others, continue to be significant producers.”

LIQUID FUEL PRODUCTION

(million barrels per day)

1990



Americas 18.9



Middle East 17.8

2000



Americas 21.4



Middle East 23.9

2010



Americas 23.2



Middle East 25.8

2020



Americas 30.5



Middle East 28.2

2030



Americas 33.9



Middle East 33.6

Christof Rühl says: “One of the most dramatic developments in the global energy landscape recently has been the renaissance of oil production in North America, largely thanks to unlocking massive reserves of ‘tight oil’ or oil contained in shale formations (see page 23). We have also seen growth in biofuels in both the US and Brazil, as well as the emergence of Canadian heavy oil. These developments mean North and South America together are set to overtake the Middle East as the world’s largest source of liquid fuels during the current decade and retain that position up to 2030 when we expect the Middle East to catch up again. The speed of these developments, especially in the US and Canada would have been unthinkable only a few years ago.”

Fuel by fuel

OIL

Expected annual growth rate of 0.8%, the slowest of all fuels. However, the world will still need 16 million more barrels every day by 2030.

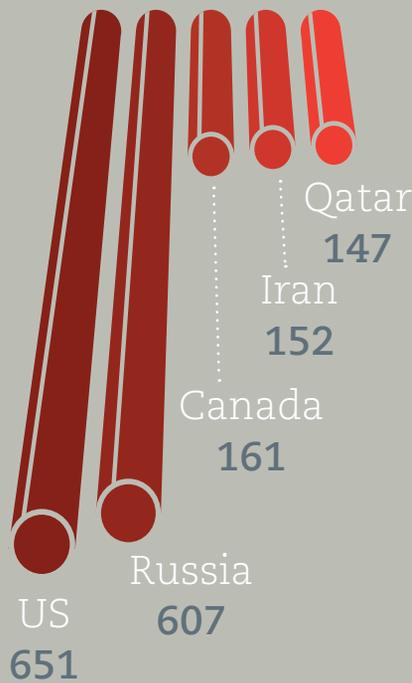
Top five oil producers in 2011 (million barrels of oil per day):



NATURAL GAS

Expected annual growth rate of 2%, making it the fastest growing fossil fuel. Natural gas typically produces half the carbon emissions of coal when used to generate electricity.

Top five gas producers (billion cubic metres) in 2011:



COAL

Expected annual growth rate of 1.2% with two-thirds of the world's coal used in the Asia-Pacific region – half in China alone. Almost half the world's energy-related carbon dioxide emissions come from coal.

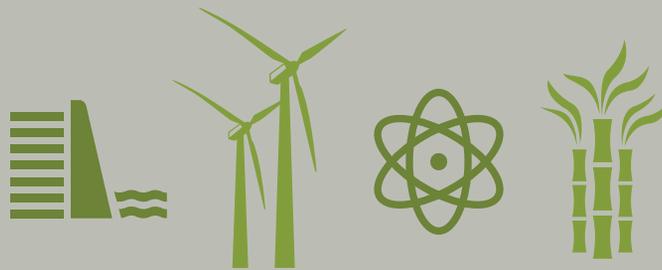
Top five coal producers (million tonnes of oil equivalent) in 2011:



Christof Rühl says: “Much of the growth will come from unconventional oil such as tight oil found in shale rock formations and heavy oil found in Canada and South America. Oil production from deepwater reservoirs is also expected to increase, while enhanced oil recovery techniques will continue to maximise production at mature fields. As the US shale boom continues and OPEC members rein in production, it is likely that US total liquids production will surpass that of Saudi Arabia and Russia very soon. Natural gas supply is growing rapidly as it is increasingly used for generating power as well as in homes and industrial plants. Traditionally, gas consumption was limited to areas pipelines could reach, but it has become technically feasible and increasingly worthwhile to transport LNG over long distances from suppliers to consumers by ship. This connects hitherto segmented markets, but there is still no global market or global price for gas. Coal consumption increased by only 7% over the 1990s, but then leapt by almost 50% in the 2000-2010 decade. BP expects it to grow a further 25% in the current decade and then growth should slow, with a rise of around 5% in the decade to 2030 as China completes its transition to being a modern industrial economy and the service sector catches up with industry.”

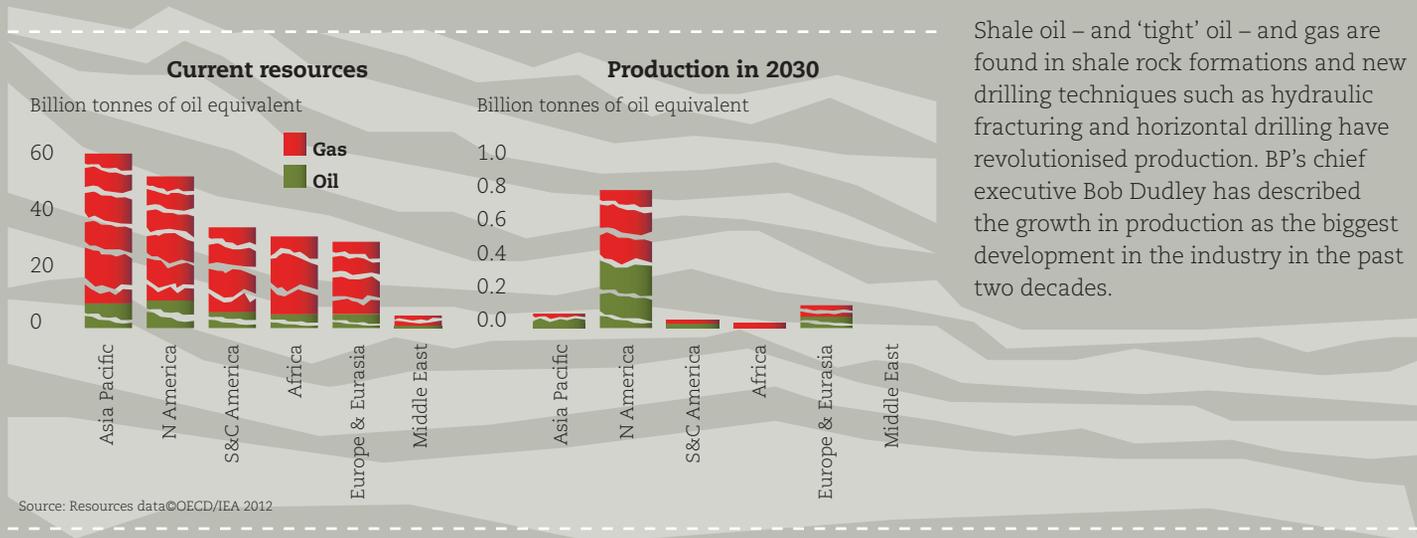
NON-FOSSIL FUELS

The volume of energy produced by non-fossil fuels such as nuclear, hydroelectricity, biofuels, wind – is expected to almost double by 2030. However, they start from a low base – around 13% of all energy – and will still account for less than 20% of the total by 2030, unless much stronger than expected policy support is put in place or disruptive technologies are developed.



Christof Rühl says: “Nuclear power is expected to grow strongly in China, India and Russia where there are ambitious expansion programmes. Renewable energy production is currently growing most in Europe and North America but a huge jump is expected in Asia in the next decade where China is already the world’s largest user of wind energy and largest producer of solar panels. Renewable energy is growing fast but in large part still due to government subsidies and regulations – and the problem is there is only so far these can go when government budgets are stretched. The efficiency of renewable energy still needs to improve to make high growth sustainable.”

SHALE GAS AND TIGHT OIL



Shale oil – and ‘tight’ oil – and gas are found in shale rock formations and new drilling techniques such as hydraulic fracturing and horizontal drilling have revolutionised production. BP’s chief executive Bob Dudley has described the growth in production as the biggest development in the industry in the past two decades.

Christof Rühl says: “In the US, shale gas production is expected to grow 4.5% per annum to 2030, making the country self-sufficient in gas and a net exporter. In the US we have seen a combination of ‘above ground’ factors come together, such as no barriers to entry, a supportive policy framework and widespread private ownership of mineral rights which have, over time, created a very competitive industry with lots of expert service companies, the world’s largest fleet of onshore rigs – around 1,800 – plus billions of tonnes of resources below the ground. Shale gas production is not expected to grow as fast in Europe and Asia because they do not currently have the same combination of ‘above ground’ factors as the US. China is staging a major programme to increase shale production. However, because of the fast growth of demand in Asia, and the decline in domestic production in Europe, both regions are expected to need growing net imports of gas.”

Energy intensity and carbon

WEALTH, ENERGY AND THE ENVIRONMENT

Over the past 40 years, the world's economy has grown by a factor of 3.6, while its energy use has only grown by a factor of 2.4. However, carbon dioxide emissions have almost kept pace with energy use – also rising to almost 2.2 times their 1970 level.

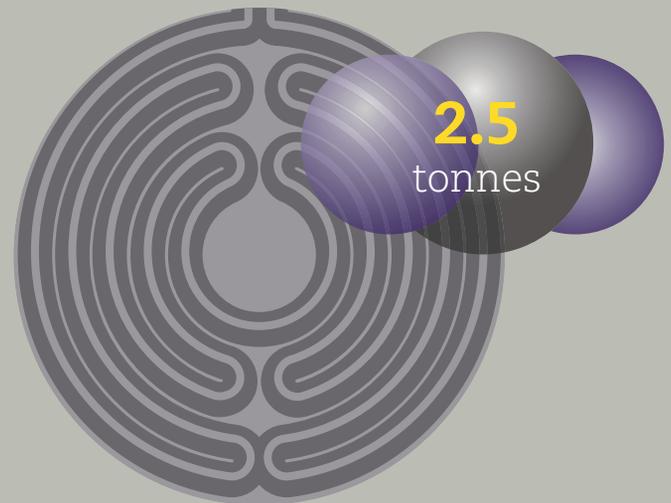
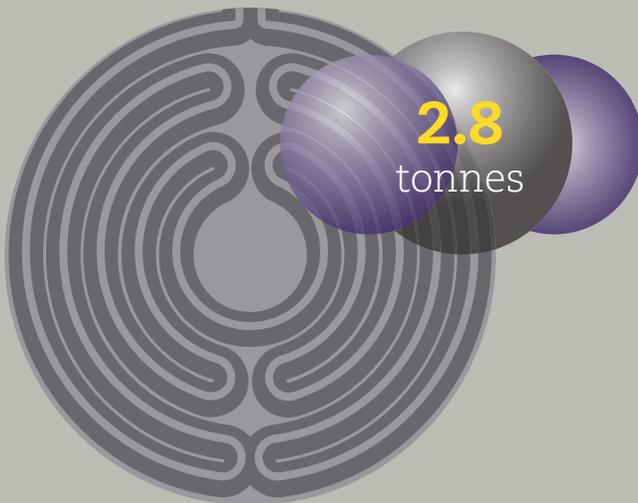
1970

2010

Tonnes of energy (oil equivalent) used for every \$1 million of world income

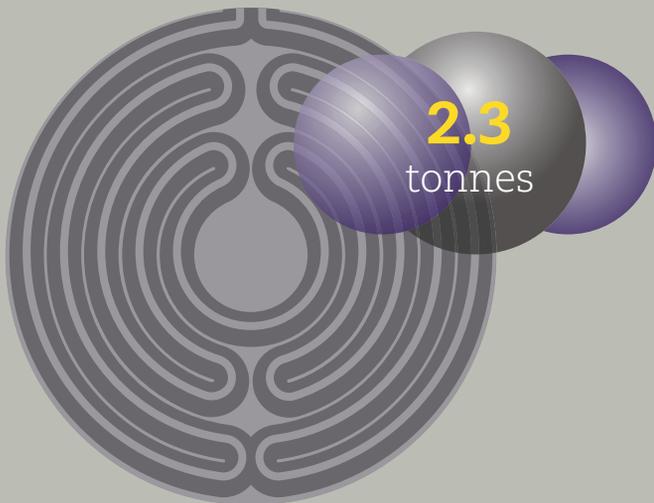


Tonnes of carbon dioxide emitted for every tonne of oil equivalent energy



intensity

2030



Christof Rühl says: “Over time, we are seeing a continuing fall in the energy intensity of the global economy – the amount of energy we use to create each unit of GDP. This is because people and businesses are learning ways to save energy – driving more miles to the gallon or recycling energy in industrial processes, for example. This saves money and also helps limit carbon emissions – although they still grow in total because aggregate energy use is increasing. As well as energy-saving, the other way to limit carbon emissions is energy-switching – which shows up in the data through the metric of ‘carbon intensity’ – the amount of carbon emitted for each unit of energy. Carbon intensity gives a very different picture from energy intensity – it has hardly fallen at all in 40 years. However, the same market forces that drive energy efficiency and, therefore, decoupled the growth in energy consumption from the growth in wealth could potentially decouple the growth in carbon from the growth in energy use. So, this is why BP and others argue for a widely applied price on carbon. This not only encourages people to save energy but to make the energy that we do use less carbon intensive.

To see the full Energy Outlook 2030 visit bp.com/reportsandpublications The BP Statistical Review of World Energy 2013 will be published 12 June 2013.

SATISFYING CURIOSITY

‘Out of this world’ is how a lot of companies would like their products described. But BP’s Castrol lubricants team can make that claim quite literally. Its greases have not only been used in spacecraft and lunar modules but are also now keeping the Mars Curiosity rover moving in its quest to learn more about the ‘Red Planet’ than scientists have ever known.

In situ: self-portrait of the Curiosity rover, combining dozens of exposures taken by the rover’s Mars Hand Lens Imager (MAHLI) during the 177th Martian day, or sol. The rover is positioned at a patch of flat outcrop called John Klein, which was selected as the site for the first rock-drilling activities by Curiosity. The rover’s robotic arm is not visible in the mosaic.



Castrol's lubricants are being used in one of the most demanding journeys any vehicle has ever made. The US National Aeronautics and Space Administration (NASA) launched the Mars Science Laboratory spacecraft carrying the Curiosity rover from Cape Canaveral, Florida, on 26 November 2011. It landed more than eight months later, on 6 August 2012, following a 563,000,000-kilometre (350,000,000-mile) voyage. It is the agency's fourth robotic Mars rover since 1996. Its mission? To explore the enduring question of whether Mars has ever had conditions hospitable to life, and to prepare for potential future human exploration.

With its ability to scale obstacles up to 65 centimetres (25 inches) high, cover up to 200 metres (650 feet) a day, take pictures, drill into Martian rock, collect samples and brush away dust, Curiosity is a mobile Martian laboratory. The \$2.5 billion mission is expected to last 23 months. As it is impossible to recall something from space for mechanical tinkering should it go wrong, smooth operation is vital to success. That is why a small group of long-standing, high-performance lubricants manufactured by Castrol is playing a crucial part in the success of this mission.

The rover has a vast number of moving parts, from wheels and probes to articulated brushes, and no fewer than 17 cameras. It is about the size of a car and its moving parts require lubrication to guard against friction. However, lubricating for operations in space is a world away from putting oil in your engine. The lack of convective heat transfer in the space vacuum means temperatures and temperature gradients are more extreme



than those experienced on Earth. Scientific instruments on Earth-orbiting spacecraft that can operate at normal room temperature must be able to survive many years in the vacuum without any maintenance. This means lubricants that can withstand the unearthly temperature variations, cope with the dust and have the required longevity are crucial to avoiding mechanical failure.

Braycote 601 EF, made by Castrol at its laboratories in Warminster, Pennsylvania, US, has a long heritage with NASA, having been used frequently since the start of space exploration back in the 1960s. Originally developed for military use and derived from a chemical called perfluorinated polyether, Braycote was acquired by Castrol in the mid-1980s. Sister products include Braycote 600 EF, 602 EF and 815 Z, all of them used to prevent the sort of friction that could mean catastrophic and expensive failure of a mission.

“If you have friction, you have wear, and if those moving parts wear down, then they stop operating the way in which they are supposed to and things will grind to a halt,” says Keith Campbell, business development manager for Castrol Industrial Lubricants and Services. “You have got to eliminate friction, or at least reduce it so you don’t have wear, and that is what these lubricants do.”

What makes a lubricant successful in space is the ability to adapt to dramatic swings in temperature without giving off vapours, a process called outgassing. These vapours can result in the loss of all the oil in the lubricant and lead to reduced performance, as well as condensation on nearby surfaces and possible contamination of the rover’s many sensitive instruments or the surrounding environment.

Braycote is formulated to perform in temperatures ranging from -80°C (-112°F) to 204°C (400°F). The products have been used in the Apollo moon missions, the Hubble space telescope, on numerous satellites, the »

Final frontier: (from far left) members of the Mars Science Laboratory/Curiosity team test an engineering model of Curiosity in the Dumont Dunes near Baker, California; an image taken by NASA’s Hubble space telescope released in 2010 to celebrate the 20th anniversary of the telescope’s launch. The pillar of dust and gas is three light years’ tall and being eaten away by the brilliant light of nearby bright stars. It is located within a stellar nursery called the Carina Nebula, located 7,500 light years away from Earth; and the International Space Station photographed by a crew member on the space shuttle Endeavour after the station and shuttle began their post-undocking relative separation, February 2010.



“You have got to eliminate friction, or at least reduce it so you don’t have wear, and that is what these lubricants do.”

Keith Campbell

International Space Station (ISS), previous Mars rovers and on the majority of the spacesuits made for NASA and other space agencies. Many of the suits used are made by Massachusetts-headquartered David Clark Company, and its subsidiary Air-Lock Inc, which manufactures the hard parts of spacesuits, such as clips and connectors, and used a Braycote product to lubricate all the moving parts in the suit worn by record-breaking Austrian space jumper Felix Baumgartner in October 2012.

Braycote 601 EF’s ability to drop well below its operating temperature, be brought back up and still work without adverse effects on its ability to lubricate, means it has proven its suitability many times over. Now, the product is enabling Curiosity to remain on Mars for the required period of time to undertake a whole range of scientific experiments.

“If the lubricant does not do its job, Curiosity would not be able to last up there as long as it needs to,” says Campbell, who is based in California and works with NASA’s Jet Propulsion Laboratory to meet the needs of the US space programme. “We have been selling this same product line to NASA for years, and we think this product is still the best lubricant out there for being able to operate at very cold temperatures and to retain these low outgassing properties at warmer temperatures.”

Compared with lubricant volumes used in the global automotive sphere, volumes of space lubricants are tiny – it is a niche area, after all – but the grease is absolutely crucial. Braycote 600 EF and 601 EF are used in the gearboxes of all Curiosity’s powered mechanisms, including its wheel actuators (a type of motor); its mast deployment, elevation and pivot mechanism; and its robotic arm’s numerous joints. Braycote products are present in the drill mechanisms and dust-removal tool and in the scientific instruments inside Curiosity’s body, and were also vitally important in the success of various mechanisms in the rover’s descent to Mars’s surface.

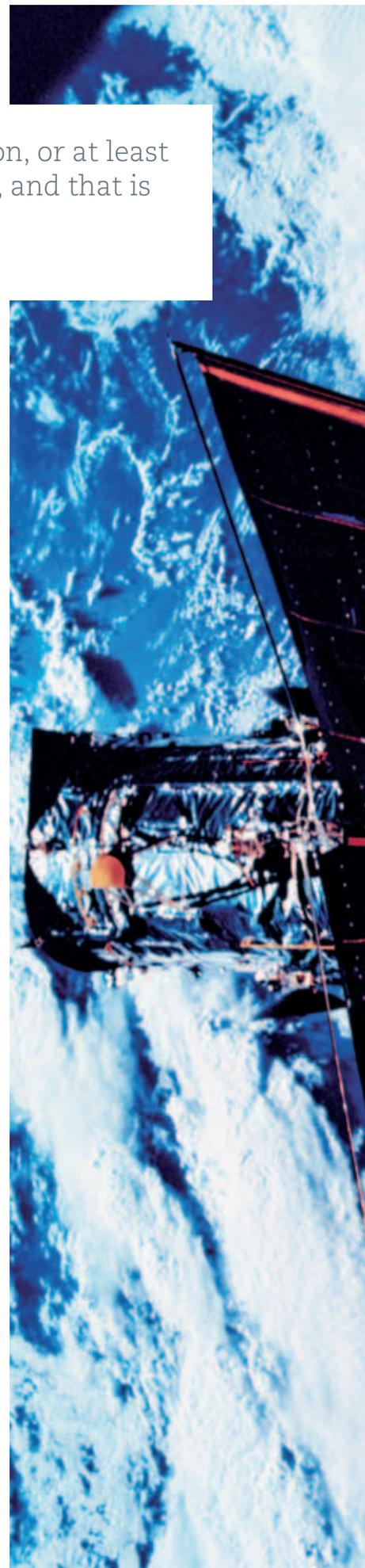
Testing of lubricants is carried out by the space agencies themselves, often in conjunction with the lubricant manufacturers. The tests are run by experts in tribology – the science and engineering behind interacting surfaces in relative motion. The trials subject the greases and oils to a variety of environmental conditions, including vacuum, different temperatures, a range of time periods, cycles and revolutions, in order to assess their suitability for space applications. Dust is a significant consideration, too, and the lubricant’s ability to cope with it is as important as the temperature capabilities.

Campbell says: “People who have already decided that they want to use our grease come to us with a lot of technical questions, such as what is the effect on it of atomic oxygen? For example, NASA was at one time looking at putting a manned space station on the moon, and we were asked about the effects of moon dust on 601 EF and whether we had any testing methodology that could be used.

“I spoke to a chemist colleague in mining and looked at tests we had done for the effects of mining operations on lubricants, and went back to NASA with that information. They incorporated that, together with their findings from tests using ground volcano dust, apparently very similar to moon dust. They let us know the dust did not cause a problem.”

High-performance lubricants such as Braycote 601 EF have applications in other environments that preclude the use of an ordinary lubricant. Castrol also sells the product line to companies with manufacturing processes that require a vacuum. Campbell cites the semi-conductor and microchip industry, electronics, flat panel display and hard disk drive manufacturing sectors as examples of such environments. Other uses include commercial aircraft and, as Campbell says, “anyone who might want to put a piece of equipment near the Arctic Circle for 10 years.”

But it is in space where Braycote really comes into its own. In 2007, the



Vital equipment: astronaut Kathryn C. Thornton, on the end of the remote manipulator system arm of the space shuttle Endeavour, hovers over equipment on the Hubble space telescope during the second space walk on the 11-day STS-61 mission, 1993. Castrol's Braycote lubricant has been used in the telescope and in many of NASA's spacesuits.



“Volumes might be small, but there are lots of things that make this product very special. It performs in a vacuum, it is non-toxic and non-reactive with oxygen and other compounds, it has low outgassing and it keeps working for years.”

Hocine Faci

product was used successfully to prevent a threatened failure of the ISS. The space station is the largest artificial satellite in Earth’s orbit and serves as a long-term cosmic platform. The power needs for the range of research activities carried out by the crew are provided by a number of solar panels that rotate to meet the sun. When a moving part started to show serious anomalies in its operational data in 2007, astronauts investigated and discovered metal shavings where they shouldn’t be and severe degradation.

Investigators detected a ‘joint drag’ problem with the bearings, a problem that threatened to lead to what the investigation called an ‘unrecoverable stall of the mechanism’. As the solar power supports the station’s life and all its activities, the problem put the whole ISS at risk, and it was Braycote 602 EF that came to the rescue,

solving a problem that the astronauts found even pure gold could not fix.

“Volumes might be small, but there are lots of things that make this product very special,” says Hocine Faci, one of Castrol Industrial’s expert technologists based in Mönchengladbach, Germany. “It performs in a vacuum, it is non-toxic and non-reactive with oxygen and other compounds, it has low outgassing and it keeps working for years.

“We are not the only company making lubricants that can be used in space, but we have seen what happened on the ISS, for example, and we believe we have the lead in space with this product.”

Although mission life requirements were just minutes or hours at the beginning of space exploration, rising to months in the 1960s and to several years now in the case of a space station, the characteristics of the lubricants have barely changed. The Braycote formulation effectively proved itself more than 40 years ago. Approving for space takes years, and doesn’t come cheap.

However, as the space industry develops, including the rise of private and space tourism sectors and developments by other space entities, such as the European Space Programme, the customer base for these high-performance products is expected to widen. According to NASA, the limiting factor in terms of spacecraft mechanism life and allowable operating temperature range is the lubricant. Lubricant stress limits, such as the 100,000 psi contact pressure limit for Braycote, are important design drivers that determine the physical size and weight of space mechanisms.

Exploration of Mars’s higher and colder latitudes would require lubricants that could withstand temperatures even more extreme than those currently experienced, whereas lubricants that could withstand higher temperatures would enable operation on the surface of planets such as Venus.

Much of this is as yet unknown territory. But what is known is that space presents environments far more hostile than those currently encountered on Mars by Curiosity and Castrol’s Braycote. Castrol is working closely with NASA and other agencies to develop other lubricants to meet the ever-increasing challenges of space exploration.

In theory, the sky is the limit. But as the Braycote line is proving, sometimes you can push those limits just a little farther. ■



Panoramic view: this panorama is a mosaic of images taken by the Mast Camera (Mastcam) on the NASA Mars Curiosity rover, while the rover was working at a site called Rocknest in October and November 2012.

UP TO THE CHALLENGE

Luh Mirah Yuliarini / Petroleum engineer

“I like a challenge,” says BP petroleum engineer Luh Mirah Yuliarini, which is lucky, since her job is full of them. Mirah is part of the Valhall base management team located onshore in Stavanger, Norway, although as seen here, her work takes her offshore as well. Valhall is a unique complex with six separate bridge-linked steel platforms for quarters, drilling, wellheads, production, water injection and a brand new combined process and hotel platform. In January 2013, BP began oil production from these new facilities, giving the field a further 40 years of life. As petroleum engineer for this challenging field, it is Mirah’s job to ensure that the safest, most efficient and environmentally sensitive methods are used to bring oil and gas to the surface. The field is now 100% powered from the shore, making direct carbon dioxide and nitrogen oxide emissions from Valhall close to zero. In addition to the bridge-linked facilities, it has three unmanned flank platforms. Two are located approximately six kilometres (four miles) from the main facilities and the third is around 13 kilometres (eight miles) away. All are remotely controlled from the Valhall field centre, except from the producing well which is uniquely controlled from the onshore control room located in Stavanger. Mirah says: “A petroleum engineer is involved in almost all stages of oil and gas evaluation, development and production. I love the challenge that the role brings and it’s important that I obtain the right data and technology in order to support the way in which we handle each stage.” ■





AUSTRALIA & NEW ZEALAND

BP has had a presence in Australia and New Zealand since 1920 and 1946 respectively. Today, its Australian business spans an array of core businesses, from upstream exploration in the Great Australian Bight to operating two strategically placed refineries. Both are home to thriving retail networks. Amanda Breen visits the region for the first of two special reports.



36 AUSTRALIA RULES

How Australia has bucked the economic challenges facing other parts of the world and the search for new reserves in the Great Australian Bight.



44 IN CONVERSATION

Former Australian minister for resources and energy Martin Ferguson spoke to *BP Magazine* while still in office about the region's energy industry.



48 A GEM OF AN IDEA

A decade since its launch, Opal fuel continues to make a difference in Aboriginal communities. Now, it's part of a broader plan to support Australia's national programme of reconciliation.



52 THE NEW NORMAL

Two years after a series of damaging earthquakes, New Zealand's third largest city is working hard to get back to normal.



New exploration: view from a helicopter over the *Ramform Sterling* seismic vessel. The vessel was used to conduct a 3D seismic survey in the Great Australian Bight.





Fact file

Land area: 7.69 million square kilometres
(2.96 million square miles)

Population: 22.6 million (UN, 2011)

Capital: Canberra

GDP (in US\$): \$1.379 trillion (2011, World Bank)

Top three exports (2011): iron ore, coal, gold

Top three imports (2011): personal travel services,
crude petroleum, refined petroleum

HIGH HOPES

Thanks to a booming resource industry, 10% growth in its economy since 2007 and strong trading links to the wider Asia-Pacific region, Australia's financial success has bucked the recent global trend. With strategically placed assets in both its upstream and downstream businesses, including new exploration in the Great Australian Bight, BP plays a significant role in supporting the country's hydrocarbon industry.

F

or most visitors to Australia, the distinctive red rock formation of Uluru – formerly known as Ayers Rock – in the Northern Territory is on the list of must-see sights. But for those venturing out to the country's west, there's another spectacle – this time man-made – that draws curious sightseers slightly off the beaten track.

As deep as Uluru is high, and with about the same circumference, the Super Pit is an enormous hole in the ground in the Western Australia (WA) city of Kalgoorlie-Boulder. This vast open-cut gold mine took shape in its early days as a series of separate underground pits. When the precious metal was discovered here in the 1890s, fortune seekers flocked to the area, some 600 kilometres (370 miles) east of the state capital, Perth. Almost a century later, one businessman started buying up leases of the so-called Golden Mile and pieced together the jigsaw in the 1980s to create a single pit.

Now under the ownership of one company, the landmark mine will eventually stretch 3.8 kilometres (2.3 miles) long by 1.35 kilometres (4,430 feet) wide and reach a depth of more than 500 metres (1,640 feet). Viewed from a distance on a panoramic platform, the colossal grooves in the Earth appear to be patrolled at a crawling pace by miniature trucks – but information panels reveal that some of these vehicles are in fact 685-tonne, two-engine beasts with 11,000-litre fuel tanks.

The immense scale of the Super Pit and its equipment might well serve as a symbol of Australia's booming resource industry as a whole. Through its mining and energy exports, the mineral-rich island continent has provided the fuel for Asia's urbanisation – and China's, in particular. Australia has reaped the benefits of its trading links with the neighbouring region; unlike other industrialised countries, it rode out the global financial crisis with a strong economy that has expanded more than 10% since 2007.

Despite a common consensus that commodity prices appeared to peak last

year, mining looks set to continue to drive the nation's economy, with projects worth billions of dollars still in development. And mines like the Super Pit around WA's Goldfields-Esperance region continue to hum with activity at all hours of the day and night.

Driving north from Kalgoorlie on a single-lane highway, bright white salt plains and a couple of emus wandering in the bush are among the few distractions to catch the eye among the expanse of red dirt outback. Those who work at two mines close to the town of Leonora, three hours from 'Kal', as the locals know it, give this road journey a miss, opting instead to fly in and out of the local airport for their shifts.

The Gwalia and King of the Hills mines are operated by St Barbara Ltd, one of Australia's largest gold producers and explorers. BP delivers fuel to these sites every other day from its oil terminal in Kalgoorlie. Three-trailer road trains loaded with 120,000 litres of product arrive at the mines' fuel farms to fill up the tanks. Just like a petrol station, drivers of different working vehicles – ranging from

passenger utes to dump trucks – pull up to refuel, before continuing their activities underground or on the surface.

As well as feeding the engines of more than 200 site vehicles that keep the mines' operations moving, diesel is also used to generate power. A dependable and timely supply is, therefore, crucial to business, according to Gwalia mine general manager Kous Kirsten. "Without fuel, nothing happens," he says. "It is critical to our operations and if we didn't have that reliable supply, we would feel it on the bottom line, instantly."

"Our demand is fairly constant and we pay close attention to how we manage our volumes to ensure that we have sufficient storage capacity. It involves staying in constant contact with BP to meet our needs." On average, the two mines consume some 14 million litres of fuel every year.

BP has off-road mining customers, such as St Barbara, spread across Australia – and that's just one part of the fuel market. So, what's the key to getting the right products to the nation's biggest miners, busiest airports and most isolated roadhouses? »





Gold rush: operations at St Barbara Ltd Gwalia gold mine (above), near Leonora, Western Australia. BP delivers fuel to the site every other day from its oil terminal in Kalgoorlie. The vehicle here brings ore rock to the surface from underground. Below, Hannan Street, Kalgoorlie's main road at dusk – architecture from the region's gold rush days in the early 1900s still remains.





With two refineries strategically positioned on the eastern and western seaboard (close to Brisbane and Perth), as well as dozens of terminals to receive, store and dispatch its fuels, BP has created a structure that allows it to move products to the locations where customers need it.

“It’s about being on the ground in the right places, such as where key mining and agriculture enterprises are located, where demand is greatest,” says Paul Waterman, president of BP Australasia. “We have an advantaged market position and that’s something we are always looking to build on.”

Most goods and freight are transported around the country by road, so this is another business segment that has seen sustained growth in recent years. “The trucks that drive up and down the coasts and inland to the resource areas are part of what we call the on road business and we believe that will grow around 40% by 2020,” continues Waterman.

“So, we’re investing quite significantly to ensure that we have the right infrastructure, as well as developing customer relationships to take advantage of that growth.” As part of building that infrastructure, in 2010, BP acquired a company called Reliance Petroleum and

with it an extensive network of bulk fuel and lubricant depots.

For the average Australian driver, though, BP is most visible through some 1,400 branded service stations and stores, both company and dealer-owned sites. Some dealerships have a very long history with BP, starting out as single-pump enterprises and growing over the decades to multi-million-dollar businesses. Take the Andrianopoulos family in Melbourne, Victoria: Andreas Andrianopoulos bought his first service station bearing the BP logo in 1970; 43 years later, along with his four sons, he runs a network of 49 sites, with fuel sales of almost 500 million litres in the past year.

“Our partners bring great expertise and passion for the business and their customers,” says head of sales and marketing for BP Australia Mike McGuinness. “Such long-standing relationships are testament to dealers’ innovation and commitment as retailers.

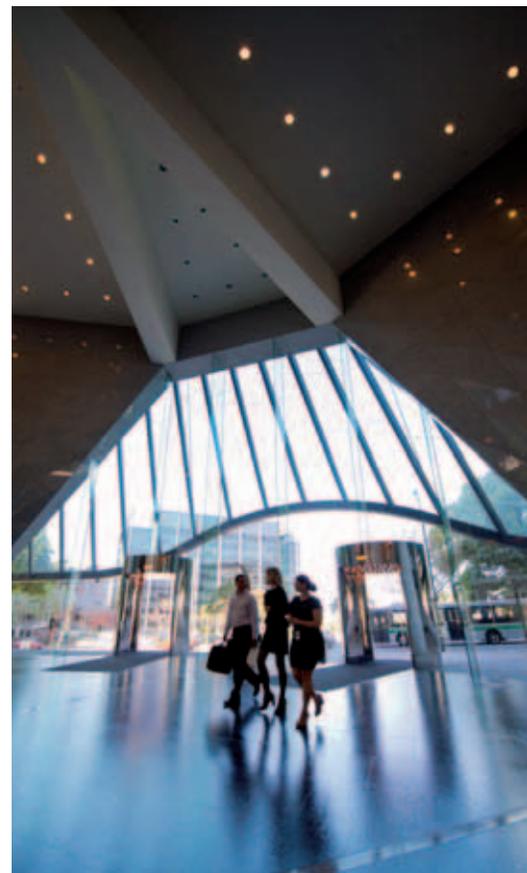
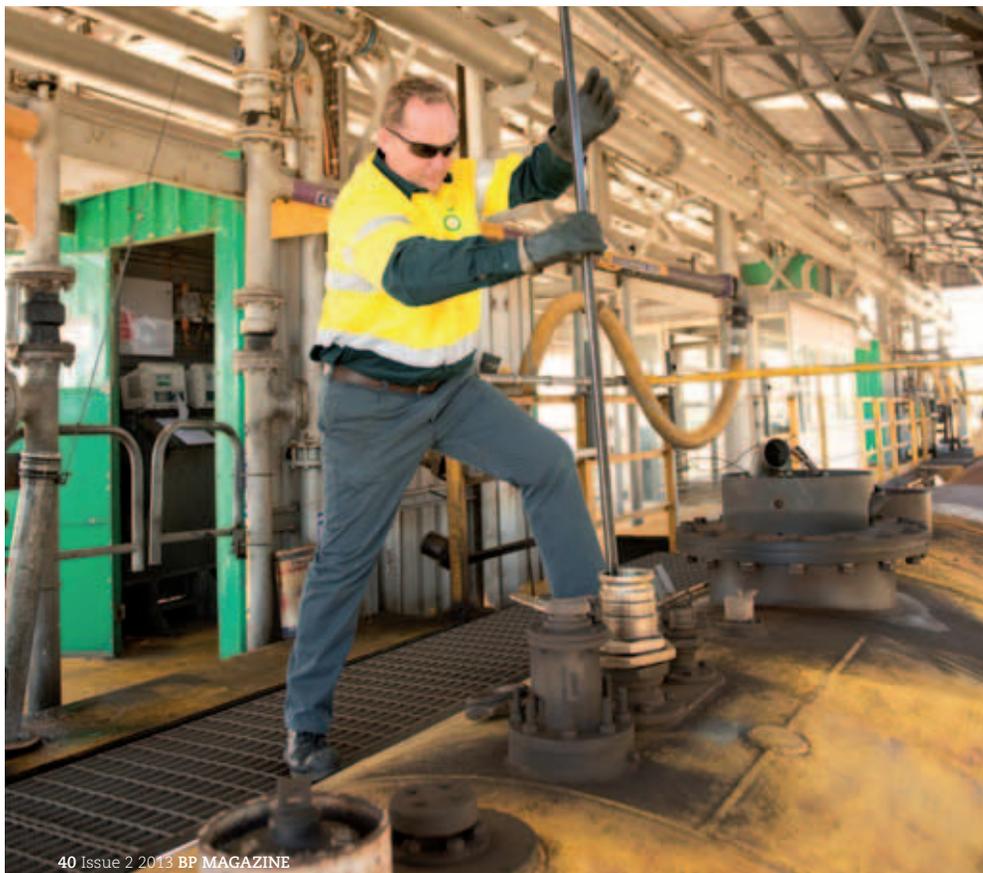
“It’s competitive out there and our customers are mobile, so they can choose to go anywhere. At our company-owned sites, we’re concentrating on how to improve what we offer – in the look and feel of our stores, the customer experience on the forecourt, making the right products and the right payment technology

available. We’re working on what delights the customer.”

Premium fuels – such as the BP Ultimate range – are big hitters on the Australian forecourt, representing more than a third of total consumer sales. While continuing to invest in the development of these products, BP has teamed up with the nation’s cricket captain and motoring enthusiast, Michael Clarke, to educate drivers about the Ultimate range. As the brand ambassador, Clarke has also been behind the wheel of the BP Ultimate rally car, driving two stages of the International Rally of Queensland.

With a sporting icon on its billboards and the familiar Helios logo on retail station canopies in every state, BP’s downstream presence is clearly evident in Australia. But the company has also been involved in hydrocarbon production for several decades, generating significant cash for the wider group, most notably as a joint venture partner in the country’s largest resource development project on the North West Shelf [see page 43].

Recent upstream activities have been operated by other companies. But, after almost a century doing business here, a new chapter began in 2011, when BP was awarded four exploration permits in the



Great Australian Bight (GAB), off the central southern coastline. “This is an untested delta system, which we believe has the potential to be highly prospective,” says Phil Home, a geologist and vice president for BP Developments in Australia.

“An industry speculative seismic survey a few years ago revealed enough information to point to a working petroleum system, so this really is a frontier basin – and that is increasingly rare on the planet.”

Covering some 24,000 square kilometres (9,266 square miles), the exploration blocks lie 300 kilometres (190 miles) offshore in water depths of up to 5,000 metres (16,400 feet). With a marine park overlapping the permit area and other environmental sensitivities to consider, including a whale calving zone to the north near South Australia’s coastline, BP consulted with state and federal governments, research agencies, environmental researchers and the fishing industry before submitting its applications for regulatory approvals to conduct further research.

By November 2011, a three-dimensional marine seismic survey was under way, conducted by experts onboard the PGS vessel, the *M/V Ramform Sterling*. Together with its trailing cables, each eight

kilometres (five miles) long, and listening hydrophones out on the water, the vessel became the largest moving man-made object in the world. Six months on, its task was complete: to record sound pulses reflected from the layers of rock below the seabed. This data from half the permit area will allow BP’s geoscientists to pinpoint where potential hydrocarbon resources lie.

Exploration on this scale requires a number of teams, working on opposite sides of the globe. While staff from BP’s Exploration division analyse the results of the seismic study in the UK, engineers in the global wells organisation are looking at how to drill wells safely and efficiently in the GAB’s challenging ocean conditions.

“From the acreage position, the next piece of land to the south is Antarctica, which is some 4,000 kilometres [2,485 miles] away,” explains Mark Stanley, BP’s vice president for wells, new ventures. “Waves have a tremendously long distance to build in height and extend in length. A wave height of 10 metres [30 feet] would not be unheard of – that’s comparable to the North Sea – but we will be seeing them more regularly.”

Such a hostile environment will require highly-specialised rig facilities to drill the four exploration wells agreed under

Daily operations: (from left) BP’s assistant manager, Kelvin Pemberton, at its Kewdale terminal, Perth, Western Australia, fills up a rail car. Its destination is Kalgoorlie; life inside the BP Developments Australia office, based in Perth, Western Australia; a three-trailer road train – a common sight on the Australian roads – leaves BP’s fuel terminal in Kalgoorlie after loading with product to deliver to customers in the region.





the permit. “We’ve had great support from colleagues in Houston who have shared lessons from the Deepwater Horizon accident,” says Home, who is based in Perth with the BP Australia Upstream team. “They have flown out here and spent time with representatives from the federal and state governments, so we can demonstrate that we know what is required to operate in the GAB.”

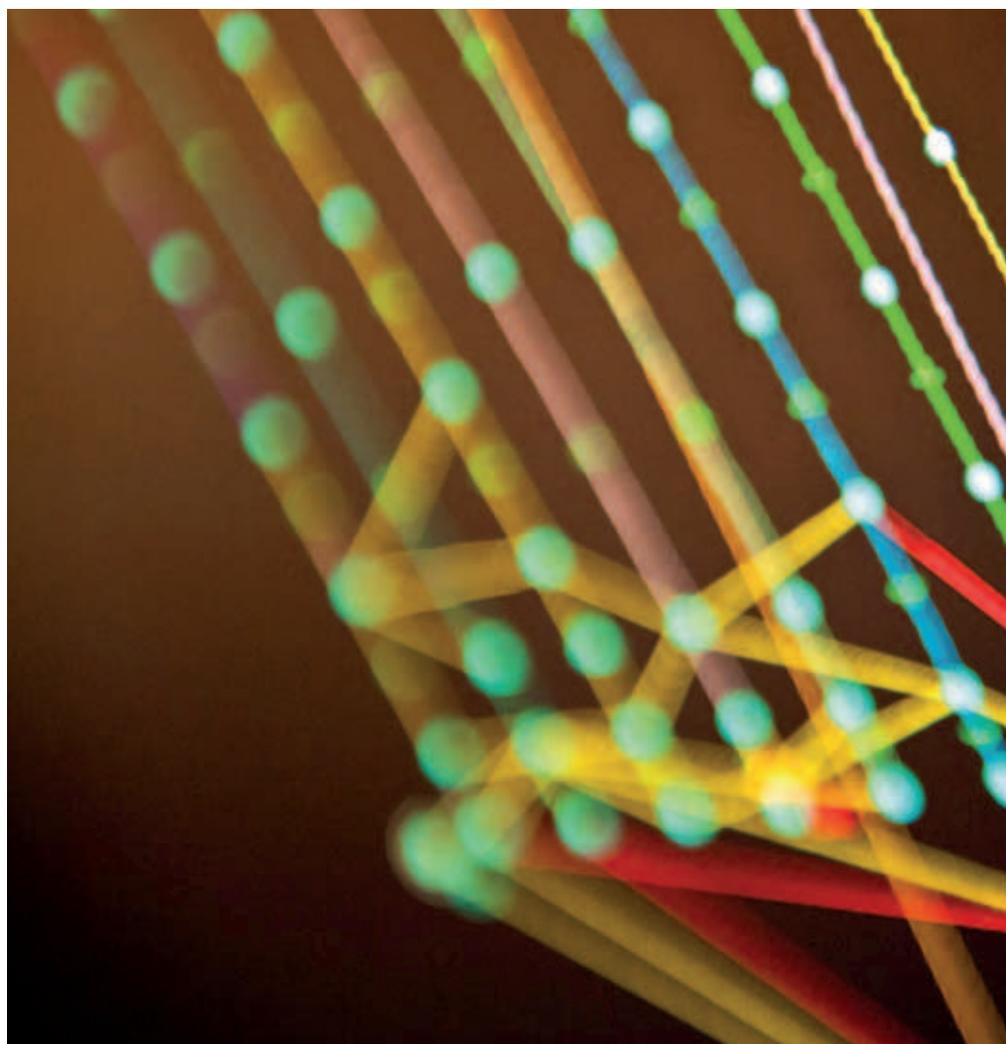
With no deepwater offshore industry currently in South Australia, BP will need to create infrastructure and also make use of existing facilities at Port Adelaide for its supply base. Meanwhile, a small representative office has opened in Adelaide so that the company has staff on the ground in the state where oil and gas may make a significant future contribution to the economy.

“We’re keeping local communities informed of our activities offshore and of the timeframe involved in studying the seismic data,” says Maria Soares, corporate responsibility manager. “We want to build relationships here, so we’re talking to stakeholders and working with other organisations, such as the Eyre Peninsula Community Foundation, to support some small-scale education projects and offer fuel vouchers.”

Negotiations also are going on to undertake a proposed environmental and social research programme relating to the GAB, through collaboration with academic and scientific institutions.

All this new activity in the south of the country makes BP an exciting place to work, not just for those directly involved in the exploration project, but for others in the company’s Melbourne headquarters, and beyond. But, if there have been downsides to Australia’s rock solid economic growth over the past decade, a shortage of skilled labour has been one of them, as the resource industry and others vie for the nation’s brainpower. It’s not uncommon to hear stories of university leavers accepting driving jobs on mining sites, where they are generously recompensed for their isolation in outback locations.

“Renewing our talent is really important and will continue to be so,” says Chris Lokum, director of human resources. “Competition with other employers does put pressure on us when it comes to looking for skills, especially at a graduate level.” Recruiting diverse candidates – whether that’s in gender, age or ethnicity – is a priority for the business, as is offering



flexible working options through part-time and job-share roles.

“We’ve focused on understanding how competitive our employee offer is in comparison to others and we’ve made adjustments to salaries and benefits accordingly,” says Waterman. “I would say our culture is important, too – if you create a stimulating and engaging place to work, where people feel they can further their careers, you’ll do well at retaining staff.

“I certainly believe that this is an exciting time for us here. The exploration blocks represent a vote of confidence for BP in Australia and signify the quality of the relationships we’ve built. Depending on what we find in the Great Australian Bight, it could be an incredible game changer, not just for BP, but for South Australia and the country as a whole.” ■

• See *BP Magazine* issue 3, 2013, for more on BP’s downstream business in Australia, including how Bulwer Island and Kwinana refineries are investing for the future.

Prime position: the navigation screen display (above) onboard the *Ramform Sterling* vessel during seismic acquisition in the Great Australian Bight. The display shows the position of the seismic ‘streamers’ that trail behind the vessel. They contain hydrophones that collect 3D seismic data. Right, Melbourne’s cafe culture thrives in the city’s laneways.



BP'S UPSTREAM PRESENCE

As well as exploration in the Great Australian Bight, BP also participates in a number of non-operated upstream joint ventures:

- **North West Shelf Venture**

BP has an almost one-sixth share in Australia's largest oil and gas resource development, in production for more than two decades. The venture supplies customers domestically, in the Asia-Pacific region and other parts of the world.

The huge gas and condensate fields lie in the Carnarvon Basin, some 130 kilometres (80 miles) off the northern coastline of WA. Gas processing takes place onshore at Karratha at a five-train facility; the venture of six international oil companies has delivered more than 2,800 liquefied natural gas (LNG) cargoes since 1989.

Investment in new fields continues today, as an estimated 3 trillion cubic feet of gas remains undeveloped. A fourth offshore facility, the North Rankin B platform, is due to come onstream this year – the AU \$5 billion investment is set to extend gas supply from the North Rankin and Perseus fields for another 25 years.

- **Greater Gorgon area**

Containing around 40 trillion cubic feet of gas, these fields are the country's largest-known gas resource, found to the west of the North West Shelf Venture. The first field scheduled to come onstream in 2015 is the giant Jansz-10, where BP owns a little more than 5%. Other fields in the vicinity, with a BP interest of 12.5%, are also in appraisal, with a view to future development.

- **Browse**

This proposed LNG development would see the commercialisation of three offshore gas fields found more than 400 kilometres (250 miles) north of Broome. BP owns about 17% of the fields and is working with coventurers on a selected concept of transporting the gas via pipeline to a yet-to-be constructed onshore processing plant. A final investment decision on the project is expected in 2013.



“I certainly believe that this is an exciting time for us here. The exploration blocks represent a vote of confidence for BP in Australia and signify the quality of the relationships we've built.”

Paul Waterman



BUCKING THE TREND

While the global financial crisis of 2008 hit advanced economies on one side of the globe, Australia escaped recession and emerged relatively unscathed, with its AAA credit rating intact, an unemployment rate of little more than 5% and a strong banking sector. According to the International Monetary Fund, economic growth accelerated from 2.75% in the second half of 2011 to 4% in the first half of 2012. Yet, this growth has been uneven, with mining and resource sectors expanding strongly, in contrast with other areas, such as trade-exposed manufacturing, which has been undermined by the strong Australian dollar.

Until very recently, Martin Ferguson was the Australian minister charged with overseeing the nation's resources and energy portfolio. Amanda Breen met him while he was still in office to discuss the country's continued economic growth, the significance of Asia in driving the country's resource boom and how investment and exploration opportunities continue to abound down under.





Data shows that the Australian economy has been growing faster than most advanced countries. In fact, 2012 saw the 21st consecutive year of growth. What are some of the factors that have influenced this?

The global financial crisis (GFC) hit soon after the Labor Government took office in November 2007. In many ways, because we are, in essence, part of Asia, it only touched Australia very lightly. We were shielded from some of the more significant effects of the GFC, so much so that I think a lot of Australians might say, “what was the global financial crisis?” Unlike Europe and North America, we have maintained pretty good employment and ensured that Australia was well positioned during that period for substantial investment. We are an island nation and we’ve been built off the back of foreign investment from North America, Europe, Japan and Korea. However, the big new wave of investment now comes from China.

At the same time, Australia is a resource-rich country. Historically, our customers have been in markets such as Japan, Korea and Taiwan, but we are also focusing on the new opportunities provided by China and India.

What has the rapid development of these particular parts of Asia meant for Australia?

There is no doubt that the growth of China has been of great benefit to Australia’s economy. China’s industrialisation and further urbanisation has led to an increase in demand for our resources, particularly iron ore and coal. In fact, both thermal coal and coking coal have been the backbone of resource development. What we saw in 2012 was the end of the commodity price boom in coal, iron ore and base metals. However, in the face of these stabilising commodity prices, Australian export volumes are continuing to grow, particularly in the liquefied natural gas (LNG) sector. LNG exports are forecast to increase by 21% this financial year to more than 24 million tonnes, with around AU\$180 billion in investment already committed to future LNG projects.

Such investment could put Australia on track to become one of the world’s largest exporters of LNG by 2020. What would that mean for the country?

Last year saw our seventh gas train become operational and we have another dozen

or so trains under construction. By about 2016, we will have increased our export of LNG to around 70 million tonnes per year. At the same time, we will be the only country in the world with three forms of LNG production – conventional, unconventional (such as coal seam methane projects on the east coast) and the first floating LNG plant, which is currently being built.

Again, there is market opportunity in Asia and we have grabbed it – the nature of the customer base is changing and there is a diversification of investors. Out of this investment boom, we now have long-term contracts into India, Korea and Taiwan, in addition to foundation customers such as Japan and China. We have a huge construction boom under way, which will peak late this year. LNG is clearly sought-after; it is a cleaner form of energy and is part of the transition to a low-emissions global economy.

Despite continued growth in resource development, what challenges lie ahead for the sector?

If there is one pressure point, it is that we must remain attractive to investors.

“Historically, our customers have been in markets such as Japan, Korea and Taiwan, but we are also focusing on the new opportunities provided by China and India.”





We have to reduce costs. It is the responsibility of government to reduce time delays on environmental approvals that cost business real money. As there is so much under construction at the moment, I think companies also need to manage projects better and put real pressure on construction companies to pay more attention to cost. It needs to be a joint approach to deliver projects under construction on time and budget. That is not going to be easy given the shortage of labour we're facing and pressure on wages.

I'm conscious that, if we don't get costs down, there are other opportunities elsewhere. No-one owes Australia a living; we have to keep working at it. Right now, we are lucky – we have AU\$270 billion in committed capital investment because Australia is resource-rich, has a stable regulatory regime, and a highly-skilled workforce. But we risk pricing ourselves out of the market and missing out on the next wave of investment.

There are plenty of resource projects already in development, so what of exploration opportunities?

Importantly, there is a lot of interest in exploration. We were pleased in January 2011 to grant BP the exploration opportunities in the Great Australian Bight. Another operator was there some years ago but walked away. Our national geological agency, Geoscience Australia, which completes all the precompetitive studies on exploration blocks, believes there are high prospects in the Great Australian Bight. BP completed its seismic programme in 2012 and we look forward to the outcome of that research.

Why is it imperative that the resource industry, in particular offshore operators, demonstrates its capacity to manage risk effectively?

Nobody wins when risks aren't managed effectively. My goal is to make Australia's oil and gas exploration and production operations the best and safest in the world. To achieve that goal, we need to work with industry to apply the lessons learned from the loss of well control incidents in Australia and the Gulf of Mexico.

In late 2009, the Montara oil spill occurred off the northern coast of Western Australia (WA), in the Timor Sea. An independent review was conducted into the incident. As a result of the review, there have been changes in expectations

of industry and we extended the scope of our statutory agency, now called the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

Establishing a single, national regulator is of benefit to industry – it sets safety expectations and outlines environmental considerations. Following the Macondo accident in the Gulf of Mexico and the Montara spill, the expectations of government and the community have increased and companies need to maintain best practice safety standards to ensure that they retain their social licence to operate. I believe industry has responded in a proper way – not only through work with NOPSEMA and the Australian Petroleum Production and Exploration Association (APPEA), but also through voluntary initiatives to develop new well-capping capacity, available on a regional basis.

What examples have you seen of BP sharing lessons it has learned from the 2010 accident in the Gulf of Mexico?

In the wake of the Macondo accident, BP has been a regular visitor to my department and staff have taken us through the different investigations and recommendations. They have shared their experiences with NOPSEMA and with the wider industry, so I consider them to be very responsive in terms of sharing these lessons. I've visited BP's operational monitoring centre in Houston, US, and my staff have been to a range of other operations. We expressed our faith in BP by the significant decision to grant exploration rights in the Great Australian Bight.

When I talk to industry in general, they clearly understand that to obtain regulatory approval in Australia, we expect best practice in terms of safety standards and environmental response.

Talking about this social licence, I might say that BP's Kwinana refinery in WA is exceptionally important in assisting our indigenous communities through the development of Opal, the low-aromatic fuel that has helped to reduce petrol sniffing [see page 48]. As someone who has worked in the Northern Territory and WA, on and off for a long time, I have seen the big impact that Opal has had in remote areas. By demonstrating best practice in areas like this, as well as safety, companies will meet their social licence to operate. ■



Art in action: BP had artwork developed specifically to represent its Reconciliation Action Plan. The result (main image) is shown here and has been used widely in communications materials. It was created by the indigenous-owned media company, Gilimbaa. Above, BP's Mark Glazebrook chats to local resident Gavin Bush at the base of Papunya's Honey East Hill.

FUELLING PROGRESS

Ten years ago, BP responded to an email asking for its help in stamping out petrol sniffing in Australia's Aboriginal communities. The result was Opal – a fuel without the aromatic vapours that create a 'high'. The results were remarkable and today Opal is part of a wider, more structured approach to community commitment that BP has developed in support of a national programme. The focus is on achieving countrywide recognition of the culture, rights and contribution of Aboriginal peoples.

Photography and artwork > Gilimbaa





Community revival: Papunya children pose for the camera (left) and at play (right). Opposite, proud father and star footballer Matt Brown with his young daughter.



A private member's bill passed in the Australian Senate in November 2012 marked another significant step in a 10-year journey towards trying to eradicate petrol sniffing in remote, indigenous communities.

The Low Aromatic Fuel Bill, introduced by Greens Senator for Western Australia Rachel Siewart, enables the government to compel petrol retailers in designated areas to sell unleaded fuel that contains only light aromatic vapours, denying substance abusers the 'kick' when sniffed.

Otherwise known as Opal, the fuel was developed at BP's Kwinana refinery, in response to a plea for help from a youth worker, in 2002, who had witnessed firsthand the devastating impact of petrol sniffing in Aboriginal communities. In his email to fuel companies in Australia, Chris Tangey described a grim reality. "As I write this, I can see an 11-year-old girl through the window with half a Coke bottle containing petrol strapped over her nose and mouth. I don't know if she will make her 12 birthday. Is there anything you can do?"

Powerful call

The message landed on the desk of BP's corporate responsibility manager, Mark Glazebrook, in Melbourne. "It was too powerful to ignore," he recalls. "We recognised immediately that it represented a stern test of our company's credentials as a genuine vehicle of social change."

During a first visit that same year to Papunya, a community some 240 kilometres (150 miles) northwest of Alice Springs in the Northern Territory, Glazebrook saw the evidence for himself. He describes seeing youngsters walking around 'like zombies'.

"I was shocked that this could happen in

Australia. We couldn't just walk away. If we thought we could save one life, it would be worth trying to support the community."

Chemists at Kwinana came up with the solution: a fuel for use in car or boat engines where the manufacturer recommends the use of regular unleaded with an octane rating of 91. But, crucially, the removal of aromatic vapours means sniffers cannot get a 'high' from the product.

After consultation with 10 Aboriginal communities, the Opal roll-out began in 2005. Results were evident almost immediately in areas where no other unleaded fuels were available. Sniffing came to a halt and communities seized the opportunity to rebuild. In a film to mark the 10-year Opal anniversary, Papunya local Alison Anderson explains the impact on her town: "Opal came in and the kids started testing it. You could see their frustration, because they couldn't get a kick. But you felt happy, because they were walking back into the community and reconnecting with the culture, with ceremony."

Tangey returned to Papunya in 2012 to see how his original email had brought about change. "It's just incredible," he said of the turnaround. "The kids are running around as if none of this horrible war zone had ever happened. The lesson is that even if you think that what you're about to do won't make a difference; do it anyway. To this day, I have only received one reply to my email – from BP."

Opal is now supplied in some 110 communities – ranging from small populations of 100 people to towns such as Alice Springs with 25,000 residents – in the Northern Territory, South Australia, Western Australia and Queensland. The fuel receives a government subsidy to make sure its price

at the pump is the same as regular unleaded.

Although Opal has yielded results – with petrol sniffing reduced by up to 94% in areas where it has been introduced – Glazebrook is adamant it doesn't provide all the answers. "It is not a silver bullet; it is a form of harm minimisation.

"Opal is a pillar in terms of what communities find useful in strengthening themselves and it helps create the right conditions for communities to fulfil their potential. It goes hand-in-hand with education and youth programmes."

Fragile gains

In proposing the bill to make low aromatic fuel mandatory in affected communities, Senator Siewart outlined that successes were undermined by the refusal of some retail outlets to stock the fuel, meaning substance abusers travel farther afield to obtain regular unleaded.

She told the chamber in November 2012: "Gains achieved to date through the roll-out of Opal are critical and crucial, but they are also fragile. Sniffable fuel is still readily available in some places. Gaps exist because, up until now, we have relied on suppliers signing up to the process voluntarily.

"I've been in communities and seen for myself the impact that taking away sniffable fuel has. It provides the window of opportunity for people to get in and deal with the underlying causes."

The Central Australian Youth Link-Up Service, or CAYLUS, is one such organisation that runs initiatives in affected communities to tackle substance misuse. In evidence presented to an earlier inquiry, repeated by Senator Siewart, it said: "We were doing this before Opal, and we would try all the other measures. You could start a



youth programme in a community and you would get a lot of the sniffers to stop but not all of them. But once you have Opal in a community, the sniffing stops and then the programmes can really go because they are not competing against people who are off their faces all the time.”

As for the role BP has played, Glazebrook – who still provides ongoing support for Opal communities – reflects on the past decade. “Of course, I feel proud, but more than that, Opal gives me a sense of hope.”

In its earliest days, BP’s Opal initiative came at a time when the country as a whole recognised the importance of undertaking a formal process of reconciliation between Aboriginal and Torres Strait Islander peoples and other Australians.

In 2000, the non-government, not-for-profit foundation Reconciliation Australia was established to focus on achieving



national recognition of the culture, rights and contribution of Aboriginal peoples. The Reconciliation Action Plan (RAP) programme, introduced in 2006, is about turning good intentions into real actions, providing businesses with the opportunity to formalise their organisation’s contribution to reconciliation by identifying clear actions with realistic targets. Since its launch, more than 300 Australian corporations, governments, and community organisations have joined – and BP is among them.

President of BP Australasia Paul Waterman says: “While we’d learned plenty and were active in several ways, we realised we didn’t have a structured approach to build our commitment to Aboriginal communities. We also needed to continue to build on our first success with Opal.

“After consultation with communities in areas where we operate, in November 2011, we launched our RAP. It focuses on four areas: people, products, procurement, and partnerships & projects. Opal fits in neatly with its attention on health and support of education programmes.”

Other RAP initiatives include funding scholarships for Aboriginal students to access better educational opportunities, and a cultural immersion programme for nominated BP staff to spend time in

“In November 2011, we launched our RAP. It focuses on four areas: people, products, procurement, and partnerships & projects. Opal fits in neatly with its attention on health and support of education programmes.”

Paul Waterman

Aboriginal communities to learn about their history and land.

In partnership with some of its mining customers, BP also launched the indigenous business development programme, which offers individuals working in indigenous-owned enterprises the chance to build on their skills to efficiently manage their operations and assist with securing commercial contracts.

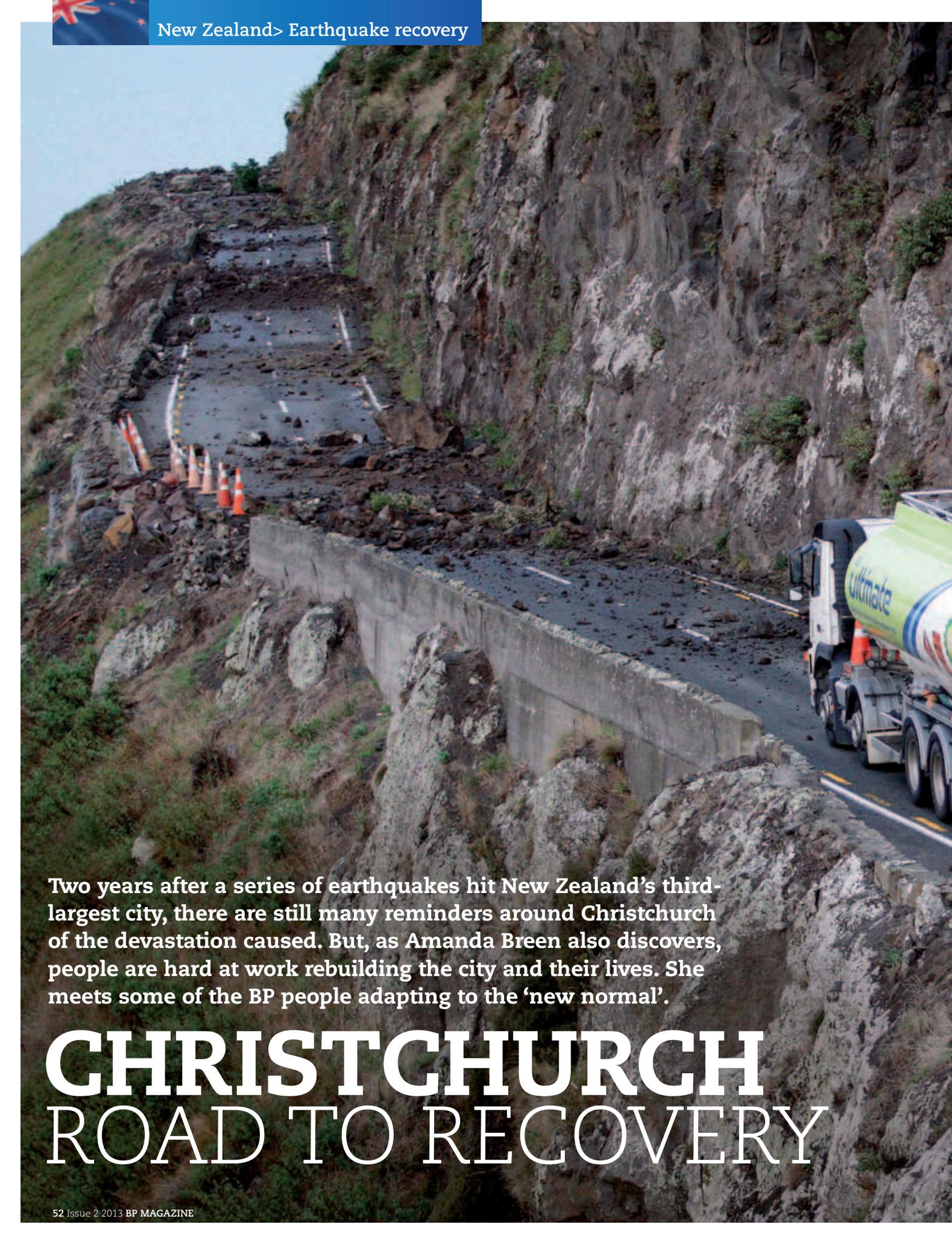
“One of the commitments is to procure more goods and services from Aboriginal businesses,” says Glazebrook, “but we’re aware that it’s not always possible to declare ‘we’re going to spend more with this group’ and assume they are ready to go. So, the development programme aims to bridge the gap; where a business is in its early days, we offer intensive mentoring to help owners take the next step.”

Business growth

Among the participants to visit BP’s Melbourne headquarters is Darrin Savo from Northern Haulage & Diesel Services, located in Weipa, on the Cape York peninsula, Queensland. “The programme exposed me to information that any small business needs, especially if you’re looking to win business with big companies.” The business, which he runs with his sister, Katrina, who has also attended the BP programme, has grown from employing two staff to 40.

Engaging with Aboriginal enterprises makes sense for BP’s retail sites as well. In rural locations, petrol stations can help to provide small indigenous traders with a route to local markets, according to Mike McGuinness, head of sales and marketing, ANZ. “In some remote areas, there is a real demand from tourists or locals for indigenous art or craft, so we are looking at programmes where we can partner with small enterprises around the products they create and sell.

“We’re looking at opportunities on a site-by-site basis; each will differ and it depends on geography and the community itself whether the focus is on employment or enterprise. As well as selling fuel and food, retail stations can be part of the community. It’s not about turning sites into souvenir stalls, but offering products that sell.” ■



Two years after a series of earthquakes hit New Zealand's third-largest city, there are still many reminders around Christchurch of the devastation caused. But, as Amanda Breen also discovers, people are hard at work rebuilding the city and their lives. She meets some of the BP people adapting to the 'new normal'.

CHRISTCHURCH ROAD TO RECOVERY

Fallen rubble: BP tanker stranded on Port Hills between Lyttelton terminal and Christchurch, 22 February 2011. During the quake, the driver took shelter with a passing cyclist behind the tanker.





Arriving in Christchurch in darkness, some two years after the earthquakes that rocked New Zealand's third-largest city, it's difficult to know what to expect. In February 2011, a relatively shallow quake of 6.3 magnitude struck at lunchtime, killing 185 people in one of the nation's deadliest peacetime disasters. This came six months after a 7.1 quake in the early hours one morning had already caused significant damage to the city and the surrounding Canterbury region.



Rebuilding work: (clockwise from top left) demolition work at the Queen Elizabeth II Stadium, home of the 1974 Commonwealth Games; the humble shipping container has emerged as an innovative option to house retailers and cafés in the CBD; punting on the Avon River through the centre of Christchurch, visitors pass the many buildings damaged during the 2011 earthquakes. Areas remain cordoned off to public access.



With Christchurch no longer under the scrutiny of global media cameras, a visitor wonders how the cityscape will appear and how the recovery is taking shape. A little background research points to a 'tale of two cities' – where the western side escaped major impact, while the central business district (CBD) or downtown area and eastern suburbs bore the brunt of the damage.

On the drive into the city suburbs at night from the westerly-located airport, there seems little to remark on, until the sight of steel girders propping up the walls of a church. Daylight reveals the extent of the damage in the central areas, though. Several affected buildings have been removed – leaving an abundance of temporary gravel car parks – others have been made safe but remain out of bounds, behind railings.

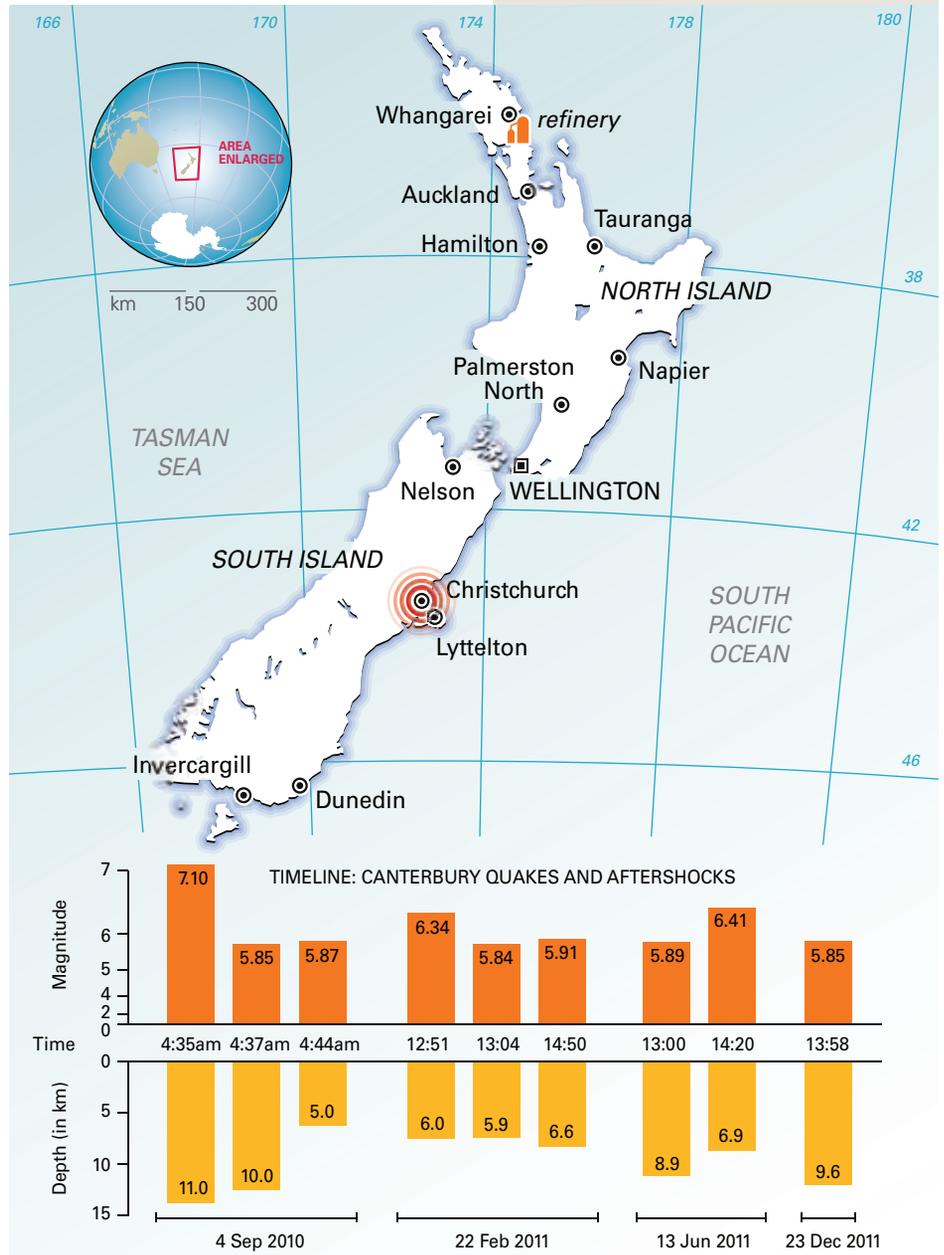
The rebuild process is under way but, at the heart of the city, the 'red zone' is cordoned off from public access while demolition work takes place. Among the landmarks behind the hoardings is the city's Anglican cathedral, damaged beyond safe repair. In spite of the continuing physical reminder of the disasters and the ongoing disruption that much of the population faces at home, at work or at school, there is a determination to make the best of the situation.

"People refer to it as 'the new normal,'" says local resident Greg Hill, Air BP's manager at Christchurch International Airport. He was convenience retail area manager for the South Island at the time of the quakes. "Life has gradually returned to the CBD: shops and cafés have started to reopen and there is punting on the river again. Scaffolding still holds up many buildings and the debate continues over how best to rebuild and retain some of our heritage."

Timeline: Canterbury quakes & aftershocks

While the September and February quakes made headlines around the world, Christchurch residents experienced significant aftershocks months later. The region is still subject to regular tremors with 11,177 quakes recorded, since 4 September 2010 (as of 28 March 2013).

Source: www.christchurchquakemap.co.nz





While redevelopment is afoot, Kiwi resilience has led to some imaginative uses of shipping containers in the damaged city. Cashel Street Mall – a former shopping hub – has come back to life with a pedestrianised precinct of retailers and food outlets housed in brightly-painted containers. Nearby, a pop-up Nike sports project named ‘Football in the Gap’ has transformed a vacant red-zone space into a five-a-side pitch open to all.

Like many fellow residents, staff at BP’s retail sites in the area have adjusted to circumstances beyond their control. “What is normal changes and you deal with it,” says Craig Whilis, store manager at BP Connect Dallington, who took on the job just 15 days before the February quake. Liquefaction – when saturated soil becomes a liquid – on the forecourt, damage to the shop and lack of power and water closed the petrol station for a week, while the team undertook a clean-up operation.

“It was important to re-open as quickly as possible, once it was safe to do so, to serve the community, including the emergency services, even if it was simply for coffee and a place for people to charge their mobile phones,” says Whilis, who was without electricity, water or sewage services at home in the aftermath. “Being at work provided us all with some normality when things were far from normal, otherwise.”

“It was important to re-open as quickly as possible, once it was safe to do so, to serve the community, including the emergency services, even if it was simply for coffee and a place for people to charge their mobile phones.”

Craig Whilis

The Dallington site is close to one of the worst affected residential areas: Avonside remains a red zone, where homes will not be rebuilt due to their location on a flood plain. With fewer people living in the vicinity and a drop in traffic on the arterial roads to the CBD, the former 24/7 retail station has reduced its hours, closing during the night now. Yet, with a new investment in the Wild Bean Café, the team is optimistic for 2013.

“It’s set to be a big year in terms of redevelopment and as the CBD comes to life again, there will be more reason for people to use the main road in and out of the centre. There’s been plenty of disruption, but local support has continued and we’re not going anywhere.”

On the other side of the Port Hills, which divide the city from its port at Lyttelton, New Zealand Oil Services

operates a terminal on behalf of BP and its joint venture partner, Z Energy. A critical supply point for Christchurch, the terminal was taken offline briefly due to power cuts and port restrictions in the immediate aftermath of the February quake, but once all tanks and pipework were tested, operations resumed within four days.

For staff at the terminal, a ‘new normal’ has also emerged, with stories told of extended family remaining as semi-permanent house guests and changes in routines prompted by the closure of local facilities. “Most of us continue to live the aftermath every day,” says Brent Cook, assistant terminal manager. “The recovery is not immediate, but we’re conscious that there are always people worse off than us.”

To support the wider Christchurch community, BP’s national network of both

Coastal life: the port of Lyttelton (left), where New Zealand Oil Services operates a terminal on behalf of BP and Z Energy; below, storage of vital equipment at Sumner Surf Club is now limited, after quake damage to the main building. BP NZ has supported the surf life savers for 45 years; below right, a BP service station in Christchurch.



company-owned and operated retail sites and dealer sites launched a fundraising appeal in 2011. With customer donations matched by BP, NZ\$1 million was passed on to the New Zealand Red Cross.

But, what of other not-for-profit community organisations, when charitable giving is justifiably focused on an emergency? Surf Life Saving New Zealand (SLS NZ) represents 73 clubs across the country, whose members patrol the beaches along the 15,000 kilometres (9,320 miles) of coastline, the 10th longest in the world.

No part of New Zealand is farther than 80 kilometres (50 miles) from the water and the nation has one of the highest drowning rates per capita in the OECD – approximately twice that of Australia.

The surf life savers aim to protect the population in the water, not only through services on the beach, but also through education programmes. “Much of our infrastructure is community-funded,” says Paul Dalton, chief executive of SLS NZ. “The Canterbury quakes placed a huge stress on our clubs in the southern region, where a number have had to deal with severe damage. Obviously, our members have faced challenges personally, as well. The clubs have continued to operate out of temporary facilities that are definitely not ideal.

“Financially, many clubs are still waiting on insurance pay-outs and are just getting themselves back on their feet. With the understandable focus on the Christchurch

recovery, it has made our lives a little bit harder.”

In one of the longest-standing corporate sponsorship roles in New Zealand, BP has supported the surf life savers for more than four decades. “The relationship is extremely significant for us, it dates back to March 1968,” Dalton continues. “It helps with our profile; a 45-year association sends a strong signal to the wider community about our longevity.

“BP’s support helps us to make certain equipment that we need for our ocean conditions available around the country, such as inflatable rescue boats. We have 240 vessels and they are by far the most important device we have.”

At Sumner Surf Club, located beachside in a coastal suburb of Christchurch, where crumbling cliff faces still remain cordoned off and partially supported by shipping containers, lifeguards have spent the past two summers operating out of a pop-up shelter on the sand. Their old club house is inaccessible due to quake damage and the rebuild is set to cost more than NZ\$1 million.

“We’ve lost our bird’s eye view of the beach from the patrol balcony,” explains club president Craig Todd. “That makes our job harder and it’s been a battle to keep our members here with minimal facilities. We hope to have the new club ready in time for the start of our summer season this November.” ■

ON THE RECORD

BP NZ managing director, Matt Elliott

“For a small country, our BP business in New Zealand punches above its weight. We are an integrated, mini fuels value chain, with a 24% shareholding in one refinery and a strong retail presence. We have some 80 sites that we own and operate, along with another 125 or so dealer sites. Our brand is strong and the loyalty to our Wild Bean Cafés and coffee is also second to none.

In fact, we sell the most Wild Bean coffee per capita in the BP world.

It’s critical that we’re investing in infrastructure around the country to support the business and we’re seeing a good return on those investments. We are at the end of a very long supply chain here, so we have some challenges from that perspective to ensure that we meet our customers’ needs. We are addressing this by bringing extra storage capacity online and making sure that we have the right pipeline assets in support.

There are around 1,500 BP employees here, including our retail staff. It’s a small team and the Christchurch quakes saw everyone get involved and assist. What strikes me in the city itself is the resilience of people who have come together to support one another. Two years on, people are still struggling, but they get on with their lives. Something about that is quite powerful.

As for BP’s future in New Zealand, we’ll continue to invest and innovate in support of the refinery, our other assets and service stations, and make sure that we have the right offers for our customers to keep coming back.”







Checks and balances

During the *British Trader's* recent second special survey dry docking period, scheduled repairs were carried out in various spaces and locations around the vessel. Throughout the docking period, second officer Andy Plucknett (pictured) is placed in charge of on board safety for both ship's crew and monitoring any discrepancies in the shipyard safety practices. The area of the ship pictured is one of the two passage ways. These spaces run along the length of the trunk deck port and starboard side for approximately 230 metres (820 feet). They are placed either side at the top of the cargo tanks and carry essential services such as steam pipes, the fire main and electrical cabling. Andy can be seen here checking the bilges to ensure they are free of any water that may have accumulated and also any oil that may have leaked out of the lines running through the space. In addition, the bilge alarms are tested in these spaces to ensure the communication with the alarm systems in the cargo control room are functioning correctly. This practice is one of many weekly routines that are carried out every Saturday while the vessel is at sea. ■



Social enterprise: (from top) Blue Sky was founded in 2005 with the specific purpose of finding jobs for ex-offenders. It works with local authorities and commercial contractors to place clients in short-term projects; CLARITY is a manufacturer of soaps and toiletries aiming to provide opportunities for blind and disabled people to play a full part in society; Rubies in the Rubble employs unemployed people to turn fruit and vegetable matter gathered from local market into a range of chutneys. All these organisations are among those supported by arc.



AN ENTERPRISING LEGACY

The medals have been put away for safe keeping. The celebratory homecoming parades and annual sports award ceremonies are over. But with its backing for a programme designed to support sustainable grassroots businesses, BP is determined that memories won't be all that's left from London 2012.

Philosophers, ex-prisoners and chutney-makers are not your average BP partner. Neither are they the first group that spring to mind when thinking about the London 2012 Olympic and Paralympic Games. And yet, they all feature prominently in BP's efforts to help leave a meaningful legacy from London 2012.

As an Official Partner of London 2012, BP played a central role in last summer's Games. But from the very start of its partnership with the London Organising Committee of the Olympic and Paralympic Games (LOCOG), BP was determined to use the momentum created by the Games to help bring benefits to the communities where it operates.

"We didn't want to just come in, have

a great party and then leave," says Peter Mather, head of BP in the UK.

So, among its many 2012-related activities, BP agreed to become a founding partner in arc – a programme that aims to create 1,000 new jobs in social enterprises based in the Olympic and Paralympic boroughs by 2015. In supporting arc, BP is working with the business-led UK charity, Business in the Community (BitC).

Social benefit

A social enterprise is an organisation that, while run on a commercial basis, has a benefit to society as its principal aim. Launched in September 2011 in east London, arc aims to foster strong and lasting links between these organisations

and larger, more-established neighbouring businesses.

The idea is that the social enterprises receive a range of services, from business advice to training and mentoring, to help them start up, grow and expand their operations.

"It's been shown that social enterprises create more jobs relative to turnover than mainstream businesses, so they have a significant role to play in the future of the UK economy," says Jennifer Exon, head of business development at arc. "Harnessing the expertise and practical skills of the latter to the passion and entrepreneurialism of the former, to help the social enterprises get off the ground and build sustainable businesses could,



therefore, have a really powerful impact.”

As part of its support, BP shares its own business expertise, and currently has 33 mentors from its Canary Wharf office in London working with 17 social enterprises in east London. The programme has now expanded to west London and staff at its site in Sunbury-on-Thames, with activity growing throughout the first quarter of 2013.

One of them is the Philosophy Foundation, an organisation dedicated to bringing philosophy into schools. By teaching the art of critical thinking, and offering a systematic and rational approach to problem solving, its aim is to give children a mechanism for resolving problems and making the right decisions »



Skills for life: (opposite) a worker at CLARITY. As well as employment opportunities, CLARITY provides specialist training programmes to allow employees to progress through the organisation; Blue Sky is based in west London but has aspirations to expand east and believes the arc programme will be instrumental in helping it win contracts in and around the Olympic boroughs; and in the UK, 16 million tonnes of food is wasted each year, and research indicates that 60% of this is preventable. Rubies in the Rubble hopes to play a part in changing that.

“It’s been shown that social enterprises create more jobs relative to turnover than mainstream businesses, so they have a significant role to play in the future of the UK economy.”

Jennifer Exon, arc



as individuals. “Children often aren’t allowed to think for themselves – they get told things,” says co-founder and chief operating officer Emma Worley. “We want to change that.”

But the foundation isn’t only interested in working with children. It also feels that the principles of philosophy could have an application in business, and BP’s Anthony Lloyd, head of liquefied natural gas origination for Europe and Africa, has been helping expand its reach.

After attending a class for six-year-olds at an inner London school and witnessing its hugely positive impact, and with the foundation looking to develop a package for businesses, Lloyd arranged a similar session with colleagues from the trading floor. “Our people took to it with the same enthusiasm as the kids. They were really engaged and the feedback was extremely good,” he says.

The foundation has since done a two-hour session on philosophy as part of the BP graduate training programme and Lloyd is now helping market it to other divisions and companies.

Sky high

Another of BP’s arc partners is Blue Sky – which proudly declares itself as the UK’s only company where you must have a criminal record to get a job.

Blue Sky’s credentials as a social enterprise are clear. Founded in 2005, its specific purpose is to find jobs for ex-offenders: it works with local authorities and an increasing number of commercial contractors to take on their clients rather than agency labour for short-term projects. Of the 650 ex-prisoners it has placed in temporary employment, around half have found full-time jobs afterwards. The re-offending rate of people who have passed through its books is just 15%, compared with a national average of almost 70%.

Ben Rusbridge, IT&S service delivery manager at BP Gas Trading Europe and LNG (GTEL) at Canary Wharf, has designed

a brand new database for Blue Sky. He says: “The organisation had a spreadsheet that helped it keep track of everyone they had employed, but it was quite basic. I designed a database that is more flexible, has more efficient data entry processes, can be shared more easily and allows them to cut their data in a number of different ways for reports.”

The beauty of arc, of course, is that its benefits are not just one-sided. Rusbridge might have been providing a service, but he has got plenty back in return. “It’s enabled me to keep my analysis, design and coding skills up, for a start,” he says. “I’ve also seen firsthand the challenges that smaller companies face on a daily basis, and how they deal with them.”

Blue Sky’s senior operations manager, Steve Finn, himself an ex-offender, has no doubt that Rusbridge’s involvement, and arc in general, have been invaluable. Finn says: “The programme will be instrumental in us winning contracts in and around the Olympic boroughs. We are in west London, which is all very well, but we want to go to east London, too. We want to spread our wings. We want to touch more people, and arc will enable us to help the ex-offenders of east London to find work.”

So, what about the chutney-makers? Well, that’s an organisation called Rubies in the Rubble, which collects fruit and vegetable matter fresh from local markets before it is discarded, then employs unemployed people who are struggling to find work to turn it into a range of chutneys that are sold at the same markets.

Food waste is a growing issue. In the UK, 16 million tonnes of food is wasted each year, and research indicates that 60% of this is preventable. This avoidable food waste is responsible for 20 million tonnes of carbon dioxide per year. “Rubies in the Rubble is aiming to tackle one problem – our surplus of food – with another – our shortage of jobs,” explains co-founder Jenny Dawson, who previously worked in the City. “Employing Londoners who are

struggling to get back into the workplace to make delicious chutneys creates employment, and also reduces waste. It’s killing two birds with one stone.”

BP’s Samantha Cran, who works as a subject matter expert on GTEL’s gas transformation project, has helped Rubies in the Rubble develop a new business plan – together with GTEL business manager Dan Bates. She has also advised on a major rebranding project.

“I’m a real foodie, so it’s a subject close to my heart,” she says. “But it has also been a great learning experience, a chance to think creatively and logically. I’ve found out a lot about myself and my abilities, too, and realise that I can do lots of things that I didn’t think I could. It’s been a great confidence booster.”

Good business

Peter Mather says: “We have always been determined to play a role in generating enterprise locally after the Olympic and Paralympic Games, and arc has provided us with that opportunity.

“We are delighted that our people and their expertise are being used to help emerging and growing social enterprises. But, increasingly, we are realising how good it is for our own business, too. It strengthens our supply chain, while our people get first-hand experience of the entrepreneurialism and creativity of the organisations they work with. It is the classic win-win situation.” ■

Day in the life: (top left to right) a Blue Sky worker clears a street of leaves; a CLARITY worker attends to a guide dog; (centre left to right) packing products at CLARITY; two of the chutneys produced by Rubies in the Rubble; out and about at market to collect fresh food matter for use in the chutneys; and a meeting in progress at Blue Sky (bottom).



“We have always been determined to play a role in generating enterprise locally after the Olympic and Paralympic Games, and arc has provided us with that opportunity.”

Peter Mather, BP





Left: famous pioneer aviator James Allan 'Jim' Mollison is greeted by a kangaroo on arrival in Australia in 1931. He made the flight from England in eight days 21 hours and set many flying records during the 1930s. Air challenges and races have been set between England and Australia since the beginning of the 20th century and continue today. **Opposite:** one of the most famous record-breaking flights was made a year earlier by English aviator Amy Johnson. Her arrival over Sydney Harbour Bridge (still in construction at this stage), in her plane called *Jason*, was captured in this famous image. In 1932, Mollison and Johnson married after Mollison proposed, just eight hours after they first met on a flight together. BP provided fuel for both these and other record-breaking flights.

A WARM WELCOME

BP has had a presence in Australia since 1920. In that time, as these pictures show, it has constructed refineries, developed a retail network, introduced the occasional chairman to the local wildlife and helped break the odd record or two.

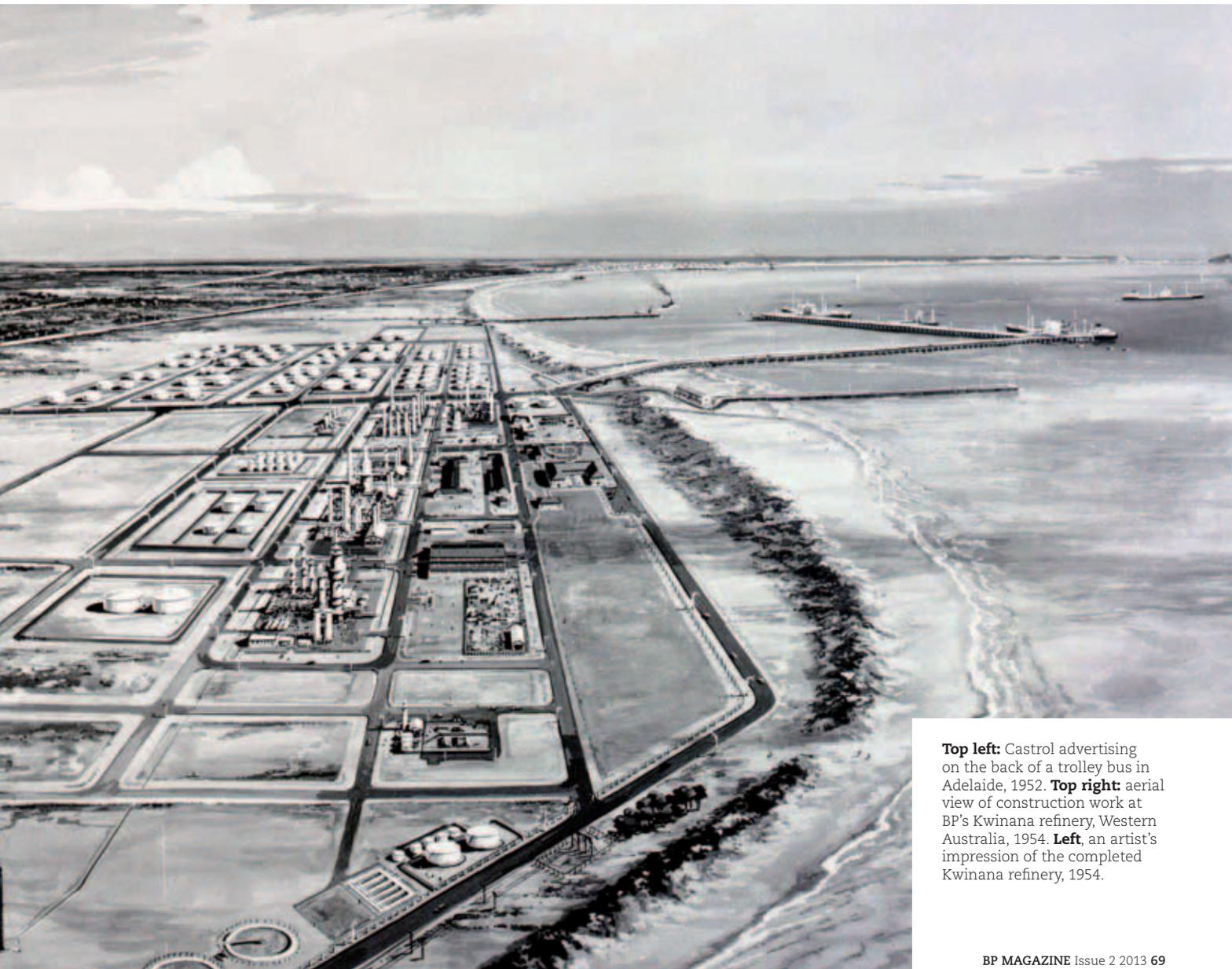
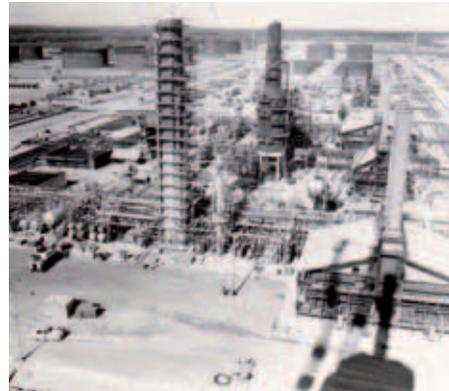


The arrival of Miss AMY JOHNSON C.B.E. in Sydney from Brisbane in the "Southern Sun," her plane "Jason" flying overhead. (Copyright.)



Clockwise from top left: a Castrol advertisement following the first motor race meeting ever held in Australia. The announcement informs readers that 13 out of 14 places in the race were won by drivers using Wakefield Castrol Motor Oil, 1914; Sir Eric Drake, then BP chairman, pictured at Phillip Island Sanctuary, Westernport Bay, during a visit to Australia that included the nearby Westernport refinery, February 1972; and pump service at a BP station in Woolloomooloo, near Sydney.





Top left: Castrol advertising on the back of a trolley bus in Adelaide, 1952. **Top right:** aerial view of construction work at BP's Kwinana refinery, Western Australia, 1954. **Left:** an artist's impression of the completed Kwinana refinery, 1954.



High chair

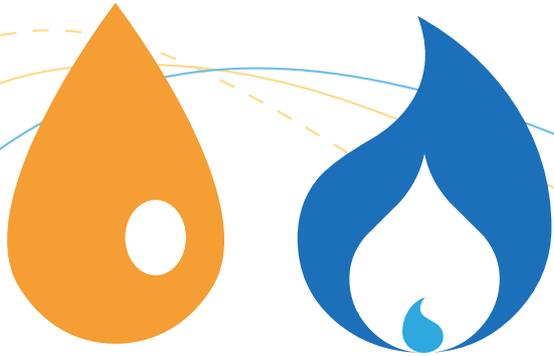
Photographer Aaron Tait took this shot while visiting BP Connect Goodna, on the western outskirts of Brisbane, the state capital of Queensland, Australia. In January 2011, the retail site was forced to close after it was completely submerged by water in the devastating floods that hit the state that summer. Waters reached the height of the service station's canopy and destroyed the store's interior and all the stock. After closing for 22 months and undergoing a rebuild of AUS \$2.7 million, the retail site is pumping gas once again. One marker remains of the flood damage – an office chair that became wedged in trees when the waters receded. Its presence is explained by a commemorative plaque that has been erected to recognise the extent of the 2011 floods.

The next edition of *BP Magazine* will be out in July 2013.

BP Magazine was printed using vegetable based printing inks and low alcohol damping on press. The FSC® certified paper was manufactured using 50% de-inked post consumer waste fibre and 50% virgin fibre pulp sourced from well managed forests at a mill accredited for EMAS, ISO14001. Laminated using Biodegradable film



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Continuing our commitment to Georgia.

Together with our business partners, BP has been operating energy transit projects in Georgia for 15 years. While our main priority is safe and reliable oil and gas pipeline operations, we continue to work with government, communities and businesses across Georgia to facilitate economic development and access to energy.

