Going Downstream: the Value of Integration
I was delighted to be invited to contribute to the second edition of Afaq, not least because of the very pleasing response to the first issue of our new magazine, published last December and dedicated to the Middle East.

As head of Total’s upstream operations in oil and gas, I am constantly reminded that our E&P activities, with production reaching nearly 2.4 million barrels per day from 30 countries, began in the Middle East many decades ago.

Thanks to this rich heritage, the Middle East story of Total continues to evolve and our upstream presence in the region continues to expand, with the acquisition of new exploration acreage in Qatar last May, and Yemen in March.

But of course Total’s contribution to the countries where we are active goes beyond E&P. Over nearly 90 years in the Middle East, we have become the most diversified international oil company in the region, with activities everywhere from the oilfield to the petrol pump.

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Despite being neighbours, when it comes to their respective hydrocarbons sectors Saudi Arabia and Qatar like to do things quite differently. Both of these Gulf states have some of the world’s most abundant supplies of natural resources and both have developed comprehensive infrastructure aimed at providing a global client base supplied with oil and gas.

However, the operating philosophies of the two national oil companies, Saudi Aramco and Qatar Petroleum (QP), differ quite comprehensively and any international oil company (IOC) looking to do business with either has to have the capability to adapt to each model.

In the Saudi Arabian upstream oil and gas industry, Aramco has traditionally worked on developing its hydrocarbon assets alone, while in Qatar QP has always formed strategic partnerships with IOCs and developed its assets in a production sharing agreement.

The Aramco way has always worked well for its upstream operations, but now the company is beginning to diversify its business and move its value chain further downstream, and to do this it needs to change its operating model in this sector to more closely resemble its neighbouring NOC in Qatar.

Aramco seeks partners with the expertise to plan, execute, finance and subsequently operate a world-scale oil refinery or petrochemicals plant. This is not an easy task and leaves only the world’s largest IOCs or chemical companies as likely partners.

“Any IOC that wants to work with a company like Aramco has to be able to help them solve a number of key problems,” says Patrick Pouyanné, President of Refining & Chemicals at Total. “Before Total was invited to participate in the Jubail Refinery project we had to prove we were capable of bringing added value to the project. This was not easy.”

Multi-dimensional partnership

Pouyanné cites a number of key criteria Total had to meet before they formed the US$9.6 billion Saudi Aramco Total Refining and Petrochemicals Company (Satorp) with the state-owned oil giant.

“For Satorp Total has had to provide the right technology, project management experience, innovative finance solutions and the capability to train local people to run a world scale oil refinery,” Pouyanné says. “We worked very hard and we feel positive that the project is going to be a great success.”

Any multi-billion dollar joint venture is not entered into lightly, but the Satorp scheme was only agreed after years of planning and talks between Aramco and Total.

The approaches of Saudi Arabia and Qatar to downstream development may differ but they share a similar goal: to extract the maximum value from their hydrocarbons resources. Kevin Baxter meets Patrick Pouyanné, Total’s recently appointed President of Refining & Chemicals to discuss how Total is achieving this goal alongside its partners.

By Kevin Baxter
When completed the refinery will process 400,000 barrels a day of Arabian heavy crude from the kingdom’s fields and this was one of the initial factors that led Total to the project.

“Due to its viscosity processing heavy crude types requires special technology and [Total] has developed extensive experience with this through its operations in Venezuela,” Pouyanné says. “It was from here that we were able to put together a plan that developed into Satorp.”

Pouyanné stresses that processing heavier crude need not be any more difficult than lighter crude types as long as you have the requisite technology in place to process it.

“One of the advantages of working in Saudi Arabia is that we have access to a dedicated resource for the [Satorp] refinery,” says Pouyanné. “We have designed all of the units at Satorp to be able to handle the Arabian heavy crude, so for us it is very important that we have a continuous supply of feedstock.”

Construction work is ongoing at the Satorp facility and there are currently over 40,000 construction workers on site. The engineering, procurement and construction contractors working on site come from countries as diverse as South Korea, Japan, France and India. Many of the subcontractors and support companies are local to Saudi Arabia as are many of the workers.

Commissioning is due to start on the first units at Satorp in late 2012 with full commissioning taking place through 2013. The product mix of the refinery will be gasoline, diesel and jet fuel as well as some base petrochemicals such as paraffin, benzene and propylene.

The ongoing success of the initial phase of the Satorp plant has left both Total and Saudi Aramco confident that the scheme will be a success when fully commissioned. Initial talks have already started for a phase II at the site which would concentrate fully on petrochemicals.

“The scale of the Satorp plant is quite inspiring and it is the largest site I have ever seen,” says Pouyanné. “It is a paradise for a refining and petrochemical company because all of the units are there and they have the economies of scale in place. Total is excited about this project.”

**Strong links with Qatar**

Saudi Arabia is a new market for Total, but in neighbouring Qatar the French supermajor has a history that stretches back to 1936 and has forged strong links with the Gulf state in many of its hydrocarbons sectors.

Total has been a key partner of QP in exploration and production, liquefied natural gas (LNG) as well as downstream ventures such as the Qatar Petrochemical Company (Qapco). Total has a 20 per cent interest in Qapco with the state-owned Qatar Petroleum Company (Qapco). Total has a 20 per cent interest in Qapco with the state-owned Industries Qatar holding 80 per cent.

Total became involved in Qatar’s downstream industry in 1974. Over the proceeding 38 years Qapco has grown into one of the Middle East’s largest producers of ethylene, low-density polyethylene (LDPE) as well as linear low density polyethylene (LLDPE).

“Their involvement with Qatar’s downstream industries is an interesting story and stretches back over many decades,” says Pouyanné. “The plant we built with Qapco in the 1970s was the first petrochemicals plant in the country and the industry did not really take off again until the late 1990s.”

The second venture in Qatar was a chlorine plant, but it took the Dolphin Project to really kick-start the petrochemicals industry in the country. The Dolphin Project was developed to supply gas to the UAE and Oman via a pipeline, but the ethane that is produced has been used to supply Qatar’s petrochemicals facilities and access to this feedstock stream ushered in a massive expansion scheme.

“There was a big debate at the time over what to do with the ethane,” says Pouyanné. “Luckily for Total they decided to use some of it to increase the domestic production. It was from here that we could develop the Qapco complex and the Qatarfin project.”

The result was the construction of the Ras Laffan Olefin Cracker which is the largest of its type in the world with a capacity to produce 1.3 million tons-a-year (t/y) of ethylene. The plant was commissioned in 2010 and now feeds the Qatofin plant in Mesaieed.

Qatofin began operations in 2009 and produces 450,000 t/y of LLDPE which is sold on the international market.

**Tectonic shift**

“Their expansions in Qatar are linked to the desire to localise some downstream operations and add value to its hydrocarbons,” says Pouyanné. From what is happening in Saudi Arabia and Qatar it is obvious that a tectonic shift is taking place in the way many Middle East countries develop their respective oil and gas industries.

IOCs in the Middle East are changing their operating models to adopt to lengthening value chains as they strive to add value or create employment opportunities for the growing population of the region.

The challenge that now faces IOCs is that they need to offer solutions to the state-owned companies in the Middle East that will allow them to implement these downstream strategies.

“Oil companies like Aرامco and QP have always been excellent at selecting their own people based on their respective competencies,” says Pouyanné. “From this they have developed the same competencies for selecting partners for their projects. It is down to these selected companies to deliver, but if they do then the opportunities could be almost limitless in the Middle East’s downstream sector.”

**Satorp Refinery production capacity: 400,000 barrels per day**

| Shareholders: Saudi Aramco (62.5%), Total (37.5%) |
| Employment opportunities in the Kingdom: 6,000 to 7,200 direct and indirect jobs |
| Operational: End of 2013 |
| US$10 billion: Total amount of engineering, procurement and construction contracts awarded |
The best of both worlds

Combining its refining and petrochemicals capabilities allows Total to achieve economies of scale and tap emerging markets

Any company wanting to succeed in the global hydrocarbons industry has always had to change with the prevailing conditions. In the different downstream sectors developing new technologies has always played a key role but effectively managing your operations to maximise returns in refining and petrochemicals operations is also vital.

In October 2011, Total announced its project to combine its Refining and Petrochemicals activities in one division, thus realigning the company’s focus on the hydrocarbon sector’s diverse downstream industries. The new division becomes a production hub that combines Total’s current refining and petrochemicals operations. As well as oil refining and petrochemicals, the division also includes speciality chemicals and fertilisers.

Complex oil refineries now produce a diverse product mix that includes many of the base chemicals used in petrochemicals production. In order to best utilise feedstock flows as well as adapt to new markets, Total decided on the merger. Utilising refined products such as naphtha, liquid petroleum gas, aromatics and propylene and feeding them into integrated petrochemical plants offers Total economies of scale and the opportunity to focus and utilise all of its resources efficiently.

The new division is run by Patrick Pouyanné. The official joined Total from a French government post in 1997 and has worked in a number of key roles at the super major including a key role with Total’s subsidiary in Qatar.

Pouyanné says that the new division has been specifically designed to allow Total the maximum amount of options when it comes to its downstream operations.

“First of all, it makes industrial sense. There are obvious similarities between the two activities. The refineries supply feedstock – naphtha, LPG, propylene and aromatics, derived from oil – to petrochemical plants. Both require similar technical competencies. The creation of the business also makes sense from a strategy standpoint, because both activities are facing the same challenges. They need to improve their economic performance in Europe, where despite strong positions returns are low, and to expand in growth markets in Asia, Middle East as well as China, Korea and India.”

Patrick Pouyanné: “We’re the first oil major to truly combine refining and petrochemicals in a single organisation. We’re deeply committed to integration.”

Total is hoping that the reorganisation will allow the oil major to adapt to changing global energy markets and tap into the growth potential of the emerging markets of the East. "We’re the first oil major to truly combine refining and petrochemicals in a single organisation. We’re deeply committed to integration." Our Specialty Chemicals subsidiaries will be managed in line with their specific requirements and will have a degree of independence, as was the case in the former Chemicals business," says Pouyanné.

The division will implement both defensive and offensive strategies to face the key issues of the global refining and petrochemicals market.

In regards to the defensive part of the strategy, the new division has been devised in such a way as to enhance the profitability of Total’s current downstream operations in its mature markets such as Europe and the US.

Total is Europe’s largest oil refiner and it is hoped that the new business unit will allow it to maintain that position as well as allow it to consolidate its petrochemicals division.

The offensive solution of the new division is aimed squarely at positioning Total in new growth markets in Asia. Countries of focus include Saudi Arabia and Qatar in the Middle East as well as China, Korea and India.

Having a fully integrated refining and petrochemicals unit is a first for an international oil company and Pouyanné cites the move as being observed with interest by some national companies as well by some of its competitors.

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Saudi Aramco 2010 total refining capacity
Figures in thousands of barrels a day

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<tbody>
<tr>
<td>Worldwide</td>
<td>4,163</td>
</tr>
<tr>
<td>International joint ventures</td>
<td>2,060</td>
</tr>
<tr>
<td>Domestic joint ventures</td>
<td>1,108</td>
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<tr>
<td>Domestic wholly owned</td>
<td>995</td>
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</table>

Source: Saudi Aramco

Qatar oil & gas projects at study, design or tender stage

<table>
<thead>
<tr>
<th>Year</th>
<th>Production (in billions of cubic metres)</th>
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<tbody>
<tr>
<td>2010</td>
<td>116.7</td>
</tr>
<tr>
<td>2009</td>
<td>89.3</td>
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<tr>
<td>2008</td>
<td>77</td>
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<td>2007</td>
<td>63.2</td>
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<td>2006</td>
<td>50.7</td>
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<td>2005</td>
<td>45.8</td>
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<td>29.5</td>
</tr>
<tr>
<td>2001</td>
<td>27</td>
</tr>
<tr>
<td>2000</td>
<td>23.7</td>
</tr>
</tbody>
</table>

Source: MEED

Saudi Aramco refined products exports by region

- Europe 5.4%
- Mediterranean 3.1%
- Far East 32.7%
- Other 37.1%

Source: Saudi Aramco

RLOC ethane cracker, Ras Laffan, Qatar.

Qatar natural gas production

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Source: MEED

About Kevin Baxter
Kevin Baxter is Industry Editor of Middle East Economic Digest

Insights: Going Downstream: the Value of Integration
Leisure time in Downtown Doha, Qatar.

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Product mix of Saudi Arabian refining capacity

<table>
<thead>
<tr>
<th>Refinery</th>
<th>Owner</th>
<th>Start-up</th>
<th>Diesel</th>
<th>Gasoline</th>
<th>Fuel oil</th>
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<tr>
<td>Satorp</td>
<td>Aramco/Total</td>
<td>2013</td>
<td>49%</td>
<td>23%</td>
<td>0%</td>
</tr>
<tr>
<td>Red Sea</td>
<td>Aramco/Sinopec</td>
<td>2015</td>
<td>49%</td>
<td>23%</td>
<td>0%</td>
</tr>
<tr>
<td>Jizan</td>
<td>Aramco</td>
<td>2017</td>
<td>30%</td>
<td>20%</td>
<td>25%</td>
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</table>

Source: Saudi Aramco

Construction of the Jubail refinery, Saudi Arabia.
Today, Kuwait Energy, the company she founded with a team of three in 2005, is producing more than 17,500 barrels of oil equivalent per day, has over 200 million barrels in reserves, and employs 500 people in six countries.

She is a model of single-minded determination: one of the few female petroleum engineers in Kuwait; a member of a fire-fighting team that extinguished dozens of oil fires in the aftermath of the first Gulf War; and an industry veteran with nearly three decades of experience who claims to have “oil in her blood.”

Yet despite having a career that can only be described as groundbreaking, Akbar humbly credits her success to family values and the influence of one very important person - her mother.

“My role model is my mother – she was never formally educated, never went to school. She’s just an elderly Kuwaiti woman whose biggest treasure was the love she gave to her children: unconditional, not expecting anything in return. That’s what I remember and it’s what I give to my children. For a woman to be able to lead two lives, as a wife and mother and as a professional, is exceptionally difficult. Without her it would have been impossible for me.”

A supportive family environment allowed Akbar to pursue her calling as an oil and gas professional. “I was born in Ahmadi, which is an oil town. Actually, the hospital sits on the oilfield itself. My whole childhood was around oilfields. Our favourite thing was to go underneath the fence of the oil company into the facilities, watching the flares, talking to people. So I just grew up in this environment, and that’s why when I went to university I thought the natural thing to do was study engineering.”

Joining state-owned Kuwait Oil Company as a fresh-faced chemical engineering graduate, Akbar set her sights on getting her hands dirty in the oilfields. But company rules barring women from working at production sites almost derailed her career plans.

“I had this wonderful, open-minded manager and he managed to convince the department to take me. But they had a condition: they said they would allow me to work [in the field] only during the daytime, from 7:00am to 4:00pm, the working hours of the company.”

By the time she arrived for her first job, on an offshore oil rig, it was already time to return home. When a crew boat finally arrived that night, her replacement was unwilling to clamber aboard the rig in the rough conditions. “So I continued working until 10:00am the next morning, when the next crew boat came. This was the first rule...
One on One with Sara Akbar

I had worked ten years in the fields, hard work, beautiful work, but I went unrecognised because I was just doing my job,” she says. “But when I participated in this fire-fighting team for two months, I became a hero. "

Iraqi army blowing up the wells. It was a horrible thing because I was very close to them. It was knowledge she swiftly applied to the restoration of oil production following Kuwait’s liberation on February 28, 1991, as part of the first all-Kuwaiti team deployed to tackle Saddam’s oil fires. "We started in the Umm Gudar field and controlled thirty-two wells around there and another ten wells in the Burgan field, including the lost well, which we controlled on November 6, 1991. It was a big celebration."

But the irony of the situation failed to escape her. “I had worked ten years in the fields, hard work, beautiful work, but it went unrecognised because I was just doing my job,” she says. "But when I participated in this fire-fighting team for two months, I became a hero. Because I was the only woman on the team and it was seen as a job for men."

A senior manager colleague at Kuwait Oil Company: “He was the person who just opened the door. That’s the difference he made, just giving me that opportunity to go and do what I wanted to do. People in management positions can make a huge difference to people’s lives, just to give them the opportunity and the chance to do what is normally taken for granted.”

Kuwait Energy: “We’re not just another oil and gas company. We want to serve the people of the region and bring best practice to all the business we do, to demonstrate that to do things in a sustainable way is good business.”

Opportunities for women: “It’s easier for women in Kuwait than it was before but we have a lot to do. There is a role for women in leadership positions to encourage young women to engage and develop.”

Her management philosophy: “If you have an idea, just go and do it. We should have the courage to allow people to go and make mistakes because that’s the only way they can achieve and build confidence.”

Partnerships with IOCs: “They can transfer a lot of knowledge and develop social programmes and projects in sustainability. R&D is another area they should have the courage to allow people to go and make mistakes because that’s the only way they can achieve and build confidence.”

Putting out her first oil fire: “We started the operation at night because nobody was around and we were unsure of our abilities. It didn’t take long to go out, about half an hour. But then it became very dark because we didn’t have any lights! So we switched on all the headlamps from the cars and sent someone to Ahmadi to bring proper lighting. By the morning we actually had 400 million barrels in reserves by 2015. That’s currently what drives me - to do what I said I would achieve.”

Considering how successfully Mrs Akbar has overcome seemingly insurmountable obstacles in her career so far, it is safe to assume that it is only a matter of time before she reaches her next professional milestone - with a helping hand from her family, of course.

I thought I could do better with my life. I served my country to the best of my knowledge and capability, and decided I could do more by going to the private sector. So we started this company, Kuwait Energy, because we saw a gap in the market: at the time, there was no independent in the oil and gas sector in this part of the world.”

Today, the company pumps oil and gas from Egypt, Oman, Ukraine, Yemen and Russia, and is even developing oil and gas assets in Iraq. For Mrs Akbar, though, Kuwait Energy is more than “just another oil and gas company”. Its mission is to introduce best practice into the region and raise the bar for companies in Kuwait. "By best practice, I mean transparency, disclosure, governance. They are missing in so many companies. I’m targeting being the largest listed independent oil and gas company in MEFIA. We have definite targets that we promised our shareholders, employees and partners. I want to have 400 million barrels in reserves by 2015. That’s currently what drives me - to do what I said I would achieve.”

Her children: “When my son was five years old, he said he wanted to study volcanoes in the US. I thought: ‘Ah, here’s my geologist!’ But now he’s at university studying mechanical engineering. My daughter isn’t clear what she wants to do yet; maybe she will end up in business. But my little one is very clear: he wants to be a lawyer.”
Yemen LNG: Empowering Yemen
by Robin Mills
Total and its partners in Yemen have achieved what few observers outside the country thought possible: the realisation of a world-scale industrial project using local manpower and the most cutting-edge technology. Afaq visits Sana’a and Balhaf to report on the transformative impact of Yemen LNG

In the Middle Ages, Yemeni sailors dominated trade in the Indian Ocean, bringing spices and Chinese porcelain from the Far East. Today, ships from Yemen carry a new cargo to Asia, Europe and America – liquefied natural gas (LNG). The Yemen LNG project, in which Total is the largest shareholder, dominates a remote stretch of the south coast. The largest industrial project and foreign direct investment in the country, it represents a major contribution to the economy and employment. And it holds many lessons for how international and national oil companies can work successfully together in the Middle East and farther afield.

Delivering the project: “Some people thought we’d never make it”

Yemen LNG’s origins go back to 1995. The company was established, with Total as the lead shareholder, to export gas from fields in the Marib region, located to the east of Sana’a. The team designed the plant, identified Balhaf on Yemen’s southern coast as the most suitable site and established a relationship with Korea Gas Corporation which would serve it well in the future. Delayed by the 1997 Asian economic crisis, internal audit manager Abdalla Awn, with the project since the beginning, recalls that “some people thought we’d never make it.” But when the South Korean gas market revived in the early 2000s, and with US gas prices rising, Yemen LNG seized the opportunity. Like other Middle East LNG projects, it had the ideal geography - able to send cargoes to Asia, Europe or the Americas.

25 years of successful partnership

Total is proud to celebrate its twenty-fifth anniversary in Yemen this year, notes Total’s Arnaud Breuillac, Senior Vice President for Exploration & Production in the Middle East. As well as its role in Yemen LNG, Total is the only major oil company to operate in Yemen, he says. “We managed to raise the production on Block 10 from 25,000 barrels per day to 80,000. We unlocked new oil out of the basement and identified how to develop those deep and difficult reservoirs.” Total works with partners including the Korean National Oil Company and China’s state-owned giant Sinpec in other blocks. “The oil production in Yemen is declining but the share of Total has been increasing and we still believe there is potential for more.”
Yemen LNG won a competitive tender from Kogas and secured a further sales contract with Gaz de France Suez to the US. When Total stepped in to buy the remaining volumes, the project was ready to go ahead. In 2005, Yemen’s General Authority for Social Security and Pensions (GASSP) entered as a partner, given confidence, as chairman Dr Ali Al Shour explains, by “the very important contribution of Total. Total needs no introduction”.

Francois Rafin, General Manager of Yemen LNG, is proud that “the LNG project was done in the fastest time schedule during 2005-2010, which was a difficult period for the industry with very stretched resources. The plant and the terminal have been completed within 4 per cent of the original budget, when the LNG industry competed with cost overruns that amounted up to 200 per cent.”

This was due to excellent project management, long experience of executing major projects in challenging locations around the world, and discipline in keeping to the original plan. Operations manager Akin Messié praises the fast start-up and 99 per cent reliability during 2011, and a strong safety culture. Innovative technologies were used to check the welds and storage tanks for flaws, speeding start-up and minimising environmental impacts.

“It is like playing with an orchestra,” says Rafin, as he explains how every partner brings something to Yemen LNG:

- The technical skills, reputation and financial capacity of Total and Hunt.
- The market of the three Korean partners.
- The essential interface with the host country of YGC and GRSSP.

As Total’s Breuillac observes, “Everything we do here in terms of exploration and production, be it in the UAE, Qatar, Saudi Arabia, Iraq or Yemen, our operations at their care are in tandem with the goals and wishes of the national oil companies.”

Engineer Ammar Saleem, Director of the Yemen Gas Company, feels that “Yemen LNG’s success is due to strong shareholders and one of the best marketing committees”, who put in all their efforts to secure the Korean market. YGC is now working to build on Yemen LNG by using Yemen’s further gas reserves for power generation and petrochemicals.

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With Yemen’s oil production in decline, LNG is critically important in offering an alternative source of government funding. Revenue to the government will amount to some US$3.0 billion over the life of the project - and peak annual payments are equivalent to more than 10 per cent of Yemen's budget. Dividends to GASSP will help pay pensions to public sector employees.

The decision to go ahead was an important vote of confidence in Yemen. As Dr Ali Al Zubairi attests, "Total’s presence in Yemen has contributed widely to improving the investment environment. We look forward to more energy investment. Other companies have talked about this project, from Kuwait, from the UAE." Francois Rafin describes how "all this shows the financial community that you can do very large things in Yemen, and they can be successful."

The Yemen LNG teams were keenly aware of the need for people in the area of the plant and pipeline to see their benefits. Engineer Ansar Salem of Yemen Gas Company notes that Yemen LNG was "better than other projects in sustainable development. The project is not only able to generate revenues and income, but to support the development of the country." Community officers are engaged in constant dialogue to understand local needs and anticipate problems. The key is to understand the distinct needs of each community - herders, farmers, and fishermen. Historian Tariq Al-Maqriti, who wrote in the fifteenth century, "Yemen is a land of honey," would have been pleased to see the new honey cultivation techniques and the 15,000 trees planted to encourage bees.

Community relations manager Jamal Al Akwaa lists the projects organised by Yemen LNG in the impoverished Shabwa area: small-scale dams and irrigation projects; electricity; a 30-bed hospital; and promoting small local enterprises, drawing on Total's experience with similar microfinance projects in developing countries. Engagement with the local community has been key. "Engagement with the local community has been key; some 280 communities and tribes live along the 320-kilometre-long pipeline, and we have learnt to speak to them daily and build relationships with each of them," explains Francois Rafin. "We are building clinics and hospitals and water networks: in fact, we will commission a new network this month that will deliver water to 4,000 households." Rafin says, "We have made agreements to develop schools and provide teachers and equipment, with a particular focus on female education." Some of the graduates will be the next generation of staff at the plant with young people from nearby Shabwa and Marib provinces, and elsewhere in Yemen, awarded scholarships in France.

Environmental issues were not an afterthought for the project, but a fundamental consideration, Rafin explains. Local fishermen were initially unhappy that the shipping channel was placed off-limits to them, but it is now seen that catches have actually gone up. The pipeline was rerouted to avoid some important archaeological sites, now on display in the Sana’a National Museum. Yemen LNG was important not just in following Yemen’s environmental standards - but in establishing them.

Ali Al Zubairi, Yemen LNG’s Corporate Affairs Manager, explains how the company coped with the political turmoil during 2011, during which the pipeline to the Balhaf terminal was attacked. "The secret to repairing your pipeline is easy access to the area. Thanks to our relationship with the local tribes-people, we fixed [the pipeline] very quickly.”

Al Zubairi believes there is a clear sense of optimism following the recent elections, a feeling that the country has an opportunity to move on. It is partly for that reason that most employees were determined to continue working at the height of the unrest last year: "we had some people in troubled areas, who weren’t able to come in, but it is now seen that the fish breed in the protected area, so that
The plant has been constructed in Yemen by Yemenis,” states Yemen LNG’s General Manager Rafin. “Five thousand people are employed directly and indirectly and the company is involved in the local community, everywhere from schools to construction to scholarships.”

HR manager Abdulla Ali Wedee says, “We thought we could never start with such a high level of Yemenisation at such a complex plant, but 85 per cent of the staff are now Yemenis, the only LNG project in the world to achieve such levels so quickly. The target is to raise this to more than 90 per cent and bring more Yemenis into senior positions.”

Some graduates of the plant will go to international assignments with Total outside Yemen, including new LNG plants such as its US$34 billion Ichthys project in Australia, in which Total has a 24 per cent stake. This possibility interests Saleh Al Ashtal, the enthusiastic young plant methods engineer. Educated at the University of Texas, he started out with Total’s E&P business in Yemen and spent two and a half years in Paris. He observes how ensuring maximum plant reliability “is not just technical”. In this remote location, served by logistics hubs in Dubai and Djibouti, he liaises with logistics colleagues to agree which supplies “are really critical to smooth operations”.

One quarter of the Yemen LNG employees are women of the Sana’a office, which features a nursery and a women’s gym. Projects engineer Rakia Najmi has worked in France, Syria and now Balhaf since joining Total four years ago. She says the 29 nationalities at the plant “work and live like a family. We have one goal and have to reach it all together. I would like to encourage women to get this experience. It has made me totally different.”

To continue raising the skills of the workforce, the LNG School of Technology on the plant site runs a range of courses.
Dome Trading & Contracting (an important supplier to Yemen LNG) has been a key player in Yemen’s oil and gas industry since 2000. With 150 trainees in 2011, the various Yemen LNG training programmes are designed to serve not just the needs of the company, but those of ministries and other oil companies in Yemen, and eventually the whole Middle East.

Iman Senhoub, Yemen LNG’s articulate contracts lawyer, explains that “energy education was never more relevant than today.” The company provided a scholarship for her to study at Dundee University in the UK. Today, working with experienced expatriate colleagues gives her a “golden opportunity” to learn, and demands her “to be creative and think a lot.”

Local contractors have been key in constructing and operating the plant, and providing security and catering, and Yemen LNG has worked with them to help develop their skills. Abdul Aziz Da’er, General Manager of Dome Petroleum, explains how his firm “started very small” in 1999 but that “opportunity” to learn, and demands her “to be creative and think a lot.”

Total is also investigating opportunities to use more gas to supply body-needed electricity to Yemeni consumers. A new power plant is planned for Hadhramaut, and there are plans for the new government to approve a pipeline to Sana’a.

The reputation of Total LNG equals its reputation in deep offshore. We capitalise on the nine plants currently in operation worldwide where we have interests,” says Rafin.

Lessons of Yemen LNG

Francois Rafin points out the project’s strategic importance. “Total has really established its LNG reputation, which makes it a natural leader for a project such as Shatkman” referring to Russia’s giant LNG project. “The reputation of Total now in the LNG industry equals its reputation in deep offshore. We capitalise on the nine plants currently in operation worldwide where we have interests - Qatar, Indonesia, Nigeria, Oman, Abu Dhabi, Fluvio... Total now has the second largest marketing portfolio in the world in LNG, thanks to Yemen and Qatar.”

The rapid development of a mostly-local workforce is encouraging for other MENA countries struggling with unemployment. Yemen LNG is an important generator of revenues for the state budget - but it is more than that; it brings economic development in the surrounding area, as well as catalysing the growth of local companies and the education of skilled people. Yemen LNG is, in many ways, a template for future petroleum developments in the Middle East and globally. It shows the challenges of delivering world-scale projects in remote and challenging locations. Total’s global experience has allowed it to draw on lessons from around the world. The close cooperation between international oil companies, national oil companies, government, customers and communities is essential in an ever-more complex, connected and demanding world.

Serving customers

This intense concentration on community relations paid dividends in helping the project continue operations during Yemen’s tumultuous 2011. This justified the faith placed in it by its Korean customers - who, lacking domestic gas resources, are critically dependent on reliable suppliers. Francois Rafin observes that Yemen LNG cooperates so closely with the EU, US and Yemeni militaries that “when you look at the maps of piracy, in front of Balhaf is the safest place in the world.”

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We are the biggest oil company in Yemen, and the only major, and fully aware of the responsibilities we have. That’s why we have maintained a permanent and continuous presence in Sana’a.

“If you make the necessary effort to engage with the local communities, you can operate even at the most difficult times; 2011 was an outstanding year for Yemen LNG, as all commercial objectives were met.

“We hope to find more oil and gas in Yemen. We are maintaining a big exploration presence, the most obvious sign of our future commitment, to unlock more value for Yemen.

“We have reached 85 per cent with our Yemenisation programme at Yemen LNG, and higher than 90 per cent is achievable.

“Our 25th anniversary in Yemen in June will be a good opportunity to praise all the good work that has been done, and to send a signal to the market - that Yemen is a country worth investing in.”

**Total in Yemen**

In Yemen, Total has been present since 1987, just one year after the country began producing oil.

Production reached 86 kboe/d in 2011, compared to 66 kboe/d in 2010 and 21 kboe/d in 2009.

Total has interests in the country’s two oil basins, as the operator on Block 10 (Masila Basin, East Shabwa permit, 28.57%) and as a partner on Block 5 (Marib Basin, Jannah permit, 15%).

In addition to its current interests in exploration blocks 69, 70, 71 and 72, the company recently acquired a 40% interest in the Block 3 exploration licence, which it will operate.

Total has a 39.62% interest in the Yemen LNG project.

**LNG explained**

Liquefied natural gas, or LNG, is natural gas that has been cooled to minus 162 degrees Celsius. At that temperature, natural gas condenses into a liquid. When in liquid form, natural gas takes up to 600 times less space than its gaseous state, which makes it feasible to transport by LNG carriers over long distances.

**Yemen LNG: Fast facts**

- Partnership between Total (39.62%), Hunt Oil Company (17.22%), Yemen Gas Company (16.73%), SK Energy (9.55%), Korea Gas (6%) and GASSP (5%)
- US$4.5 billion investment: largest industrial project and capital investment in Yemen’s history
- US$2.8 billion limited recourse project financing from export credit agencies and commercial banks
- Approved August 2005
- Project operator is Yemen LNG Company
- His Excellency Hisham Sharaf Abdalla, Yemen’s Minister of Oil and Minerals, is Board Chairman
- Upstream facilities in Block 18 in Marib, with reserves of 9.15 trillion cubic feet of gas
- Two-train liquefaction plant in Balhaf on the Gulf of Aden
- 320 km pipeline connecting Marib with Balhaf
- 7.4 million tons per year capacity
- First export on November 7, 2009 and reached full capacity in 2011
- First shipment was delivered to South Korea
- 106 cargoes shipped in 2011
- Long-term supply agreements signed in 2005 with GDF Suez, Korea Gas Corporation, and Total
- Sufficient gas to supply new and existing customers for the next 25 years

**Preserving marine life**

The rich coastal waters around Balhaf contain 79 different species of coral.

Yemen LNG has sponsored two guides to the corals of the Yemeni coast.

International specialists were engaged to transplant corals away from construction areas.

The project cost US$60 million. 1,500 corals were moved and 91% survived.

The largest coral moved weighed 4 tons - a world record for relocating a living coral.
His Excellency Hisham Sharaf Abdalla, Yemen’s recently appointed oil minister, shares his vision for developing the country’s energy sector.

“Investments in Yemen can succeed”

“Every time we go abroad we put this project in every exhibition, to show that we succeeded once and that we can do it again,” says His Excellency Hisham Sharaf Abdalla, Yemen’s Minister of Oil and Minerals, about Yemen LNG. Abdalla assumed his post a few months ago, as part of the new unity government. However, trained as an engineer in the US and with long experience in the Yemeni government, he is well-prepared for the role.

He is convinced of the importance of Yemen LNG for the country. “For a long time we’ve been saying Yemen cannot solve its unemployment or economic problems except through investments, and I mean foreign direct investments. For us, Yemen LNG is our certificate to the world that investments in Yemen can succeed – that you can come to Yemen and do similar projects. It shows our ability to work with others and manage such sophisticated ventures.”

Speaking to Alfaq from his home in Sana’a, a day after historic elections installed Abedrabbo Mansour Hadi as the new president, Yemen’s oil minister sees the country’s relationship with Total as a strategic partnership, with the potential to expand further. “They can go offshore for more exploration. Total is showing the rest that this country still has a lot of potential. They are making a profit for Yemen... Sometimes, when I see other companies, I try to make them jealous by telling them what Total did but if they put in what Total is putting into Yemen, I don’t mind!”

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Oil and gas critical to reconstruction

“Yemen has many promising sectors, such as agriculture, fishing, tourism, but without energy we can’t do anything,” says Abdalla, as he lays out his vision for the energy sector. “We have to exploit our energy. Our way out is oil, gas and minerals – these are number one, and revenues from them will promote other industries. Yemen will not graduate from the least developed countries without oil and gas.”

An engineering graduate from Penn State University and a Master’s degree holder from Catholic University of America in project management, Abdalla plans an intensive programme to offer more areas for exploration and improve the environment for investment.

“We are working on a short-term plan of three years and a 10-year medium term plan. We will put more blocks forward, do more studies. We have to go beyond what we used to do, instead of just waiting for others to come to us... People say that the oil here is declining – yes, it’s declining, but only because we have offered only a small part of what we have. You want it to go up by looking to more blocks, offshore operations and areas where you have gas... We will give blocks to those that are interested over the next three years, and go beyond [the existing] small tender process.”

With Yemen LNG having kick-started the development of a gas industry, Abdalla plans to amend existing production sharing agreements to allow companies to develop gas as well as oil. “A lot of companies are saying they have found gas but don’t want to work without prior arrangements, so we are signing with them because this country cannot wait. If we keep on with the old traditional methods, we will lose.”

Encouraging grassroots development

Citing Yemen LNG’s initiatives aimed at encouraging local contractors, the minister insists that inward investments must translate into long-term grassroots projects. “Foreign investments are good at the beginning, but the private sector and the government need to create partnerships that will last. Let’s start some kind of training, workshops, small factories. If we focus on these, train our people, invite people to come in, believe me, Yemen in the next 10 years will witness a big change.”

Abdalla sees security and stability as the backbone of future development and is optimistic that the country can chart a path towards prosperity. “We’re a poor country, true, but we’re a wealthy country if we are ready to explore and realise our potential. The new president is of such thinking. The new era with the new president will build on the good of what has been done in the past and start Yemen as a country that wants to emerge.”

And Abdalla sees Total playing a significant part in Yemen’s reconstruction, not only because of its work on Yemen LNG, but also because of the leadership role it is taking in the development of a gas industry. “Total has worked in many countries and we will use their expertise to improve Yemen. What has been done [with local employment at Yemen LNG] can be replicated in other fields. This takes time, but [Yemen LNG] proved that Yemen can do it. People didn’t expect a project of US$4.5 billion in Bahif, now it’s there.”

Abdalla’s 24 years of government experience give him the confidence to tackle the momentous challenges of his new role. “Yemen needs to have a plan of 10-15 years. The issue is not only wealth or natural resources. The main problems are population and how to upgrade the education of the people. But I’m an optimist. What I’ve witnessed and managed has given me a good insight into how to work in the ministry with the existing teams, and we’ll ask them to look beyond their imagination.”

Visiting the rocky plains at Bahif in 1995 or even 2005, it would indeed have taken imagination to visualise rising there the gleaming towers and tanks of the modern industrial monument that is Yemen LNG.

Hisham Sharaf Abdalla says: “Total is showing the rest that this country still has a lot of potential. They are making a profit for Yemen...”
Off the coast of Doha, Al Khalij, a long-standing venture between Total and Qatar Petroleum, is demonstrating the value of teamwork

Khalfì Jassim Al-Malki first visited Qatar’s Halul Island when he was a boy. He came with his father and uncle, both of whom made their living from the sea as fishermen.

Back then the island, which is about 80 kilometres north-east of the country’s capital Doha, was a desolate place: a waterless, rocky outcrop in the middle of the Arabian Gulf. No one lived there but the local fishermen, while pearl divers valued it for the safe harbour it offered from occasional rough swells.

Today, the island still provides a welcome refuge for clusters of wooden dhows, and Al-Malki continues to visit, some 40 years later. But these days it’s oil, not fish, that brings him there.

Al-Malki is now one of Qatar Petroleum’s Halul Superintendents HTO/1. Working on the island on a seven-days on, seven-days off rotation, his job is to manage the facilities and 1,700 plus workforce that make up one of Qatar’s most important oil storage, import and export terminals, as well as the country’s main hub for offshore production.

Total has been involved in Qatar’s oil industry since before Khalifa Jassim Al-Malki was born. Operations began in 1936 and since then the company has built up a productive partnership with the country, and a strong relationship with Qatar Petroleum.

“Cooperation with Total goes way back,” says QP Operations Manager, Muburak Awaida Al-Hajri. “We have close coordination with them on daily activities. We have regular meetings with their management and we are always looking for ways to improve coordination.”

Khalij platform, 120 km north-east of Doha, Qatar.
A People’s business

If living on a remote desert island appears challenging, despite all the modern facilities, then working out to sea in the Al Khalij field is a different order of magnitude. Paul Glover, who manages the Rouan California oil rig, says people skills are just as important to the job as technical abilities.

“You have to be able to manage people; if you can manage people you can manage the job. There are 90 staff on board – a lot of different characters, opinions, nationalities and religions. I’ve learnt not to talk about politics and money – avoid those two subjects and you’ll get along fine.”

Ahamd Rimer Al-Hemaidi, Qatar Petroleum’s Manager of Halul Terminal & Export, puts it succinctly: “The safety of our staff and the people on the island always comes first.”

Preserving the environment

Protecting the environment is also extremely important to both Total and QP. The island is home to 89 species of birds and 84 varieties of plants; offshore there are coral reefs with 26 species of fish. Total takes its responsibilities seriously. “A lot of effort goes into disposal of rubbish, there must be no oily water going into the sea, that is completely forbidden,” says Pascal Taillefer. “Even when you are re-injecting salty water back into the well you must remove the maximum oil content, you can’t even have a few ppm.”

Total is also committed to the principle of sustainable development. Among many local programmes, it has opened a multi-million dollar research centre inside Qatar’s Science and Technology Park and provides scholarships to some of the most promising Qatari students – one of whom is the current manager of the Halul Terminal, Ahmad Al-Hemaidi. He spent eight months with Total in France, first in Paris and then at Total’s research and development centre in Pau.

Qatar Petroleum is now studying how to improve the facilities on Halul. There are plans to bring electricity from the mainland (the island currently generates its own power); as well as proposals for new accommodation, roads, export facilities and four more desalination units (in a joint venture between Total and QP). Qatar has ambitious plans for Halul, and Total is clearly committed to being a part of that future. In its own way, the Al Khalij field is also keeping a Qatari tradition alive. Forty years after Khalifa Jassim Al-Malik’s first fishing trip, people are still visiting the island, and will continue to do so for many years yet.

About Simon Mars

Simon Mars is a writer and TV producer based in Dubai, London and Cairo.

Total in Qatar

AI Khalij offshore oilfield: 100% owner and operator

NFB Gas Block, North Field: 20% Block BC Exploration licence, North Field: 25% shareholder

QatarGas 1: 10% shareholder with QP

QatarGas 2: 16.7% shareholder in Train 5, from which Total supplies 5.2 million tons of LNG to the world per year

Ras Laffan Refinery: 10% shareholder

QPCCO: 20% shareholder

QTRDFET: 36% shareholder

Ras Laffan Olefins Company: 22.2% shareholder
World News

Corporate

Financial results: In February 2012, Total published its 2011 financial results. The Group recorded a 17 per cent increase in net income in 2011 to US$16 billion and forecasts net investments in 2012 to reach US$20 billion.

Qatar increases its share: Qatar’s sovereign funds stake in Total share capital reached 3 per cent in April 2012, making it one of the group’s largest shareholders. Commenting on the increase, Christophe de Margerie, Chairman and CEO of Total said: “It is clearly a positive development.”

Europe

Formula one: Last December, Total and Sahara Airways partnered with French driver Romain Grosjean to kick off the 2012 Formula One season which started March 18.

Norwegian North Sea: In February 2012, Total launched the development of the Hild field in the Norwegian North Sea. The development represents an investment of US$4.2 billion and Total has a 51 per cent stake. Production is expected to start in late 2016. This comes barely one month after Total was awarded 8 new exploration licences in the Norwegian Sea. 5 of them are operated.

Gas leak on Elgin: On March 25, Total reported that a gas leak following a well operation occurred at the wellhead platform on the Elgin gas field which is located in the UK North Sea approximately 240 km east of Aberdeen.

Strong upstream performance

Commenting on the 2011 results, Patrick de la Chevaliere, Corporate Chief Financial Officer, said Total’s encouraging performance in 2011 reflected its strong performance in the upstream sector, “which was buoyed by an average oil price of US$110 per barrel and growth in global demand.” “The financial community welcomes our new momentum,” he added. “We are managing our portfolio much more aggressively. We’re withdrawing from mature and non-strategic assets – Colombia being a recent example - to focus on high-potential investments. Our bolder exploration policy paid off in 2011 with three major discoveries – in Azerbaijan, Bolivia and French Guiana [see the winter 2011 issue of AFAQ]. The reorganisation of the downstream-chemicals segments reflects this new momentum.”

Americas

Solar: Expanding their R&D partnership, Total and California-based薄膜 formed a joint venture in November 2011 to develop, produce and commercialise new ranges of innovative fuels and related products.

Ohio: In January 2012, Total partnered with Chesapeake to enter the Utica shale gas formation in Ohio.

Colombia: In February 2012, Total decarbonised in Colombia by selling mature assets to Sinochem for US$1 billion.

Africa

Angola: In December 2011, Total was awarded three new exploration licences in Angola’s Kwanza basin.

Morocco: In January 2012, Total received two onshore and offshore exploration licences in Morocco.

Nigeria: Total’s operations in Block OML 138 of the giant Usan deep offshore field in Nigeria came on stream in February 2012. Discovered in 2002, the Usan field lies around 100 kilometres off the coast of southeast Nigeria in depths ranging between 750-850 metres. The Usan development comprises of floating production, storage and offloading vessel (FPSO) designed to process 100,000 barrels per day and store up to 2 million barrels of crude oil. Measuring a staggering 325 metres long and 51 metres, it is one of the largest vessels of its type in the world. The development comprises 42 wells connected to the FPSO by 70 kilometre subsea network.

South Africa: Total began E&P operations in South Africa on October 1, 2012.

Uganda: Total began E&P operations in Uganda with the acquisition of three licences in the Lake Albert Region, in partnership with CNOOC and Tullow.

Ivory Coast: In February 2012, Total strengthened its presence in West Africa by acquiring three new ultra-deepwater exploration licences in Ivory Coast.

Usan: A new record for Nigeria

Commenting on the start-up of operations at Usan, Yves-Louis Darricarrère, President of Exploration & Production at Total, said: “This project demonstrates the ability of Total to be a key operator of large-scale deep offshore developments in the Gulf of Guinea, to lead ambitious projects that contribute to increasing production for Total and Nigeria. Its operator, Total has introduced a number of technological innovations, including a solution that drastically reduces gas flaring, thus minimising the project’s environmental impact. A record 60 per cent of the man-hours for Usan came from the Nigerian market, strengthening the know-how of local industry in deep offshore exploration.”

Asia-Pacific

Australia: In January 2012, Total and Inpex finalised their joint involvement in the strategic, large-scale onshore LNG facility in Australia. Construction of the US$34 billion project is expected to start in the second quarter of 2012.

South Korea: Total announced last January a major upgrade and expansion of the Samsung Total Petrochemical complex in Daesan, South Korea.

Thailand: In April 2012, Total announced the start-up of production at the offshore South Bangka field in Thailand. This new development consists of a central processing platform, living quarters and 13 wellhead platforms. Capacity of the facility is 350 million cubic feet per day of gas and 15,000 barrels per day of condensate.

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Elgin: controlling the leak

Two types of actions have been identified and are being progressed in parallel to stop the leak. The first is a well control intervention through which heavy mud is pumped into the G4 well from the wellhead. The second consists of drilling two relief wells in the vicinity of the G4 well to intercept it and pump in heavy mud at the formation level to regain control of the well. The first of two relief wells was spudded on April 18 as a back-up option to the well intervention. As of April 25, works were progressing satisfactorily.
Qatar
Air quality: Total signed last December an MoU with Qatar Foundation to develop an integrated Air Quality Management System for Qatar. The new air monitoring system, which will increase collaboration between the Total Research Centre Qatar (TRC-Q) and the Qatar Energy and Environment Institute (QEEI), reflects Qatar’s and Total’s commitment to environmental conservation.

WPC: In December 2011, Total attended the 20th World Petroleum Congress in Doha, the first time the global industry gathering has been held in the Middle East. Total CEO Christophe de Margerie hosted a gala dinner during the event featuring the Total-sponsored exhibition “Humanisms in the Land of Islam” by the Bibliothèque Nationale de France.

Qatar Tennis Open: Total sponsored the 10th edition of the Qatar Tennis Open tournament, which took place in Doha last February. Total also agreed a five-year partnership with the Qatar Tennis Racing and Equestrian Club.

Mixed feed cracke: In February 2012, Qatar Petroleum and Oasis, in which Total holds a 20 per cent stake, agreed a joint venture to build a mixed feed cracker. The new facility will produce 1.4 million tonnes per year (tpy) of high density polyethylene, 760,000 tpy of polypropylene, 760,000 tpy of pyrolysis gasoline, 125,000 tpy of polyethylene, and 83,000 tpy of butadiene.

Yemen
Museum: The Geological Museum of Yemen, sponsored by Total, was inaugurated last January in Sana’a by the Prime Minister of Yemen, His Excellency Mohamed Salem Bassiuni. President Brueillac, Total’s Senior Vice President for E&P in the Middle East, attended the unveiling.

Exploration: In March 2012, Total acquired a 40 per cent interest in Yemen’s Block 3 onshore licence from Oil Search. Total is the operator of the licence, which covers an area of 2,954 square kilometers in the eastern region of the high-potential Marib Basin.

Jordan
French language: Total Liban has strengthened its cultural ties in the country by promoting French language learning. In January 2012, a ceremony attended by French and Lebanese military officials, local dignitaries and Total Liban management opened two classrooms and an instructor’s office at the barracks of the Lebanese Army Logistics Brigade in Kfarshima.

Kuwait
Together in China: In March 2012, Total and Kuwait Petroleum Company signed an MoU to develop the Zikriang offshore and petrochemicals project in China, in partnership with Sinopec. The project, involving a 300,000 bpd full conversion refinery integrated with petrochemicals and marketing, will process Kuwaiti crude oil feedstock.

Arab Sciences: Kuwait’s Dar Al Rimor Al Islamigo museum inaugurated last March the “Golden Age of the Arab Sciences” exhibition, supplied by Total. Open free to the public, the exhibition, curated by The Institut du Monde Arabe, hosts priceless Islamic art from the world-renown Al Sabah Collection.

Saudi Arabia
Careers: A member of the King Abdullah University of Science and Technology Industrial Programme, or KICP, Total attended in March the third annual KICP Career Fair, held in Thuwal in the Kingdom’s Makka province.

Iraq
Training: Last December, Total E&P and Iraq’s Ministry of Oil renewed cooperation in training and development, involving scholarships for Iraqi engineers to study at top French universities and high-level workshops for ministry trainees.

UAE
Safety: In December 2011, Total reached its third safety milestone, achieving 5 million man hours without Lost Time Injury.

Shams 1 on schedule: The first mirror was installed in January at the Shams 1 site, a joint venture between Masdar, Total and Abengoa, located in the western desert of Abu Dhabi. On stream in the third quarter of this year, Shams 1 will be the world’s largest concentrated solar power plant, producing 100 megawatts of electricity for the national grid.

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Jordan
An expanding network: Total opened four new service stations in Jordan between January and March 2012, bringing its network in the country to 17 outlets and creating 100 new jobs. Another six sites are under construction.

UAE
Energy mix: Total attended the FIV World Future Energy Summit, held in Abu Dhabi last January, as a main sponsor, displaying its clean technologies and alternative energy solutions. Experts from Total Integrated Energy Solutions (TIES) also attended WFES, a new unit dedicated to helping partner countries diversify their energy mix.

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At a Glance  Did you know?

Total by the numbers

TOTAL has exploration and production activities in more than 40 countries and produces oil and gas in 30 of them.

- 2.35 million barrels of oil equivalent per day (boe/d) produced in 2011
- 11.423 billion boe in proven reserves as of December 31, 2011
- Net investments in 2011 were US$22 billion
- 96,104 employees worldwide
- US$345 million for R&D spending in Chemical activities
- 15,434 service stations worldwide

Source: Form 20 F, 2011

Snapshot of a growing Middle East

The UAE’s oil income is expected to reach US$122 billion in 2012, its highest level ever, according to the IMF. The UAE pumped 2.6 million barrels per day in 2011 and production is expected to be the same this year.

Kuwait’s GDP is expected to grow by 5.4 per cent this year, according to the country’s Ministry of Finance.

The 2012 UN World Happiness Report ranks the UAE, Saudi Arabia and Kuwait among the world’s 30 happiest countries.

A total of 55 million tourists visited the Middle East in 2011, six per cent of the total international tourist arrivals of 980 million, according to the World Travel Organisation. The region is expected to see a five per cent increase in tourist arrivals this year.

World’s largest sovereign wealth funds

<table>
<thead>
<tr>
<th>Ranking</th>
<th>Country</th>
<th>Fund name</th>
<th>Assets (billions)</th>
<th>Years started</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Abu Dhabi</td>
<td>Abu Dhabi Investment Authority</td>
<td>US$627</td>
<td>1976</td>
</tr>
<tr>
<td>3</td>
<td>China</td>
<td>SAFE Investment Company</td>
<td>US$567.9</td>
<td>1997</td>
</tr>
<tr>
<td>4</td>
<td>Saudi Arabia</td>
<td>SAMA Foreign Holdings</td>
<td>US$532.8</td>
<td>n/a</td>
</tr>
<tr>
<td>5</td>
<td>China-Hong Kong</td>
<td>China Investment Corporation</td>
<td>US$439.6</td>
<td>2007</td>
</tr>
<tr>
<td>6</td>
<td>Kuwait</td>
<td>Kuwait Investment Authority</td>
<td>US$296</td>
<td>1953</td>
</tr>
<tr>
<td>7</td>
<td>China-Hong Kong</td>
<td>Hong Kong Monetary Authority Investment Portfolio</td>
<td>US$293.3</td>
<td>1993</td>
</tr>
<tr>
<td>8</td>
<td>Singapore</td>
<td>Government of Singapore Investment Corporation</td>
<td>US$247.5</td>
<td>1981</td>
</tr>
<tr>
<td>9</td>
<td>Singapore</td>
<td>Temasek Holdings</td>
<td>US$157.2</td>
<td>1974</td>
</tr>
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<td>10</td>
<td>Russia</td>
<td>National Welfare Fund</td>
<td>US$149.7</td>
<td>2008</td>
</tr>
<tr>
<td>11</td>
<td>China</td>
<td>National Social Security Fund</td>
<td>US$134.5</td>
<td>2000</td>
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<td>12</td>
<td>Qatar</td>
<td>Qatar Investment Authority</td>
<td>US$100</td>
<td>2005</td>
</tr>
</tbody>
</table>

Source: Sovereign Wealth Fund Institute