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- Hydrocarbon quest intensifies
- Proposals for Six new blocks carved out of the prolific Block 6 concession currently operated by Petroleum Development Oman (PDO) were offered for investment by E&P companies as part of the 2019 Oman Licensing Round

- Sahim: A clean-energy game-changer for Oman
- Oman to host International Gas Union forum in 2020

- Energy investments: Are we doing enough?
- Investment inflows into the global energy sector have dwindled in recent years, partly because of the economic downturn unleashed by the fall in international oil prices in 2014

- “Sufficient energy is necessary to sustain economic development” – Dr Rumhi

- Need for cleaner air driving strong LNG demand growth
- Growing recognition of the role of liquefied natural gas (LNG) as the world tackles poor air quality and climate change

- The next chapter in oil benchmarks: Watch this space
- The Middle East’s petrochemicals push signals oil’s future

- Workforce of the Future Survey

- Global Energy Transformation: A roadmap to 2050
- Oman LNG revenues surge 60pc to $3.5b in 2018
- Oman LNG, Qalhat LNG prepay loans in reflection of robust fiscals
- Contract awarded for Oman LNG debottlenecking

- Making heavy oil a sustainable fuel
- Sultanate to host World Heavy Oil Congress and Exhibition (WHOC) in September

- UK’s Wood plc scoops FEED for Duqm petchem complex
- PDO – Trailblazing CSR with a strategic national dimension

- Managing gas portfolios
- A shared strategic direction
- Interim CEO Fathy Al Mendhry sheds light on the new ‘strategic direction’ of Opal

- AGM welcomes a new vision for OPAL
- OPAL’s growing family
- Sterling leadership
- Under Mr. Al Mandhry’s leadership, OPAL reinvented itself while forging a new vision and mandate

- Iea Oil Market Report 2019
- Workforce well-being – not just accommodation: Renaissance Village Duqm
- OPAL’s growing family
- Upcoming events
Dear readers,

Oman’s nascent renewable energy sector may not be one of the largest in the region, but the pace of growth is expected to be breathtaking. From virtually zero megawatts of grid-connected renewables-based capacity today, the sector’s share of total energy demand is projected to balloon to 30 per cent by 2030 – a feat that will have few parallels in the Middle East. While solar will account for the bulk of this share, contributions from wind energy, and even waste-to-energy, will be noteworthy.

OPAL Oil & Gas Magazine will continue to document these exciting developments in the Sultanate’s power and renewables industry not least because of the inclusion of the sector in the remit of the Ministry of Oil and Gas. Consequently, OPAL will see its ranks swell as companies operating in the power and renewables space in the Sultanate begin to sign up as members. Indeed, we anticipate a sizable jump in our membership, while bolstering our ranks with professionals from a rapidly modernising industry.

Renewables aside, the big story of the year thus far is that of the merger of Oman Oil Company and Orpic Group to create an energy powerhouse. Oman Oil and Orpic Group will be one of the largest entities in the Sultanate by market capitalization. It will also play an increasingly important role in driving economic growth, employment generation, human capital development and In-Country Value (ICV) development. We will continue to track the energy giant’s role in transforming Oman’s hydrocarbon and petrochemicals landscape.

Please feel free to send in your thoughts on how we can bring you content that is informative, instructive and helpful to your business growth and professional development.

Please email the editorial team at: opal@opaloman.org

Fathy Al Mendhry
Interim CEO
An Integrated Energy Company
Delivering Sustainability and Business Excellence
Market highlights

A brief snapshot of recent events and developments of significance to Oman’s Oil & Gas, Electricity and Renewables sectors:

**Oxy Oman inks pacts with four oilfield SMEs**

Occidental Oman signed support agreements with four Omani SMEs as part of Phase 4 of the company’s SME Development Programme. Under the initiative, which was launched in 2013, a select number of SMEs receive support in each phase in the development of their capabilities. These efforts are aimed at creating employment opportunities for Omanis, as well as maximizing ICV development. Desert Sand Oil and Gas, Oman Drilling Systems, Marjan Petroleum and United Petroleum Industries were the four SMEs that will benefit from Oxy’s capacity building efforts in Phase 4 of the programme.

HE Salim bin Nasser al Aufi, Under-Secretary of the Ministry of Oil and Gas, presided over the signing ceremony. The support agreements were signed by Mr. Stephen Kelly, President and General Manager of Occidental Oman, and the representatives of the four companies: Mr. Ali al Wahaibi, Chairman of Desert Sand Oil & Gas; Mr. Munir al Balushi, Chief Executive Officer of Oman Drilling Systems; Mr. Rashid al Masfry, Chief Executive Officer of Marjan Petroleum; and Mr. Abdulbaqi al Kindi, General Manager of United Petroleum Industries. Mr. Abdulkarim Al Ghassani, Vice President of Supply Chain, and other senior executives of Occidental Oman were also present at the ceremony.

“We are proud to enter Phase 4 of Occidental Oman’s SME Development Programme, which has seen steady growth since its inception in 2013,” said Mr. Kelly. “As Phase 4 commences, we are hopeful that the programme will encourage a pursuit of excellence in SME development, such that the awarded SMEs will be able to compete locally and internationally, as well as serve as essential sources for economic growth and job creation in the country.” [2 June 2019]

Dear readers,

Your feedback is very important to us. In this section of OPAL Magazine we would like to add a dedicated page where we can hear your thoughts on topics covered in this issue, as well as issues of relevance to the Oil & Gas business. Please feel free to send in your suggestions on how we can improve the overall content.

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OMAN LNG SIGNS DEAL WITH OMAN OIL AND ORPIC GROUP

Oman LNG has signed an agreement committing its output of Natural Gas Liquids (NGL) – a byproduct of its gas liquefaction operations – to Oman Oil and Orpic Group. The Sales and Purchase Agreement (SPA), covering the supply of NGLs for a six-year period, was signed by Mr. Harib al Kitani, CEO – Oman LNG, and Mr. Ahmed al Jahdhami, CEO – Downstream, at Oman Oil and Orpic Group.

“The six-year agreement is buoyed by the existing robust partnership between both national companies to further harmonise the existing synergies,” stated Oman LNG in a tweet.

The pact builds on a longstanding arrangement between the two strategically vital entities centring on the supply of Oman LNG’s natural gas liquids output to Oman Oil and Orpic Group’s refinery and petrochemicals complex in Sohar. These liquids have typically been added to the Group’s crude feedstock for refining and processing.

NGL output from the three-train LNG complex in Qalhat topped around 240,000 tonnes in 2018, which was delivered in a total of 36 shipments to Oman Oil and Orpic Group. Yearly NGL output has stabilized around this level.

Oman Oil and Orpic Group is building its own NGL extraction plant at Fahud as part of its mammoth Liwa Plastics complex currently at an advanced stage of execution at Sohar Industrial Port with an investment of around $6.4 billion. The NGL will be processed at the Sohar complex into polyethylene and polypropylene plastics. A pipeline is being constructed to transport the NGL from Fahud to the Sohar complex. Liwa Plastics is slated for commissioning in 2020. [20 May 2019]

SPIKE IN POWER SUBSIDY

The Omani government’s allocation of subsidy to the electricity sector soared 23 per cent to RO 536.29 million in 2018, according to Nama Group – the holding company of state-owned power sector subsidiaries.

Nama Group CEO, Eng. Omar al Wahaibi (pictured), attributed the uptick to a combination of factors, notably an increase in the number of electricity units sold during the year, as well as the strong growth in investment in power transmission and distribution infrastructure.

“Subsidy is a reflection of all of the investment we have in the system, and the more we invest in the system, the more it will be reflected in the subsidy. Given the fact that the customer pays a fixed tariff – and tariffs have not changed in a very long time -- and as we keep investing in infrastructure – somebody has to be pay for all of this investment,” the CEO stated during a media briefing hosted by Nama Holding to announce the sector’s overall performance in 2018.

Government subsidy to the sector, in contrast, totalled around RO 456 million in 2017, which was itself lower by 8.3 per cent from the previous year’s tally of RO 497 million.

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[Mazoon Electricity accounted for the largest share of the subsidy (35.12 per cent), followed by Muscat Electricity (22.69 per cent), Rural Areas Electricity Company [Tanweer] (18.20 per cent), Majan Electricity (16.11 per cent) and Dhofar Power (7.88 per cent).]

Significantly, government subsidy accounted for a hefty 43.66 per cent share of total revenues of RO 1.290 billion earned by Nama Group in 2018. Actual revenues earned from customers represented 42.95 per cent of the total.

Desalinated water sold to the Public Authority for Water (PAW) contributed a 10.30 per cent share. [20 May 2019]

Salalah Liquefied Petroleum Gas (SLPG) signed agreements with Dhofar Power Company covering the supply of electricity for the LPG project.

Dhofar Power Company, a member of Nama Holding, signed the power supply and delivery agreements with Salalah LPG – a member of the Oman Oil Company and Orpic Group.

The agreements were signed by Mr. Ali bin Issa Shammas, Chief Executive Officer of Dhofar Power Company, and by Mr. Sultan bin Hamad al Buraimi, Acting Executive Managing Director of Oman Gas Company, on behalf of SLPG.

Construction of the Salalah LPG project is more than 60 per cent complete and is expected to be on stream in the third quarter of 2020. [15 May 2019]
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Oman Oil and Orpic Group organized a Product and Technical seminar for its customers at the W Hotel, Muscat. The event was also attended by key stakeholders from the government, academia and private sector.

The customers were presented with innovative polyolefin solutions and the many opportunities arising from the polymers industry development in Oman. The customer event also provided a platform for industry experts, government, and customers to meet and exchange ideas on latest developments in the industry.

The seminar highlighted that upon the completion of the LPIC project, the Group will act as a catalyst for the development of the Oman’s downstream plastics industry. Officials took turns to share information on upcoming trends and applications, as well as offer global insights into the industry. The Group also discussed technical and market support to small and medium enterprises.

The development of Oman’s downstream plastics industry will contribute towards the diversification of Oman’s income sources. It will also add value to academia, in shaping their curriculum and Research & Development programme. Consequently, it will further assist in developing human capital, so that national talents will thrive in Oman and globally. This will trigger an influx of foreign investments, thereby helping Oman to further multiply added value from hydrocarbon resources.

The average price of Oman Crude Oil Future’s Contract on the Dubai Mercantile Exchange (DME) witnessed a hike by 6.2 per cent in April 2019 compared with price trends during the previous month. The official selling price for Oman Crude Oil during trading in April 2019, for the delivery month of June 2019, settled at $71.15, which was higher by $4.18 per barrel compared with March 2019 trading prices, the Ministry of Oil and Gas stated in its monthly review for April. The daily average trading marker price ranged between $68.24 per barrel and $74.73 per barrel.

Oman’s total production of crude oil and condensate throughout April 2019 reached 29.114 million barrels representing a daily average of 970,476 barrels. Of this total, exports reached 23.949 million representing a daily average of 798,301 barrels.

Asian markets accounted for the lion’s share of Omani crude oil exports during April 2019. China was the largest importer of Oman export blend crude oil with a 83.83 per cent share (up 2.46 per cent compared with the previous month). Likewise, imports by Japan and India increased by 5.11 per cent and 1.74 per cent to reach 10.55 per cent and 5.62 per cent respectively from total imports.

Futures trading of crude oil prices witnessed a healthier trading movement during April 2019 compared with March 2019 for most major crude oil benchmarks around the world. The average price for West Texas Intermediate crude oil at the New York Mercantile Exchange (NYMEX) has averaged $63.91 (which was higher by $5.51 compared with previous trading’s month). The average price for North Sea Brent mix on the Intercontinental Exchange (ICE) in London ended at $71.63 per barrel, up $4.60 compared with March 2019.

Oman Oil Marketing Company (OOMCO) has announced that it has secured board approval for the construction of an in-port bunker terminal of 30,000 cubic metre tankage capacity at the Port of Duqm on the Sultanate’s Al Wusta coast.

“This bunker terminal will supply marine fuels of required grades to ships in and around the port. As such, our bunker terminal will serve to enhance the portfolio of services available to attract ships to Duqm and thus contribute to the port’s growth and business development,” said the company in a filing to the Capital Market Authority (CMA).

Last May, OOMCO announced the appointment of WorleyParsons Engineering Oman LLC as the project management consultants for the Duqm Bunker Terminal Project. To be commissioned in early 2021, the terminal is expected to be a major driver in development goals for the Port of Duqm.

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AROUND 1500 OMANIS BENEFIT FROM ‘FUTURE ENGINEERS’ PROGRAMME

More than 1500 Omani students have so far benefited from a ‘Future Engineers’ educational initiative sponsored via BP Oman’s Social Investment Programme with the support of Nizwa-based Engineering Village.

The students were felicitated at a closing ceremony held under the auspices of HE Sheikh (Dr) Khalifa bin Hamad al Sa’adi, Governor of Al Dalhiliyah. Also present were representatives from BP Oman, Ministry of Education and other stakeholders. The Future Engineers Programme was conducted in collaboration with Innovation and Scientific Olympiad at the Ministry of Education.

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Mr. Ahmad Sharaf, Chairman of DME, said: “We are committed to enhance Oman crude benchmark so it is always aligned with current market trends. The oil industry went through several changes in the past decade, therefore, the benchmark had to evolve to reflect latest market dynamics and both consumers and producer’s needs.”

DME’s Oman Crude Oil Futures Contract is currently used by the governments of Oman, Dubai, Saudi Arabia and Bahrain to set their official selling price of crude oil export heading to Asia. The contract is widely traded by a broad diversity of customers around the globe and more than 80 players participate in the price discovery mechanism on the Exchange on any given trading day.

Mr. Sharaf added: “The potential addition of a new grade, combining with CME Group’s recently implemented Velocity Logic, will bring an additional level of security to the DME Oman benchmark and strengthen its status as the most reliable price discovery mechanism for Middle Eastern crude oil.”

[D22 April 2019]
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PACT SIGNED FOR LARGE-SCALE SOLAR POWER PROJECT IN SOHAR FREEZONE

Dubai Mercantile Exchange (DME) issued a public consultation to add Abu Dhabi Murban crude oil as an alternative delivery crude into its flagship DME Oman Crude Oil Futures Contract, after receiving preliminary regulatory approval.

With a production capacity of approximately 1.7 million bpd, out of which 40 per cent are freely traded, Murban will be deliverable through the exchange on certain market situations at the seller’s option. This potentially adds around 700,000 barrels per day to the standard Oman crude oil delivery mechanism and reinforces the benchmark transparency and fair market value representation.

Mr. Ahmad Sharaf, Chairman of DME, said: “We are committed to enhance Oman crude benchmark so it is always aligned with current market trends. The oil industry went through several changes in the past decade, therefore, the benchmark had to evolve to reflect latest market dynamics and both consumers and producer’s needs.”

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[D22 April 2019]

In a significant effort to tap into the Sultanate’s renewable energy potential, Sohar Port and Freezone has entered into a land lease agreement with Shell Development Oman (SDO). This agreement means that businesses in the Sohar Freezone could be powered by solar photovoltaic (PV) projects instead of gas. On April 18, 2019, HE Laetitia van Asch, Ambassador of the Kingdom of the Netherlands to the Sultanate of Oman, hosted a ceremony to officiate this collaboration at the Crowne Plaza OCEC in Muscat.

In line with the partnership, SOHAR will allocate 600-hectares of land for solar plants under development, with capacities ranging from 10MW up to 40MW. The pioneering project of 25MW will be focused on providing dedicated supply to Al Tamman Indsil Ferrochrome LLC, and the entire development will create long lasting economic value for the nation and the companies within the Freezone.

Commenting on the importance of the upcoming collaboration, Mr. Mark Geilenkirchen, CEO of SOHAR Port and Freezone said, “Sustainability is one of our key values in driving development at SOHAR and this partnership with Shell will create solar powered solutions that are the first-of-its-kind in the country. This also marks an incredible milestone and the first step in our proactive long-term programme, that we have already begun implementing, to transform our 4,500-hectare development into a ‘green Freezone’. We hope that the changes we are implementing today will encourage current clients and future investors to adopt cleaner technologies and sustainable practices tomorrow.”

[D20 April 2019]
The amalgamation of two of Oman’s biggest hydrocarbon-focused organisations has been nothing short of momentous ever since they first went public with their ambitious plans late last year. Oman Oil and Orpic Group (OOOG), the product of a landmark 100-day-long consolidation exercise (dubbed ‘Nakhla’), has the makings of an integrated energy behemoth the likes of which the Sultanate has never witnessed before.

As separate entities, Oman Oil Company and Orpic Group dominated the hydrocarbon sector – primarily the midstream and downstream segments of the business – for well over a decade. Their merger unlocks synergies that when monetised and commercialised will spawn investment opportunities extending into the tens of billions of dollars.

This game-changing potential of the integrated entity was summed up by its newly restructured Board of Directors as follows: “Oman Oil and Orpic Group seek to create an environment where talent thrives globally, capturing and capitalising on greater participation in the global hydrocarbon value chain, facilitating local and international private participation in Oman’s oil and gas sectors to increase value for shareholders and the Group’s contribution to the nation.”

The contours of this new economic engine, and its strategy for spurring the Sultanate’s development, were outlined by top officials representing the Group’s new executive leadership at various energy forums held in Muscat in recent weeks.

There has a significant reorganisation of the constituent companies that operated under the respective umbrellas of the two entities prior to integration. As many as nine prominent businesses that constitute a dominant part of Oman’s hydrocarbon value chain have been identified as ‘Core Businesses’ of new Oman Oil and Orpic Group.

Besides Orpic, which operates the nation’s two refineries at Mina al Fahal (Muscat) and Suwar, as well as Al Jifnain fuel depot and distribution network, the Core Businesses include Oman Oil Company Exploration & Production (OOCEP) – the upstream energy investments arm, Oman Gas Company (OGC), Salalah LPG, Duqm Refinery & Petrochemical Industries (DRPIC), Oman International Petrochemical Industries Company Limit-
ed (OMPET), Salalah Methanol Company (SMC), OXEA Group, and Oman Trading International (OTI) – the commercial arm of the Group. Businesses not listed among these nine entities will continue to be run as they are, according to the Board. Importantly, the nine core businesses have been distributed across two Business Lines (Upstream and Downstream) and four Central Functions, supported by a dedicated Integration Management Office helmed by Mr. Musab Al Mahruqi, Group CEO. Assisting the Group CEO in driving the integration process is an eight-member Integration Leadership Team comprising: Dr Salim al Huthaili, CEO – Duqm Refinery & Petrochemical Industries (DRPIC), Isam al Zadjali, CEO – Upstream; Ahmed al Jahdhami, CEO – Downstream; Talal al Awfi – Chief Commercial Officer; Nasser al Lawati, Chief Financial Officer, and Ayad al Balushi, Lead – Integration Management Office. Yet to be named are two Senior Vice Presidents to head the People & Culture and Project & Technology positions on the Integration Leadership Team.

Speaking at a media briefing hosted by the Ministry of Oil & Gas, Group CEO Al Mahruqi said the integration process is expected to take about two years. “This is a staggered approach of about 18-24 months, during which we are trying to restructure, integrate, and draw up a new organisational structure for each of (our core) functions, and staff the new organisational structure. We want to do it in a way that doesn’t impact business continuity. We will still deliver what we need to during the year, and therefore we remind everyone that there are three priorities in general. (1) To run the business safely and deliver the KPIs expected. (2) To find new ideas and quick wins in-between, and (3) to Build the Future based on our future plans, such as alternative energy, our new gas business, as well as our retail focus. So we have a mix of business as well as organisational priorities.”

Quick-wins

The integrated Group, he said, has also its sights on generating $250 million worth of additional value to the Group through the implementation of ‘quick-win’ initiatives during 2019. Launched at the outset of the integration exercise late last year, the programme of ‘quick-wins’ has evolved into a value-creating enterprise involving employees from across the group, he said.

“It’s been 110 days since we started the Quick Wins programme. Earlier, we began with around 2 – 3 quick wins per week, but as of March 20 (last week), it has resulted in a total value amounting to $95 million,” Al Mahruqi said. “As there is still a rich funnel of new ideas of quick wins being processed, we committed to the Board on December 20, 2018, our target of $100 million worth of quick wins for 2019. However, just a few weeks ago, we changed the target to $250 million in 2019.”

Al Mahruqi credited the staff of the integrated group – an energy powerhouse created out of the merger of Oman Oil Company and Orpic – for the enormous success of the quick-wins programme. “It makes us proud that all of these quick wins and ideas have come from our people. As many as 550 people have so been involved in the quick wins. The ideas came during many workshops and engagements. We allowed them to implement the ideas they saw fit, we tested them, challenged them, and enable them – and when the results came through, we celebrated together.”

Importantly, the integrated group and leadership structure will be key to steering the speedy delivery of the Duqm project – comprising the Duqm Refinery and downstream petrochemical complex at a cost of around $13 billion, said Al Mahruqi.

“The size of the Duqm investment necessitates a closer link and stronger connection to what has already been built and the capability developed over the years (within the Group). Therefore, we don’t want them to start from scratch; rather we want them to start from where we have ended in Suwar. Therefore we are trying to transfer as much knowledge and experience as possible from Suwar to Duqm. The link here is Dr Salim al Huthaili, CEO – Duqm Refinery and Petrochemical Industries Co (DRPIC), who is with us on the integrated leadership team.”

Musab Al Mahruqi, Group CEO
Project Nakhla: Unlocking synergies, creating value

The integration of Oman Oil Company and Orpic Group was the subject of a 100-day programme, code-named ‘Nakhla’, that brought together around 80 per cent of the workforce of the companies, along with stakeholders and internationally renowned experts, says Eng. Ahmed al Jahdhamy, CEO – Downstream, Oman Oil & Orpic Group.

The Nakhla Programme, achieved in 80 days against a targeted 100-day timeframe, was all about unlocking synergies and adding value to the businesses and operations of Oman Oil Company and Orpic Group by bringing them together under one integrated brand, according to Ahmed al Jahdhamy, CEO – Downstream, Oman Oil and Orpic Group.

Kicking off the integration exercise late last year, the Nakhla Programme’s leaders were posed a seemingly simple, yet daunting, question: How do you move away from an organisational structure where the different companies of Oman Oil Company and Orpic Group – working essentially in silos although all government owned and operating in the same hydrocarbon space – into a seamless business model focused around value?

Integrating Orpic Group – which owns and operates the country’s two main refineries in Suhar and Mina Al Fahal – with Oman Oil Company, a predominantly investment-driven organization with assets distributed around the world, was destined to be a complex exercise. While the form is primarily an operating company, the latter’s business model centres largely around wholly owned investments or partnerships with local and international companies. At the time of integration, Oman Oil Co had a portfolio of 54 investments totaling around $15 billion in value, said Mr. Al Jahdhamy. More than 12,000 people are employed across the group’s businesses, including 10,000 in the Sultanate, he noted.

“The managements of Oman Oil Company and Orpic Group came together and looked at global trends, the challenges we face globally, and how to move into the future. We agreed we need to change our business model, and we were blessed to get the support of the Board, as well as the Financial Affairs and Energy Resources Council, which approved the integration. We started with the formation of one board for both companies. Since then, the integration has picked up,” the CEO – Downstream said.

In driving the integration process, the integrated management team identified two “key strengths” that it pledged to leverage and develop: local talent and hydrocarbons. The CEO – Downstream explained: “We are not necessarily the biggest in energy (in Oman) and neither are we the most resourced. However, we believe that our assets are our young, energetic, talented and passionate people. We want to develop people who can thrive globally, become global leaders and help the Group compete globally as well. This is particularly important because 80 per cent of our (output) is exported globally, while a lot of our investment is currently outside Oman. So talent is a key focus for us going forward.”

Equally important is a goal to unlock further value around the integrated group's hydrocarbon and petrochemicals businesses, says Ahmed. “Within the group we currently process around 700,000 barrels per day (bpd) of crude, some of which is produced through partnerships within the group. A lot of this is processed through our refinery and petchem plants, while we also have a trading arm, Oman Trading In-
ternational, which markets local and third party volumes too.”

“The key thing for us is to add further value to this value. So we are targeting to increase, by 2030, the added value to processed crude by $25 per barrel (from $15 per barrel presently). A lot of this will be focused on downstream and further down into petchem and specialty chemicals.”

By harnessing these two strengths – human capital and hydrocarbons – the integrated group aims to create further value for its principal stakeholder – the Omani government, said the CEO – Downstream. “We hope to more than double our contribution to the Gross Domestic Product (GDP), from around $8 billion per annum currently, to around $20 billion by 2030. Also by 2029, we promised to provide the Ministry of Finance with a dividend on the investment of around $8 billion made by the government in our group so far. We have managed to double the value of the enterprise to $16 billion now, and we want to increase that to $20 billion by 2030. Our goal is to continue to partner with international and local private sector organisations to enhance the value, but also to create more opportunities within Oman,” he added.

The dividend payment pledged by the integrated to the government is projected at a minimum of $1 billion per annum from 2029 onwards. Market capitalization of the Group is anticipated to rise to $30 billion by 2030.

There is value to be unleashed across the upstream, midstream and downstream segments of the Group – an objective that the Integrated Management Team has taken on board as part of its remit, according to Mr. Talal Al Awfi, Chief Commercial Officer.

As a first step, the Group has identified 10 key companies out of a total of 54 entities in its portfolio that it sees the potential for value optimization. These assets, which include OOCEP, OGC, ORPIC, SMC, OOMCO, DRPIC, OMPET, SALALAH LPG, OXEALAND OTI, cumulatively account for 80 per cent of the Group’s EBITDA. The goal, says Mr. Al Awfi, is to achieve a higher dollar value per barrel of crude.

Furthermore, the Group is also exploring opportunities in the rapidly expanding renewables and alternative energy space. The new business stream is proposed to be developed alongside the Group’s core verticals represented by its investments in Upstream, Gas, Refining, Petchem, Trading / Marketing, and Infrastructure / Logistics businesses, the Chief Marketing Officer noted.

“We went back to our shareholders and presented the fact that we are an energy company. (We) highlighted the importance of mega trends in renewables, but decided to come up with a more encompassing term – Alternative Energy,” Al Awfi said.

The official said the Group’s foray into the alternative energy space would be better defined during the course of this year. “We are still relatively new in this business, so this is something of a work in progress.
Within 2019 we will come up with a more concise plan going forward – whether we become a developer, or concentrate on R&D, or perhaps buy into entities that are already well-established in the renewables area, and so on. So this is an exciting area we are trying to develop."

Another area of interest for the integrated group is the energy retail sector – part of an effort designed to create a “home” for the hydrocarbon molecule, Al Aufi said. He explained: “Oman is exporting most of the molecules it produces. So we are still an export-oriented nation. Thus, while we are optimizing value by creating more industries, ultimately a lot of these products will be exported to different markets. But in the last 10 years, there has been a significant change in terms of our approach: it’s no longer a question of having molecules to sell; It’s having a home for these molecules; this is something we are trying to maximize. We are looking at initiatives like buying into retail companies, depots and terminals, but we will be trying to maximise and invest in things that will add to our value chain not only in Oman but internationally.”

Oman Oil & Orpic Group already has a well-established presence in the marketing and trading of hydrocarbons refined petroleum products – a task handled by its wholly owned subsidiary Oman Trading International (OTT). Its 49 per cent owned OOMCO is a key player in the distribution and supply of fuels, while the Group also has a sizable stake in Oman Logistics Company (OLC), which operates a major fuel terminal at Al Jifnain as well as a fuel logistics distribution system. Oman Tank Terminal Co (OTTCO), which is investing in a world-scale crude oil storage park at Ras Markaz, is also a subsidiary of the Group.
$28bn worth of mega projects in the pipeline

A flurry of downstream, refining and petrochemical projects involving investments totaling around $28 billion are slated for implementation within the next seven years: Dr Salim al Huthaili, CEO of Duqm Refinery & Petrochemical Industries Company LLC (DRPIC).

These are “exciting” times for the integrated Oman Oil & Orpic Group, not least because it is now set to oversee a portfolio of eight projects, worth a hefty $28 billion, through to implementation over the next seven, according to Dr Salim al Huthaili (pictured), CEO of Duqm Refinery & Petrochemical Industries Company LLC (DRPIC). Included in the mix are some big-ticket ventures, as well as strategic projects that are indispensable to the Sultanate’s goals of evolving into a formidable petrochemicals player in the region.

“Most of these projects are downstream projects, which are very important and complementary to what’s going on in the upstream sector,” said Dr Al Huthaili. “We are trying to translate some of the projects and investments that we have in terms of what is the added value to the barrel of crude – some of our investments are contributing up to $90/barrel on top of the upstream price. Oxea, for example, is contributing (this value). So we try to develop new KPIs to see what contribution that we are trying to make in order to achieve a significant impact on the GDP.”

Dr Al Huthaili, who until recently headed wholly group-owned Oxea Chemicals before he joined the top management of the integrated Oman Oil & Orpic Group, says he is immensely impressed with has been accomplished at Suahar. “When I came back to Suahar after over 22 years overseas, the feeling seeing Omanis and their professionalism in operating these refineries has been heartwarming. Returning from the US and Germany from Oxea, I thought I could teach them something, but they ended up teaching us everything. That gives us confidence that we are integrating some of the operations between Suahar and Duqm as well.”

Among the exciting projects being delivered as part of this portfolio is Liwa Plastics, said the CEO. Integrated with Suahar Refinery, the project aims to improve and expand on the refinery delivered earlier this year. Liwas Plastics, with an investment of over $6 billion, is the first petrochemical cracker in the Sultanate. It is over 80 per cent complete and will be in commercial operation by the first quarter of 2020. An exciting project that has changed the landscape of Suahar, Liwas Plastics currently has an army of 20,000 people involved in its construction, he explained.

Duqm Refinery, on the other hand, is envisaged as an anchor project of the Special Economic Zone (SEZ) at Duqm – a venture that is sparking a lot of interest in the investment potential of the zone. The project is well past the 10 per cent completion mark.

Significantly, the lion’s share of funding for the eight projects currently in the pipeline for implementation will come as project finance, according to the CEO. “We are not depending any more on government funding, so we have to find a way to fund these projects. We will do this through partnerships, albeit the Omani way. (In our upstream business, we have over 19 companies that are involved as partners). The same will happen in the downstream sector.”

Oman Oil & Orpic Group is looking at raising debt of over $16 billion to achieve some of these projects. This figure does not include ventures currently under study, such as Shell's Gas-to-Liquids (GTL) project, in
terms of funding for upstream activities, such as drilling and so on, he explained. Divestment is also a route being explored to fund the Group’s activities. Last year, a wholly owned subsidiary Oman Oil Company Exploration and Production (OOCEP) divested 10 per cent of its stake in BP Khazan Block 61 to Malaysian state-owned energy giant Petronas, said Dr Al Huthaili, adding, “We continue to look for opportunities both on the upstream and downstream going forward.”

**Integrated Gas Development**

Dr Al Huthaili sees investments in an expanding portfolio of upstream, midstream and downstream projects slated for implementation in Oman’s Oil & Gas sector over the next several years potentially swell to staggering $40 billion if a string of newly announced strategic ventures linked to an ambitious integrated gas development are factored in as well. While Oman Oil & Orpic Group currently has projects worth $28 billion in various stages of implementation, the size of this investment is expected to balloon to around $40 billion if a Gas-to-Liquids (GTL) scheme as well as LNG bunkering terminal, both linked to the monetisation of natural gas resources of the Greater Barik area, are taken into account as well.

The integrated gas development involves the participation of a number of leading international and local energy firms, notably Shell, Total, Petroleum Development Oman (PDO) and the integrated Oman Oil & Orpic Group. Envisioned at the downstream end is a first-of-its-kind GTL project to be developed and operated by Shell in partnership with Oman Oil Company. GTL capacity is projected at roughly 45,000 barrels per day. At the same time, Total is weighing the development of an LNG bunkering service at Sohar Port to supply LNG as a fuel to marine vessels. This entails the establishment of a new modular liquefaction plant featuring a 1 million metric tonnes per year capacity liquefaction train.

According to the official, value creation and optimization has been the subject of a just-concluded three-month review during which Oman Oil & Orpic Group looked at options for enhancing the economics of its next major investment – the Duqm Petrochemicals complex planned downstream of the Duqm Refinery. To this end, the Group weighed options for including natural gas liquids (NGLs) and other types of ‘advantageous feedstock’ to help build the petchem project’s “competitiveness to a global scale”, said Dr Al Huthaili.

In early June, Duqm Refinery and Petrochemicals Industries Company (DRPIC) announced the award for the Front End Engineering Design (FEED) work to commence for its Petrochemicals Complex to UK-based engineering services firm Wood plc. The FEED services include also the NGL Extraction facility in central Oman and a 230-km pipeline from concession areas to the Petrochemicals Complex in Duqm.

The Duqm Petrochemicals Project (DPP) represents the second stage of the integrated refinery and petrochemical complex planned by Duqm Refinery - part of the strategic partnership between Oman Oil Company and Kuwait Petroleum International. Oman Oil & Orpic Group will take lead in developing the NGL extraction unit and pipeline. NGL plant will be located in the concession areas in central Oman and connected with Oman Gas Company’s (OGC) gas network. A pipeline will be constructed to transport NGL stream from the NGL extraction plant to the petrochemical complex. At the center of the project is a mixed-feed Steam Cracker with a capacity of 1,600 KTPA ethylene processing selected Duqm Refinery product streams; Liquefied Petroleum Gas (LPG), Full Range Naphtha (FRN), off gases and Natural Gas Liquids (NGL) extracted from natural gas available in Central Oman.

The project proposes to produce new products for the first time in Oman such as Ethylene Glycols, Oxo Chemicals, Butadiene and increase the diversity of the existing petrochemical portfolio in Oman. The expected polyethylene and polypropylene grades produced by DPP would both differentiate and complement the current shareholder product portfolio.

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**Conrad Prabhu**
Oman Licensing Round 2019:

HYDROCARBON QUEST INTENSIFIES
Six new blocks carved out from the prolific Block 6 concession currently operated by Petroleum Development Oman (PDO) were offered for investment by E&P companies as part of the 2019 Oman Licensing Round that concluded at the end of May. All blocks are aligned along known play trends with structures mapped in each of them. ‘Together these blocks offer potential across the complete producing section within Oman, from the Precambrian through the Cretaceous’, according to the Ministry of Oil & Gas.
May 2019 marked the deadline set by Oman’s Ministry of Oil & Gas for the receipt of offers from international E&P firms for six new petroleum blocks that were tendered out for investment as part of Oman’s 2019 Licensing Round.

An official of the Ministry’s Directorate of Petroleum Concessions revealed that the licensing round garnered positive interest from upstream energy companies from within the Middle East and the wider world.

“The response to the licensing round has been good,” said Mr. Suleiman Saif al Ghunaimi, Director of Petroleum Concessions. “We received interest in certain blocks from existing players who are already operating in the region, including some that are looking to (venture into Oman’s upstream sector) for the first time. Local Omani players that used to be involved in this sector in the past, have shown interest as well.”

The six licenses on offer -- Blocks 58, 70, 73, 74, 75 and 76 -- were previously part of the prolific Block 6 concession currently operated by majority-government-owned Petroleum Development Oman (PDO), which was obliged to relinquish these blocks due to statutory license rules, the Ministry said in its tender announcement.

“All blocks are aligned along known play trends and structures are mapped in each. Together these blocks offer potential across the complete producing section within Oman, from the Precambrian through the Cretaceous,” it stated.

Snapshot of the new blocks on offer:

**Block 58**
Covering a 4,557 sq km area in southern Oman, Block 58 is a pure exploration gas Block that has been under-explored, according to the Ministry. Also known as the Qat-beet Block, the license has all the necessary components for development of a field: trap, seal, and reservoir-quality lithofacies. The block contains several prospects mapped by a former operator. Only two wells have been drilled in the block. The first (Lahan-1) was drilled in October 2002, by PDO. This well discovered gas in the Nafun and Abu Mahara groups.

**Block 70**
Located in central Oman, Block 70 covers a 639 sq km area. It contains the Mafraq field, a Shuaiba formation heavy oil accumulation. Undeveloped, it is a potential secondary-recovery target. There are seven wells drilled in this block. Most are older wells, drilled prior to 1992. Primary targets for the older wells were the Shuiba Formation and the Natih Formation, where gas was discovered. Besides the Natih and Shuiba formations, deeper targets exist. These include the Barik, Miqrat and Amin. All are gas-condensate targets. That makes this block an oil (proven) and gas-condensate (prospective) block, according to the Ministry.

**Block 73**
Extending over an area of 2,988 sq km in southern Oman, Block 73 is essentially unexplored, containing just five wells. The last well was drilled in 1985. The wells did prove the structural elements of the exploration concepts for which they were drilled. Modern data, such as 3D seismic, would better define traps. This is an oil block, with deep gas potential, according to the Ministry.

**Block 74**
Covering a 3,064 sq km area in southern Oman, Block 74 contains three exploration wells. This is an oil block for any shallow reservoirs and a probable gas block for deeper reservoirs. It contains a variety of trap types, such as low-relief dip closures, updip stratigraphic truncations, and thin-skinned thrust complexes. This latter trap type has only been tested by the Zapfaran-1 well, drilled in 2012.

**Block 75**
Located in southern Oman, Block 75 covers a 2,266 sq km area. It only has one well, the Khawtar-1. This well, drilled in 1972, was PDO’s first well drilled in the Dhofar portion of their concession. The well, located on the northwestern edge of the block, proved the structural concept being explored. When combined with the low density of seismic data, and a well almost outside of the block, this is a pure exploration block. This block is situated in an area where adjacent blocks have mapped prospects.

**Block 76**
Spread over an area of 704 km2 in southern Oman, Block 76 contains a single well, the Ranadah-2 drilled in 1984. This is an oil block for the shallower targets and a probable gas block for deeper targets. Several additional plays exist within adjacent blocks. These plays include the stratigraphic truncation play which was the original objective of the Ranadah-2.
This map is not an authority on international boundaries.
A key milestone in the deployment of solar PV systems atop residential buildings in the Sultanate was marked in June when the Authority for Electricity Regulation (AER) formally launched a mobile app that enables landlords and homeowners to register their desire to participate in the initiative.

The Sahim Mobile App takes its name from the 'Sahim' programme – a landmark initiative spearheaded by the sector regulator to support the roll-out of grid-connected solar PV systems atop homes across Oman. Sahim (meaning ‘contribute’ in Arabic) seeks to secure a sustainable and economic source of low-carbon energy for hundreds of thousands of homes across the Sultanate. Consumers get to tap into the sun’s abundant energy and thereby benefit from reduced energy bills. At the same time, the initiative will ease Oman’s reliance on natural gas and enable the Sultanate to defer investment in new grid infrastructure by using solar to contribute to the peak demands of air conditioning.

Sahim: A clean-energy game-changer for Oman

Sahim II enables owners of residential buildings in the Sultanate to obtain clean and renewable energy at the lowest cost.
Sahim-I, representing the first phase of the programme, was launched in May 2017, enabling large households and businesses to install rooftop PV solar systems at their own cost and to be compensated for PV electricity exported to a licensed system at the relevant approved Bulk Supply Tariff.

Sahim-II, representing the second phase of the initiative, was launched recently. It aims to the wide-scale deployment of small (3-5 KWp) grid connected PV systems for up to around 30% of residential premises in Oman. Customers will be able to utilise the electricity generated from the solar cells directly in their homes.

At a ceremony held on 18th June 2019, under the auspices of HE Salim bin Nasser Al Aufi, Under-Secretary of the Ministry of Oil and Gas, to officials of the Authority for Electricity Regulation outlined the steps that interested homeowners should follow to register their residential particulars on the Sahim Mobile App.

Clean power
Mr. Qais bin Saud al Zakwani, Executive Director and Member, AER, explained: “The second phase of Sahim provides a unique opportunity for owners of residential premises in the Sultanate (Muscat Governorate as a first phase) to reduce their electricity bills by installing solar systems with financial contributions of RO 100-300. The contributions are considerably lower than the actual cost of installation of solar panels of 3-5 kilowatts which may vary from RO 2400 to RO 4000. The financing solutions provided by the second phase of Sahim will promote the benefits of installing solar panels which include customers getting lower bills. The broader benefits from the initiative include reducing the dependency of the Sultanate on fossil fuels to generate electricity.”

Eng Hilal bin Mohammed al Ghaithi, Project Manager, said: “The second phase of the initiative and the launch of the Sahim Application is part of the Authority’s efforts to support environmentally friendly solutions by increasing the utilisation of clean and renewable energy.”

He added: “We aim to provide solutions to obtain clean and renewable energy at the lowest cost. The cost of procuring, installing and operating will not be met by customers but by innovative financing solutions through qualified private developers. Customers will be asked to contribute small amounts based on their electricity bills for each premise.”

I urge villas owners to join the initiative and download the application. Sahim is expected to reduce their electricity bills, and allow them to take advantage of energy generated from the solar systems.”

Ms. Khuloud al Zadjali, Manager of IT and Information Security, added: “The application is available on the Android and IOS operating systems and enables users to install solar panels as it can be used to fill the data and calculate the surface area by utilising Augmented Reality. Customers will have to ensure they use PKI enabled SIM cards to ensure functionality of the application. Augmented Reality technology is an essential aspect of the application and it was incorporated to facilitate the calculation of available surfaces and provide accurate information and data, which in turn, leads to making an informed decision on the installation of solar panels.”

IPP model
Under the scope of the Sahim II initiative, the cost of installing, maintaining and operating the rooftop solar PV system will be borne substantially by the successful developer – broadly on the lines of the long-term Power Purchase Agreement (PPA) that underpins the hugely successful Independent Power Project (IPP) model. However, the customer will be required to pay a modest fee that in reality amounts to a small percentage of the actual cost of the PV system. This payment corresponds to the savings in the electricity bills accruing to the customers every month for a period of four years from the date of installation of the PV system. Cost savings generated thereafter over the tenure of the contract
with the developer will be retained by the customer, Mr Qais Al Zakwani explained. “Registered customers will be asked to confirm their interest in being part of the Sahim II programme by making a payment, which will be calculated on the expected savings that they will be making over a four-year term. Thus, for example, if you are making a saving of RO 10 per month, it amounts to RO 120 per year, totalling RO 480 for four years. This is the amount payable in order to have a PV installed atop your house. Any savings generated after four years goes entirely to you for the duration of the programme, which is typically 20 – 25 years for such projects.”

The developer, for their part, is assured a return on their investment through payments by Muscat Electricity Distribution Company (MEDC) corresponding to the reduction in the monthly electricity bill of each customer that is benefiting from rooftop solar PV-generated electricity.

Robust interest

According to Eng Hilal al Ghaithi, Project Manager, the Sahim II initiative has garnered robust interest from prospective developers from key markets around the world. “Over the past three years, we have seen significant interest from local and international developers, some of whom are already participating in the local markets in the development of Independent Power Projects (IPPs),” said Mr. Al Ghaithi, adding that companies from Europe, Asia and the Middle East have registered their desire to be part of the initiative.

The regulator has begun inviting homeowners to register their interest in being part of the initial deployment of small-scale solar PV systems atop their premises, starting with residential buildings in Muscat Governorate. Solar PV systems are proposed to be installed atop an initial tranche of around 1,000 homes in the first phase of the programme’s roll-out.

Interested developers are expected to organize themselves into consortiums when bidding for the Authority’s contract to deploy the solar PV systems – a competitive process that is set to kick off with the issuance of a Request for Proposals (RfP) later this year.

Each consortium, according to the Project Manager, will be made up of, among other players, the lead developer, the technology provider, one or more equity partner, and a contractor to provide Engineering-Procurement-Construction (EPC) services. Consortiums will be obliged to enlist the services of local Omani SMEs that have been establishing themselves in the local small-scale renewable energy space with the support of the Authority, and other SME development agencies.

This is in line with the regulator’s efforts to ensure that Omani entrepreneurs and SMEs stand to benefit from the rollout of the Sahim programme – in terms of commercial opportunities and employment creation as well. As they build their capabilities, these local SMEs will be invited to bid for future phases of the Sahim programme as developers in their own right, Mr. Al Ghaithi noted.

Extending specialist technical assistance to the Authority in the roll-out of a robust rooftop solar PV scheme is UK-based energy solutions provider PassivSystems. Earlier this year, the company won a competitive tender to provide its PassivPro platform to the regulator for the delivery of the programme. AER will use the platform to manage up to 250,000 residential solar PV assets totaling 1 GW in capacity, from pre-installation through commissioning, operation, remote monitoring and maintenance.
The contract will see PassivSystems localise its platform to suit typical environmental operating conditions found in Oman. This will include providing support for the use of extra sensors to analyse the impact of extreme heat on output. Sensors will also be installed to detect localised build-up of debris on the panels as combinations of sand, high winds and early morning moisture can quickly lead to encrusted deposits. If left uncleaned, these deposits will severely degrade performance. By integrating data from a network of physical sensors into the platform, PassivSystems will accurately forecast how yield changes with temperature and alert homeowners or maintenance teams to carry out targeted cleaning of panels as and when required.
Oman to host International Gas Union forum in 2020

Oman LNG and Oman Convention and Exhibition Centre (OCEC) collaborate to bring prestigious event to the Sultanate
The event could not have come at a better time, as 2020 marks a significant milestone in which Oman LNG will celebrate twenty years of its existence since the start of operations in 2000. Oman LNG was established through the visionary leadership of His Majesty Sultan Qaboos by a Royal Degree in 1994. According to the IGU, Oman supplies a critical three per cent of liquefied natural gas to meet demand in the international LNG trade and its volumes are pivotal in keeping the balance of supply and demand. With natural gas as the world’s cleanest and most efficient fossil fuel, Oman LNG plays an important role, bringing energy to many corners of the world, helping to diversify the country’s economy.

Oman LNG, as the longest existing IGU member in Oman, has gone to great efforts to bring prestigious gas events to Oman, to be able to showcase the multitude of wonders this country has in abundance— from its strategic geographic location, well-developed venues to the beautiful natural splendours this country boasts.

The LNG industry is a significant contributor to a steadily increasing quality of life for citizens and residents in the Sultanate of Oman through its execution of a wide swath of social investment programmes through Oman LNG Development Foundation that addresses many economic and social needs. Export of Oman’s first cargo was in 2000 and since then, proceeds from the blossoming trade have supported, what some observers have described, as an ambitious diversification programme that has spurred growth in other important sectors of the economy including tourism, agriculture and the spread of vital infrastructure that support business and daily life.

Harib al Kitani, CEO of Oman LNG LLC said, “We are very grateful and humbled by being able to bring such a prestigious event to Oman. The IGRC 2020 will bring over 1000 senior leaders, partners and experts in the gas industry together to share invaluable insights into the role of natural gas today, amid critical gas discoveries and a booming gas industry, and in the future.”

Rodney Cox, Events Director of the International Gas Union stated, “The International Gas Union (IGU) is very pleased to welcome Muscat, Oman as the Host of IGRC 2020. IGU Charter Member, Oman LNG, has been an active contributor to IGU and hosting IGRC 2020 builds on this ongoing support. We look forward to an outstanding conference that supports both IGU’s global objectives as well as a legacy for the natural gas industry in Oman and the region.”

The Sultanate of Oman is widely recognised as a global leader in enhanced recovery technologies. This is largely thanks to the country’s focus on research and the key reason behind Oman’s application to host IGRC 2020 was to further Oman’s ambition of becoming a knowledge economy and to transform the commodity-reliant country into one that helps shape the world’s thinking. The congress will help Oman realise its vision and help contribute to disseminating the best practices and research in enhanced oil and gas recovery.

Dr. Hisataka Yakabe, General Manager of the Fundamental Technology Institute, Tokyo Gas Co. said, “We hope that the IGRC will meet the aspirations of all the participants, stimulate the gas business of Oman, and provide technological insight into the industry.”

Said Al Shanfari, CEO of the Oman Convention & Exhibition Centre (OCEC) added, “It is a privilege to be able to showcase Oman and OCEC as the leading venue of choice in the Arabian Gulf and we will be honoured to host the 2020 IGRC Conference. OCEC has now won 22 international and regional conferences that will be hosted in the Sultanate over the next few years contributing over 24.5 million OMR (63.5 million USD) and we look forward to welcoming the IGRC delegates from April 2020”.

THE IGRC 2020 WILL BRING OVER 1000 SENIOR LEADERS, PARTNERS AND EXPERTS IN THE GAS INDUSTRY TOGETHER TO SHARE INVALUABLE INSIGHTS INTO THE ROLE OF NATURAL GAS TODAY, AMID CRITICAL GAS DISCOVERIES AND A BOOMING GAS INDUSTRY, AND IN THE FUTURE.
Energy investments: Are we doing enough?

Investment inflows into the global energy sector have dwindled in recent years, partly because of the economic downturn unleashed by the fall in international oil prices in 2014.

By Mohammed Al Riyami

Energy is a major component playing a pivotal role in the economies of developing, emerging and advanced countries. Indeed, without energy, GDP growth and living standards will be seriously impacted. To maintain our standard of living, we need security of supply, which in turn necessitates a steady stream of investment into resources.

Investment inflows into the global energy sector have dwindled in recent years, partly because of the economic downturn unleashed by the fall in international oil prices in 2014. But investment is the lifeblood of the energy industry, which in turn powers manufacturing, aviation, transport, real estate, and commerce, among other sectors of the economy. Ensuring security of energy through a steady form of investments in industry is paramount.

According to the World Energy Outlook (WEO) 2018, the global energy industry needs annual investments to the tune of USD2 trillion to meet energy demand growth. In 2017, the industry managed to garner only USD1.8 trillion in investment. Clearly, we need to quicken the pace of investment now that oil prices are on a rebound.

Figures published by the International Energy Agency (IEA) indicate that governments and state-owned enterprises pitched in an average 40 per cent of all investment in the energy sector between 2012 and 2017. Around half of this capital was ploughed into power generation and network infrastructure. Thermal power and coal were collectively the second most important sector in terms of investment, followed by Oil & Gas in third place, and renewables in the fourth. Oman's investment in the energy sector continues to be strong despite the constrained fiscal environment. Majority government-owned has a sizeable OMR 4.4 billion investment in Oil & Gas activities this year. Duqm Refinery – a partnership of Oman Oil and Orpic Group and Kuwait Petroleum International (KPI) – is another example of a mega project being supported by the Omani government. The local State General Reserve Fund (SGRF), the largest of Oman's sovereign wealth funds, is also supporting inflows of Foreign Direct Investment (FDI) into the Sultanate.

China has been playing a stellar role in the energy arena. China needs to have its economy moving from investment to consumption and this will require rebalancing. It is interesting to note that China is working hard to develop its own hydrocarbon fields. To this end, it was announced in July 2018 that Chinese National Petroleum (CNPC) plans to spend USD22 billion in its new frontier by 2020.

Are we seeing consumers becoming producers? Indeed, this is exemplified by the United States which announced for the first time in its history that it had produced 11 million barrels of crude per day on 18th July 2016. In comparison, Saudi Arabia’s production average 10.4 million bpd during the same period. Across the globe, energy firms are taking the lead in driving investment in the hydrocarbon industry. In 2017, seven top oil compa-
Mohammed Al Riyami has extensive experience in Oman’s Oil & Gas sector. He held positions in a number of leading organisations operating in the upstream, midstream and downstream segments of the industry. He also served at the Gas Exporting Countries Forum.

Global Oil & Gas Upstream Spending 2012 to 2018
(USD Billion to LHS $/BBL to RHS axis)

- Electricity demand grows four times faster than all other fuels
- Renewables cost declines
- Coal demand peaks in the next decade with oil peaking 20 years thereafter. Gas grows modestly.
- CO₂ emissions plateau by 2030 and remain on a 2-degrees temperature growth pathway.
- If we look at BP’s Energy Outlook 2018, global energy demand will increase by a third by 2040. Oil will focus on US tight oil and then the onus will shift to OPEC oil producers.
- Demand for natural gas and liquefied natural gas (LNG) grows strongly.

Conclusion
So are we doing enough in terms of energy investments? There is still a USD0.2 trillion deficit in the global energy spend. We need to close the gap so that energy supply is sustainable. Investment must be prudently allocated keeping in mind climate safeguards, energy efficiency and reliability. For its part, the Omani government will need to continue to be an important enabler in attracting FDI, and thereby keep the lifeblood of our economy flowing smoothly.

Mohammed Al Riyami
Mohammed Al Riyami has extensive experience in Oman’s Oil & Gas sector. He held positions in a number of leading organisations operating in the upstream, midstream and downstream segments of the industry. He also served at the Gas Exporting Countries Forum.
Dr Rumhy:

“Sufficient energy is necessary to sustain economic development”

Oman’s Minister of Oil and Gas wins the 2019 Abdullah Bin Hamad Al-Attiyah International Energy Award for the Advancement of Producer-Consumer Dialogue

E Dr. Mohammed Hamad Al Rumhy, Minister of Oil and Gas, was selected as the 2019 winner of the Abdullah bin Hamad Al-Attiyah International Energy Award for Lifetime Achievement for the ‘Advancement of Producer-Consumer Dialogue’. The honour was presented at a Gala Awards dinner held in Doha in May. Each year the award ceremony is attended by the industry’s visionaries and stakeholders both from Qatar and beyond.
HE Al Rumhy was one of seven distinguished individuals recognized for exemplary careers in the energy industry, which included the Ambassador of the State of Qatar to Italy, HE Abdulaziz bin Ahmed Al-Malki, awarded in the Advancement of the Qatar Energy Industry category, and Dr. Zhongrong Shi, Founder of Suntech Power, selected for the Advancement of Renewable Energy.

“I have immense respect for His Excellency Al Rumhy. As the region’s longest serving energy minister, his wisdom and leadership have enabled Oman’s energy sector to thrive and, most crucially, to invest and transition into the new era of technology adoption for regeneration of conventional resources and development of renewables. I am honoured to bestow on him the award for Lifetime Achievement for the Advancement of Producer-Consumer Dialogue,” commented HE Abdullah bin Hamad Al-Attiyah.

The Foundation’s annual Honorary Award for Advancement of International Energy Policy & Diplomacy, was given to Fu Chengyu, Former Chairman of the Sinopec Group. Previous winners of this prestigious award have included Lee R. Raymond, former Chairman and CEO of ExxonMobil; Sir Mark Moody-Stuart Chairman, UN Global Compact Foundation & Vice Chairman, UN Global Compact, and former Chairman of Shell, and the late Christophe de Margerie, former Chairman & CEO of Total.

The Abdullah Bin Hamad Al-Attiyah International Energy Awards are the foremost honour to recognize individuals for their Lifetime Achievement in the global energy industry. This year’s awards were supported by Qatar Petroleum, ExxonMobil, Shell, North Oil Company, Dolphin Energy, Qatar Airways and Total.

“I am honoured and delighted to be a recipient of this award. To sustain economic development around the world, you must have sufficient energy. My concern has always been on how we can meet growing energy demand and we have a responsibility to mankind to supply that energy that is required for sustainability. Soaring energy demand growth requires the world to continue to invest in the sector,” said HE Dr. Mohammed Hamad Al Rumhy.

The nominees are voted on by an International Selection Committee, a group of renowned figures, who are invited to reward candidates for an outstanding record of accomplishment in their sector and for making an exceptional impact on the industry through distinct personal achievements and engagement. The Nominees are evaluated in four areas: Impact, Innovation, Long-Term Vision and Leadership.

Other winners of the 2019 Award were Kenneth B. Medlock III, Senior Director at the Center for Energy Studies at the Baker Institute, who received the accolade for Advancement of Education for Future Energy Leaders and Diane Munro, Editor-in-Chief at Argus Media, recognized for Advancement of International Energy Journalism. A new category introduced by the Foundation this year – for the Advancement of Gas Exporting Countries Forum (GECF), was awarded to its Secretary General, HE Dr. Yury Sentyurin.

Amongst the distinguished 2019 Selection Committee members this year were Maria van der Hoeven, Former Executive Director of the International Energy Agency (IEA), HE Mohammad Sanusi Barkindo, Secretary General of OPEC and Lee R. Raymond, Former Chairman & CEO ExxonMobil Corporation.
Shell LNG Outlook 2019

Need for cleaner air driving strong LNG demand growth

Growing recognition of the role of liquefied natural gas (LNG) as the world tackles poor air quality and climate change
Strong demand for cleaner-burning fuel in Asia continued to drive rapid growth in liquefied natural gas (LNG) use in 2018, with global demand rising by 27 million tonnes to 319 million tonnes, according to Shell’s latest annual LNG Outlook.

Shell expects demand to reach about 384 million tonnes in 2020. Global LNG supply is set to rise by 35 million tonnes in 2019. Both Europe and Asia are expected to absorb all this additional supply. A rebound in new long-term LNG contracting in 2018 could revive investment in liquefaction projects.

Based on current demand projections, Shell still expects supplies to tighten in mid-2020s. Ongoing efforts to improve urban air quality saw China’s imports of LNG surge by 16 million tonnes in 2018, up by 40% from 2017. On the supply side, Australian LNG exports caught up with those of long-time leading supplier Qatar towards the end of 2018 and are expected to rise by 10 million tonnes in 2019. Both countries are well-positioned to supply rapidly developing economies across Asia with gas they need to improve air quality by displacing coal-fired power and heating.

“The continued surge in Chinese LNG imports has helped improve air quality in some of its biggest cities over the last few years. China’s success in making the air cleaner for millions of people shows the critical role that natural gas can play in providing more and cleaner energy to the world,” said Maarten Wetselaar, Integrated Gas and New Energies Director at Shell.

“We saw Asian LNG demand growth exceed expectations again in 2018 and we expect this strong growth to continue. Investment in new supply projects is picking up, but more will be needed soon.”

LNG has played an important role in the global energy system over the last few decades, as an increasing number of countries have turned to natural gas to meet their growing energy needs. LNG trade increased from 100 million tonnes in 2000 to 319 million tonnes in 2018.

New long-term contracts may spur investment

New LNG projects typically require long-term sales agreements to secure financing. From 2014 through 2017, LNG buyers had increasingly been looking to sign shorter, smaller and more flexible contracts. Shell warned in its 2018 LNG Outlook that this mismatch between suppliers and buyer needs would have to be resolved to enable developers to go ahead with new projects.

Encouragingly for the long-term health of the global LNG market, the average length of contracts signed more than doubled from around 6 years in 2017 to about 13 years in 2018. Meanwhile, the total contracted volume more than doubled to almost 600 million tonnes in 2018.
Nationally Determined Contributions (NDCs)

Demand for energy will continue to rise to meet the lighting, heating, cooling and transport needs of a growing global population. At the same time, there is an increasing need to significantly reduce carbon emissions by changing the way energy is produced, delivered and used. The Paris Agreement has set out a political framework for reducing emissions. And, while countries are concerned with how to deliver their Nationally Determined Contributions (NDCs), they are also concerned with better air quality for their increasingly urban populations.

Projections to 2035 estimate that more than 70% of energy demand growth will be met by gas and renewables combined, with gas supplying more than 40% of the additional demand. China, India and other major importers are putting policies in place which drive preference for gas over coal. Gas emits between 45% and 55% lower greenhouse gas emissions than coal when used to generate electricity. Coal to gas switching has led to a 78% improvement in Beijing’s winter air quality over the last five years. Blue skies are not the only benefit of the measures China has taken to improve air quality in Beijing. There has been a calculated annual reduction of 176 million tonnes of carbon dioxide (CO2) in Beijing and surrounding areas. LNG continues to be the fastest-growing gas supply source, with an expected compound annual growth rate of 4% between now and 2035. We expect growth in LNG demand to continue around the world, led by Asia and Europe.

LNG provides flexible supply to meet the seasonal and short-term demand requirements of an importer, providing greater security of supply. It is also a reliable partner for renewables because it can quickly compensate for dips in solar or wind power supply and rapidly respond to sudden increases in demand. The number of LNG importing countries continues to increase, reaching 42 in 2018, with Panama and Bangladesh turning to LNG imports for reliable, affordable and cleaner energy. The use of LNG in transport is growing, especially in the heavy-duty transport sector. Europe is predicted to have over 280,000 LNG trucks on its roads by 2030. China already has over 300,000 LNG-fuelled trucks and bus on the road.

A look back at the 2018 global LNG market shows continuing strength with deliv-
ered volumes reaching 319 million tonnes – enough to power around 643 million homes. LNG trade increased by 27 million tonnes – growth supported by 70% of the LNG capacity additions sanctioned between 2011 and 2015 coming online. Japan remains the world’s largest LNG importer, followed by China, which eclipsed South Korea for the second year in a row.

Focus on China

China’s strong demand for energy continues with gas the fastest-growing fuel source, accounting for more than 40 billion cubic metres (BCM) of growth. China has become the world’s largest gas importer, with LNG imports doubling over the last two years. This demand has been driven by industrial use (+44%) and residential and commercial use (+38%). More than half of this gas demand growth was met by LNG.

India is also using LNG to meet its increasing needs for a secure energy supply. Domestic gas production dropped and the resulting increase in demand for imported gas was met by LNG (up 10% year on year). LNG’s share of India’s total gas supply mix exceeded 50% for the first time in 2018.

Marine LNG also continues to grow strongly. There are currently 143 LNG fuelled ships in operation and 135 on order. 2018 saw a number of announcements from across the marine sector supporting new LNG ship building and infrastructure development. Encouragingly for the long-term health of the global LNG market, the average length of contracts signed more than doubled from around six years in 2017 to about 13 years in 2018. Meanwhile, the total contracted volume more than doubled to almost 600 million tonnes in 2018. There were more than 1,400 spot cargoes delivered in 2018.

Looking out to 2019, 35 million tonnes of additional LNG supply is expected. This supply growth is expected to be absorbed by both Europe and Asia. 2018 saw final investment decisions on 21 million tonnes of new capacity, compared to a total of 7 million tonnes over the last two years, combined.

A rebound in new long-term LNG contracting in 2018 could revive investment in liquefaction projects. There is potential for a supply shortage developing in the mid-2020s, unless more LNG production project commitments are made soon.
What can be guaranteed looking at well-trodden mountain range paths? All are interconnected. Consider that the range represents the global oil market and that each path is an oil price benchmark. No benchmark works in isolation, each acts as a ‘guide’ to offer market participants the necessary transparency to trek the summits of success in trading ecosystems. The robustness of these symbiotic relationships – in the Middle East and beyond – has a major bearing on the black gold market. Three benchmark markets largely define global crude oil trading – Brent, WTI and Dubai – with Brent having the widest and deepest global reach of the three.

**Shifting sands**

Change is constant but the next 12 months will be particularly busy for the global oil community.

The implementation of International Maritime Organization’s (IMO) new sulfur limit of 0.5% for marine fuels, down from 3.5%, from the first day of 2020 will have ramifications for refiners around the world, which in turn af-
fects the producers of different grades of crude. The economics of sourer and heavier grades – predominantly associated with the Dubai benchmark – and the relationship with lighter grades, which go into the Dated Brent benchmark, are expected to vary considerably in the years ahead due to the IMO sulfur limit.

Looking to meet the continuously growing demand for crude in Asia, traders are increasingly arbitraging the grades that go into Dated Brent moving them from North West Europe to Asia. Flows of Middle Eastern crude to Asia are also rising with vessels travelling from the Middle East to Asia often stopping for bunker at the UAE’s Port of Fujairah -- the world’s second largest bunkering port. IMO 2020 may also change the balances of bunker sales at the world’s leading bunker ports.

The staggering growth rate of US crude oil exports which S&P Global Platts Analytics estimates is currently around 2.4 million b/d and forecasts to rise to almost 4 million b/d by 2020 has dramatically altered global crude flows, with many newer Chinese refiners seeking the light, sweet grades earmarked for export. It is the rise of crude exports from the US that has also re-established West Texas Intermediate’s (WTI) credentials as a major benchmark.

Since the 1980s, Platts Dubai has been the primary pricing reference for crude oil delivered to Asian refineries from supplies coming from the Middle East Gulf. With deep financial markets available for hedging and an unrivalled track record as the sour crude benchmark of choice East of Suez, Dubai’s influence and importance has seen remarkable growth through the years. It is the spread between the different crude benchmarks that drive trader behaviors and their value is reflective of the characteristics of the different grades of crude that make up the basket of crude that can be delivered into each benchmark.

Global influence

Dated Brent is the most widely used and robust benchmark for physical crude oil, which means changes to it have importance worldwide. Ensuring the benchmark evolves to remain robust and well supplied to all market participants for the next decade and beyond is critical to the global oil community. As markets evolve, so too must benchmarks. Relevance and transparency are essential.

A key part of S&P Global Platts active stewardship of Dated Brent is to continue to engage extensively with market participants. We recently proposed to reflect competitive offers of the five North Sea BFOE grades that comprise Dated Brent (Brent, Forties, Oseberg, Ekofisk or Troll) on a CIF (Cost Insurance & Freight) basis delivered into the major hub of Rotterdam as well as the current FOB loading basis effective November 2019-loading cargoes.

The potential inclusion of the BFOE crudes on a delivered Rotterdam CIF basis, would ensure that every barrel of the grades currently reflected in Dated Brent is able to play the fullest possible role in establishing the value of North Sea crude.

We believe these changes will strengthen Dated Brent as a global benchmark to ensure it remains relevant for participants to value term contracts and exploit arbitrage opportunities (including in the Middle East). Feedback is requested from market participants by February 14, 2019, ahead of IP Week in London in February.

In addition, Platts continues to consult with market participants on the potential inclusion of other grades beyond the current five in Dated Brent. While we observe regular trade flow into the Northwest European region, trade practices are still evolving and becoming more transparent, and we will continue the consultation with stakeholders. Clear communication ensures that the relevance and transparency of a benchmark are widely and fully understood-- vital in this multifaceted market. Therein lies the value of consultations that focus on listening – rather than just transmitting – with a varied group of stakeholders that encompasses producers, refiners, trading houses and many others. The more feedback, the better the pathways will be for those traversing the mountain range in search of energy security and economic prosperity.

In Numbers

In Numbers The staggering growth rate of US crude oil exports which S&P Global Platts Analytics estimates is currently around 2.4 million b/d and forecasts to rise to almost 4 million b/d by 2020 has dramatically altered global crude flows, with many newer Chinese refiners seeking the light, sweet grades earmarked for export.
The Middle East’s petrochemicals push signals oil’s future

Plastics and chemicals will account for the largest share of global crude demand growth by 2030, and a third wave of petrochemicals expansion underway in the Middle East is looking to cash in on the trend. This is the second installment in a three-part series exploring oil, plastics demand and sustainability.

Part 1: Consumer push for sustainability masks massive growth in plastic demand

by Philip Reeder

Barely a week goes by without another headline decrying the use of plastics and plastic packaging in Europe. Plastics are clogging up our oceans, overflowing our landfill sites and even finding their way into our food. But as the world wakes up to the environmental damage caused by plastic waste and pollution, it may come as a surprise to learn that the industry is looking to dramatically ramp up production, not slow it down.

The International Energy Agency now forecasts demand for petrochemical feedstocks – the specific group of refined oil and gas products used to produce plastics – to grow by nearly 5 million barrels per day to 2040. Meanwhile, the petrochemicals sector itself is now being positioned as the largest driver of global oil consumption at more than a third of the growth in oil demand to 2030, and nearly half to 2050.

In the US, ready access to low-cost unconventional oil reserves has already led to the investment of more than $200 billion in new chemical manufacturing facilities since 2010, while in Europe new investments are counting on exports of US chemicals to produce even more plastics for consumption worldwide. Coal and methanol to olefins projects in China are driving self-sufficient plastics production in East Asia. At the same time a wave of new capacity additions for ethylene – one of the major building blocks of plastics production – in South Korea, India and the Middle East are being met by an average global demand growth year on year of 3.4% from 2018 to 2028 according to S&P Global Platts Analytics.

As the public backlash against plastics intensifies, however, the industry is being forced to manage a difficult double act: meet growing demand while attempting to transition from a single-use economy to true sustainability.

Media spotlight drives policy

Reducing our reliance on single-use plastic and boosting recycling rates is certainly getting lots of attention in the media at the moment and that is a good thing. The 2017 BBC documentary Blue Planet II may have been a turning point, bringing
home the scale of the damage plastics are doing to the world’s oceans. The shift in opinion against plastics has been as decisive as it has been central to recent decisions taken to curb their usage. The European Commission is now moving aggressively to implement stricter recycling measures, the UK is proposing a ban on plastic straws and cotton buds as part of a 25-year plan to eliminate plastic waste, and India is committed to doing the same, only by 2022. Elsewhere, brand-owners such as Coca-Cola, Evian, Unilever and Nestle have committed to higher standards of product design and recycling content targets, and in April last year, supermarkets across the UK signed up to a ‘plastics pact’ which set targets to use 30% recycled material in all plastic packaging.

Yet while efforts are clearly being made to reduce the production of the world’s most harmful plastics, the focus until now has been almost entirely centred on single-use plastics. Legislation to restrict disposable plastic is an obvious win for legislators in Europe, representing a kind of low-hanging fruit to appease both consumers and voters, but the fact is these efforts are likely to do little to offset the massive underlying growth of chemical products globally. The truth is that plastics and the petrochemicals that are used to produce them are an integral part of modern society, and that is not going to change any time soon.
Plastic is everywhere

Chemicals derived from oil and gases are used in just about everything. Besides the manufacture of plastic straws, cotton buds, shopping bags and food packaging, they are used in digital devices, medical equipment and clothing. Synthetic rubber derived from the petrochemical butadiene is used in tires for cars, trucks and bicycles. Polypropylene – a polymer derived from cracking the hydrocarbon chains of distilled fractions of oil and then connecting the by-products – is used to keep tea bags from falling apart.

Beyond even tea bags, however, the attractiveness of plastics also extends to investments in clean energy infrastructure. Silicone is used in solar cells and thermoplastic foams are needed to make wind turbine blades lighter and more durable. Plastics also compose many of the materials needed for the light-weighting of electric vehicles – a fleet expected to number 280 million in 2040, according to S&P Global Platts Analytics.

To achieve the grand challenge of reducing our global carbon footprint, plastics will continue playing a crucial role in leading the transition away from fossil fuels to low-emission, low-cost alternatives.

Investment and innovation

Given the vital role plastics are expected to play in meeting the needs of future economies, major oil and gas companies have already begun moving to integrate downstream assets within their operations. For oil companies with deep pockets, the focus on major downstream initiatives in petrochemicals is both an effort to diversify portfolios and also a hedge against future reductions in road transportation fuels as the world moves to electric powered vehicles.

The recent acquisition by Saudi Aramco of Saudi Basic Industries Corp., the Middle East’s largest producer of plastics and chemicals, is one of many examples of oil giants that now perceive chemicals to be one of the future growth engines of the economy. Last year the company announced its latest investment will be the building of a crude-to-chemicals complex with a capacity to process 400,000 b/d of crude to produce 9 million mt per year of various petrochemicals. News quickly followed that Aramco will be investing $100 billion in chemicals over the next decade and will use 70% of its crude oil in petrochemical production.

Almost paling by comparison then, was news last month of the launch of the Alliance to End Plastic Waste, a partnership of companies committed to spending $1 billion to keep plastic waste out of the environment. Despite grabbing headlines, the pact seems unlikely to tackle the production problem at its source. The signatories in the alliance include Shell and Exxon, companies that are actively investing many more billions building integrated chemical production plants worldwide. With global production of more than 300 million metric tons of plastic each year and massive growth expected worldwide, sustainability concerns are unlikely to temper plastics demand.

However, many companies are beginning to see the economic potential in building infrastructure for plastics disposal and re-use. In 2017, furniture giant IKEA acquired a 15% stake in a Dutch polypropylene and high density polyethylene (HDPE) recycling plant. Petrochemical giant Borealis acquired German recycler mtm plastics in 2016 and Austrian recycler Ecoplast in 2018. Add to that list the purchase last summer of French recycler Sorepla by polyethylene terephthalate (PET) producer Indorama.

There are also signs that oil and gas companies are strengthening their links with recycling players, with the signing of an agreement in August last year between oil and gas major MOL and German recycler APK to support completion of the latter’s ‘Newcycling’ plant which will enable recycling of multi-layer packaging.

As the field of waste management evolves, the future of the industry may even lie in a new generation of plastic to fuel (PTF) conversion technologies, aimed at recovering synthetic crude oil from plastic waste. PTF may well be the first step in a move to a truly circular economy, irrespective of the massive increase in plastics demand that recent headlines seem to have missed.
Plastics and chemicals will account for the largest share of global crude demand growth by 2030, and a third wave of petrochemicals expansion underway in the Middle East is looking to cash in on the trend, as investment into downstream petroleum industries will become a critical demand driver for oil markets in the future.

Industrialized economies use up to 20 times more plastic and up to 10 times more fertilizer than developing nations on a per person basis, underscoring the huge potential for global growth. The International Energy Agency expects petrochemicals to account for almost half of global oil demand growth by 2050, equivalent to almost 7 million b/d.

However, chemicals and plastics have become dirty words for many consumers, with a growing international campaign gaining momentum to ban single-use products like bottles and cups. Despite the environmental backlash, particularly in Europe, Japan and South Korea, which have ramped up recycling efforts, S&P Global Platts Analytics expects demand for the material and other associated materials to remain on a growth trajectory.

“Petchems and plastics demand are highly correlated to population and GDP growth,” said Jennifer Van Dinter, Platts Analytics’ global head of NGL and petrochemicals. “The focus at present in the petchem market is targeting economic growth in China and India and bringing western development trends to those economies.”

Middle Eastern leaders
Middle East petrochemicals producers are racing to expand, and Saudi Arabia –

**Petrochemicals Growing Global Crude Demand**
A growing need for plastic and chemicals will continue to build global crude demand in the coming decades. The International Energy Agency expects petrochemicals to account for almost half of global oil demand growth by 2050, equivalent to almost 7 million barrels per day. Investment in downstream petroleum industries will be a more critical demand driver for oil markets in the future.
already the region’s largest producer – is leading the charge. Last month Saudi Aramco unveiled a deal with France’s Total and Daelim of South Korea to build a new 80,000 mt/year polyisobutylene plant by 2024. The product is used for adhesives and lubricants.

The deal comes as Aramco pursues a tie-up with Saudi Basic Industries – the world’s third largest petrochemicals producer. Aramco and Total are also planning to construct a huge petrochemicals complex in Jubail, next to the SATORP refinery, utilizing 1.5 million mt/year of ethylene, key for plastic packaging. The state-controlled upstream giant is also working with Sabic on another major project to convert crude oil to chemicals at Yanbu on the eastern Red Sea coast.

Abu Dhabi is also targeting significant petrochemical production growth. ADNOC is expanding its global refining and petrochemicals footprint, with plans to transform its main Ruwais facility into a sprawling integrated refining and petrochemicals complex.

Last year, the company said it aims to double crude refining capacity and triple petrochemicals production in a $45 billion investment drive alongside its partners. In Oman, the sultanate is investing heavily to create an integrated refining and petrochemicals hub in the port of Duqm outside the Persian Gulf. The Duqm refinery—a joint venture between Kuwait Petroleum International and Oman Oil Company—includes a petrochemicals complex. The facility is expected to reach completion by 2023. The Duqm industrial zone, which aims to attract investments of up to $15 billion over the next 15 years, is Oman’s biggest single economic project and part of the sultanate’s efforts to diversify its economy away from oil export revenues.

State-owned Kuwait Petroleum Corporation is eyeing further expansion in petrochemicals. The company is mulling a potential fourth complex, called Olefins-4, to produce plastics. The project would add to KPC’s petrochemicals capacity on top of Olefins-3 and Aromatics-2, which are being built at the Al-Zour refinery. The 615,000 b/d Al-Zour refinery and petrochemicals complex in the south of the country is expected to come online in 2020 after years of delays.

**The next wave**

It is no longer just the Middle East banking on petrochemicals as the key source of oil demand growth. The US and now China are muscling in, with Deloitte saying availability of low-cost shale gas resulted in an unprecedented capacity creation and expansion in 2010-2017, primarily along the US Gulf Coast. And the next wave is imminent.

The Middle East, with an advantaged supply, and China and India, where there is strong demand, are “leading the way for oil-to-petchems refineries and projects,” Van Dinter said. “The North American petrochemicals complex has put significant investment dollars behind the ethylene value chain [which goes to making plastics among other products] in the form of ethane-fed steam crackers.”
European governments and corporates are setting ambitious goals on plastics recycling, but there are practical and economic hurdles to get over if the policies are to be a success. Not only do some countries’ domestic markets lag behind, but there is a general reliance on material from countries such as Germany and the Netherlands where more inroads have been made to cope with high levels of demand. So what are the key challenges that European countries need to overcome for their recycling aims to be realised?

Lackluster recycling rates
Collection rates are the biggest concern. This is the amount of plastic waste that is placed into the recycling stream by consumers. The collected plastic is processed into post-consumer bales, which become the feedstock for recyclers. It is in this most important factor that disparity is seen between European countries. Germany, Scandinavia and the Netherlands enjoy higher collection rates, chiefly because they have effective consumer deposit return schemes that have been running for decades in many cases. A deposit return scheme works because it gives a financial incentive to consumers to recycle their plastic bottle, thus creating more supply of a good quality feedstock. France and the UK, on the other hand, do not have deposit return schemes and have relatively low collection rates. It is not just the rate of collection that is important – the quality of what is being collected also matters. Deposit return schemes work well because they provide a supply source that is, theoretically, almost 100% good quality, usable feedstock. In Scandinavia, one market source even went as far as to say that the recycled polyethylene terephthalate flakes are of such a high quality that they can be fed directly into the machine that creates the bottles, and mixed with virgin PET. Normally the flakes must be processed further into pellets before being turned into a plastic bottle.

UK recycling, however, does not produce such high quality feedstock. There are two main reasons for this, which sources say must be addressed if the industry is to cope with expected growth in demand. The first is consumer mixed recycling. The disadvantages of mixed recycling mean that when waste is brought to a mechanical recycling plant there are a significant number of contaminants that must be removed from the waste stream to create a usable feedstock. Not all the contaminants can always be successfully removed and, inevitably, not all of the PET will be recovered. Some will escape and move to landfill. Simply put, by starting off with a lower quality waste stream, a lower quality feedstock is produced. This means that a lower-quality end product may be produced and less of the processed post-consumer material can be successfully recycled. Output quality also determines the future use of the recycled product. Food-grade recycled PET pellets have to be of a very high quality, meaning only recycled ma-
Plastic: Wasted or recovered?

Share of plastic packaging waste that is
- Not recovered (e.g. ends up in landfills)
- Recycled (e.g. materials reused)
- Otherwise recovered (e.g. incinerated for energy)

<table>
<thead>
<tr>
<th>Country</th>
<th>Share of Plastic Waste</th>
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<tr>
<td>Malta</td>
<td>75%</td>
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<td>Greece</td>
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<td>Croatia</td>
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<td>Romania</td>
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<td>Portugal</td>
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<td>Austria</td>
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<td>Liechtenstein</td>
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Source: Eurostat (env.waspax), latest available data for each country (2015 or 2016)

Material that was originally food-grade can be used and has to be processed several times. This increases costs and, even for countries with successful deposit return schemes, it is a tightly supplied market. Food-grade R-PET pellets, assessed by S&P Global Platts for the first time on February 6, 2019, can therefore be expected to command a premium price.

To boost the amount of collected waste that can be successfully recycled, sources have suggested that a deposit return scheme, akin to those in the Netherlands, Germany and Scandinavia, could be introduced in the UK. This would help increase supply, by providing the consumer an incentive to recycle and increase the quality of that supply, by having a dedicated PET supply stream.

In late March 2018, the UK Government proposed the introduction of a deposit return scheme as a means of increasing collection rates within the UK. According to the government’s Commons Select Committee environmental audit, a deposit return scheme in the UK could significantly increase recycling rates to between 80-90%, as in countries with successful deposit return schemes.

Effective, but costly
The German deposit return scheme has certainly helped increase recycling rates. Around 93% of PET bottles are reused and over 97% of bottles are deposited. As a result, the average recycled content of PET bottles in 2017 in Germany was just over 24%. Forum PET, an industry group that campaigns for the sustainable use of PET, now aims to increase this recycled material to 50% by 2022. This is much higher than the UK government’s plans of 30% by 2022.

These schemes, however, come at a cost, both in the installation process and in the incentive that needs to be given to the consumer – large enough to tempt them, but not so large that the recyclers are unable to pay. They also take time: time to gain enough coverage over the country, time for consumers to become used to depositing and time for recyclers to receive consistently good quality supply.

Sweden’s deposit return scheme started in the mid-1980s, while the rest of Scandinavia introduced schemes in the 1990s and early 2000s. In Germany, the scheme started in 2003 and there are now plans for expansion of products that can be deposited, beyond beverage bottles.

Despite the high costs involved in introducing and maintaining deposit return schemes, the increase in collection rates and quality of collection is sizeable. For the UK and France to meet their proposed policies on recycled content, introducing schemes seems to be a must. Even European countries that already have a scheme will have to increase participation in some way to meet increasingly ambitious recycled plastics policies.
The oil and gas industry is facing strong competition in attracting science, technology, engineering and mathematics (STEM) talent, with 44% of STEM Millennials and Generation Zs (Gen Z) interested in pursuing a career in oil and gas, compared to 77% in the technology sector, 58% in life sciences and pharmaceuticals, and 57% in healthcare – according to the inaugural global “Workforce of the Future” survey released today by the Abu Dhabi National Oil Company (ADNOC) at CERAWeek by IHS Markit, the world's premier energy event.

Interest in oil and gas is on par with the marketing and advertising (48%), hospitality (47%), transport/logistics (46%) and retail (41%) industries.

The survey was commissioned by ADNOC to examine future workforce and employment trends in the oil and gas industry, particularly as the industry looks to attract STEM talent and enable the 4th Industrial Age. This is in line with ADNOC’s Oil & Gas 4.0 mission to help meet the world’s increasing demand for energy and higher-value products – by fostering a dynamic and performance-led culture that cultivates talent and applies the latest technology to optimize resources.

The survey interviewed STEM students and young professionals aged 15 to 35 in 10 countries – across North America, Europe, Asia, and the Middle East, representing a mix of significant global economies, and producers and consumers of oil and gas – and looked at their perceptions across multiple STEM-related industries, including oil and gas, and the skills they value and believe are required to succeed in these industries.

**Key findings include:**
- “Salary,” “work-life balance,” “job stability,” “on-the-job fulfilment,” and “a good work environment” are ranked the top five drivers behind potential career choices for STEM Millennials and Gen Zs.
Young STEM talent also associate the oil and gas industry with high salaries and see it as an industry that is invaluable. “The industry pays well,” “the industry is crucial for their country’s economy and development,” and it is “an industry we couldn’t live without,” are ranked as the top three positive attributes about the industry.

STEM Millennials and Gen Zs show the most interest in industries that they believe will be most impacted by new technologies. Globally, 42% say that new technologies will have a major impact on the oil and gas industry, while 56% say the same for healthcare, 53% for life sciences and pharmaceuticals, and 73% for the technology industry. Nearly 3 in 4 (72%) believe that new technologies will have an overall impact on the oil and gas industry, compared to 9 out of 10 for the technology sector.

Dr Sultan Ahmed Al Jaber, UAE Minister of State and ADNOC Group CEO, said: “The findings from the ADNOC ‘Workforce of the Future’ survey show that the more STEM Milennials and Gen Zs associate oil and gas with new technologies, the more interested they will be in a career in the industry. The oil and gas industry should position itself at the cutting-edge of technology and showcase how breakthrough innovation is vital to every aspect of our business – across the upstream and downstream value chain. “The world’s demand for energy and higher-value products continues to increase at an unprecedented rate. In order to meet that demand, our industry must stay ahead of the curve and ensure we continue to attract, retain and develop our young people. As we enter the 4th Industrial Age, we need to come together as an industry and – with our technology industry partners – better highlight the exciting opportunities our dynamic industry offers to young talent with strong technology skills,” he added.

FINDINGS SHOW A MISMATCH BETWEEN WHAT STEM TALENT PERCEIVES AS THE MOST IMPORTANT SKILLS FOR THE FUTURE AND FOR A CAREER IN OIL AND GAS

WHAT MILLENNIAL & GEN Z STEM TALENT WANTS

Interest in pursuing a career by industry

- Technology: 77%
- Life sciences / Pharmaceuticals: 58%
- Healthcare: 57%
- Oil and gas: 44%

Salary, work life balance and job stability are the top career draws

- $50%: say good salary
- 38%: say work life balance
- 27%: say job stability and security

Biggest attractions to working in oil and gas

- 39%: Say pays well
- 38%: Say is crucial for my country’s economy and development
- 37%: Say I couldn’t live without
- 26%: Say technology driven

Say new technologies will have an impact on oil and gas ...
... and the more an industry is associated with new technologies, the higher the interest in pursuing a career.

72%

There is a gap between what STEM talent see as key skills for the future, and skills needed in oil and gas

- IT and computer skills: 27%
- Creativity and innovative thinking: 26%
- Programming languages: 11%

Interest in oil and gas rises as STEM talent enters the job market

Young professionals: 51%
University students: 47%
Secondary students: 37%
Addressing perception gaps will be important in attracting STEM Millennials and Gen Zs

The results also show that STEM Millennials and Gen Zs appear divided on whether oil and gas is an industry of the future (45%) or the past (44%). The data also indicates a mismatch between what STEM Millennials and Gen Zs see as the most important skills to succeed professionally versus what they see are the most important skills for a career in the oil and gas industry. “Information technology and computer” skills (37%) and “creativity and innovative thinking” (33%) are seen as the most important skill-sets for succeeding in the future, but only 18% see “IT and computer” and “creativity and innovative thinking” as important skills for a career in oil and gas. Similarly, while 26% say programming languages are key for future professional success, only 11% view it as an important skill in the oil and gas industry.

Interest in Oil and Gas rises as STEM talent enters the job market

The data also shows that some experience in the job market and a tertiary education in STEM subjects can help change perceptions positively towards a career in the oil and gas sector. While interest is low among secondary school-age STEM students (37% are interested in a career in oil and gas), this figure rises to approximately half (51%) of young professionals being interested in pursuing a career in the sector – representing a 14-point increase.

Dr Al Jaber added: “It is encouraging that STEM talent begin to view oil and gas more favorably and acknowledge the benefits and opportunities the industry offers as they mature and enter the workforce. However, there is clearly an opportunity to start engaging earlier and emphasizing how technology and softer skills such as ‘creativity and innovative thinking’ are important for oil and gas.

“Oil and gas has always been – and will continue to be – an industry of the future that is at the forefront of technology and innovation. It is an exciting time for STEM talent to join the industry, particularly as we advance our Oil & Gas 4.0 mission and embrace new technologies and partnerships for digital and technological transformation across our entire operations,” concluded Dr Al Jaber.
Global Energy Transformation: A roadmap to 2050

This report is based on the International Renewable Energy Agency (IRENA) Renewable Energy Roadmap (REmap) and on the socio-economic pathway analysis. It outlines an aggressive, yet feasible, course for the global energy transition.
The global energy transformation is picking up pace. While steps have been taken in recent years in the right direction, a greater acceleration is needed that is centred on renewable energy, electrification and energy efficiency. This report outlines that transformation. Such a global energy transformation – seen as the culmination of the “energy transition” that is already happening in many countries – can create a world that is more prosperous and inclusive. It is, however, more than a simple transformation of the energy sector – it is a transformation of economies that would bring new opportunities and greater prosperity while also improving the air quality in our cities, preserving the environment and protecting our climate; but it will also be a complex transformation that will deeply affect economies and societies.

This report is based on the International Renewable Energy Agency (IRENA) Renewable Energy Roadmap (REmap) and on the socio-economic pathway analysis. It outlines an aggressive, yet feasible, course for the global energy transition. The report brings new insights. For instance, it shows that the outlook for energy-related carbon dioxide (CO2) emissions in the Reference Case has improved compared to the previous analysis, but that emissions in recent years have risen, not declined as one would expect. The report also presents new findings on the costs, subsidies and socio-economic effects of the transition.

Finally, it provides new insights on the crucial role of renewable power and electrification technologies and identifies them as the key enablers for energy-related CO2 emissions reductions.

**MIXED PROGRESS ON THE ENERGY TRANSITION**

**Positive steps**

Technology has already transformed a wide array of sectors, and is now greatly disrupting the energy sector. The confluence of smart energy networks, digital solutions that better allow for controlling energy demand and trade, electrification and ample, low-cost renewable power has the potential to transform the energy sector in a way that just a few years ago seemed improbable. Developments are already being seen in several key areas. Yet the transition cannot be achieved through technology advancement alone. Policies are needed to better align international energy and climate plans, and countries need to increase their levels of emissions reduction ambition. Costs of renewable energy have continued to decline rapidly. Overall the fall in electricity costs from utility-scale solar photovoltaic (PV) projects since
2010 has been remarkable, with the global average cost declining 73% (IRENA, 2018d). Cost declines have been seen in diverse countries ranging from Saudi Arabia and the United Arab Emirates to Brazil and the United States (US), where wind and solar PV costs are now approaching 2-3 US cents per kilowatt-hour (kWh) (CleanTechnica, 2018; GTM, 2019; IRENA, 2018d). In Europe, offshore wind can now compete at market prices. In the US, the Energy Information Administration expects non-hydroelectric renewable energy resources such as solar and wind to be the fastest growing source of electricity generation nationwide in 2019 and 2020 (EIA, 2019).

Large economies are increasingly powered by renewables. Renewables are projected to have produced 33% of total power generation in the United Kingdom and 40% of total power generation in Germany and Spain in 2018 (Energy Reporters, 2018; FT, 2019a; PV Magazine, 2019), and instantaneous generation can reach even higher levels. China reached a 38% share of renewable generation capacity at the end of 2018, and at the same time was able to greatly reduce the amount of power that was unusable and wasted due to grid flexibility issues (a phenomenon known as “curtailment”) (Reuters, 2019). Progress is also being seen elsewhere: Chile is undergoing a renewable energy boom and for the last few years has been one of the largest renewables markets in Latin America (PV-Tech, 2018), and Morocco is pioneering its own boom, with renewable power providing 35% of its electricity in 2018 (MoroccoWorldNews, 2019). Wind and solar power dominated overall renewable energy additions in the power sector again in 2018, with an estimated 51 gigawatts (GW) of wind power (GWEC, 2019) and 109 GW of solar PV power (BNEF, 2019) installed. For the seventh successive year, the net additional power generation capacity of renewable sources exceeded that of non-renewable sources.

Growth rates in renewable power have averaged 8-9% per year since 2010 (IEA, 2018a). Global electricity markets are constantly evolving to meet the growing demand for renewable energy required by different types of consumers, including companies. IRENA estimates that at the end of 2017, the global corporate renewable electricity market reached 465 terawatt-hours (TWh) (comparable to the consumption of France today), representing approximately 3.5% of total electricity demand and 18.5% of the renewable electricity demand in the commercial and industrial sector (IRENA, 2018e). Expanding the use of electricity is the main driver for accelerating the energy transformation. In particular, the electric mobility revolution is gaining pace. Electric vehicle (EV) sales (both battery-electric and plug-in hybrids) surpassed 2 million units in 2018, a 58% growth over the previous year (InsideEVs, 2019). In Norway, EV sales grew 40% in 2018, with nearly half of all passenger cars sold being electric that year (Electrek, 2019). Globally, around 5.6 million battery electric light vehicles were on the road by the end of 2018 (EV Volumes, 2018). The switch to electricity is not just happening with cars. Electric buses are making large in-roads, particularly in China, where some cities have converted their entire public bus fleet to electricity. For instance, Shenzhen has over 16 000 electric buses in operation (The Guardian, 2018).
While electricity is clearly making in-roads in transport, steps are also being taken to electrify heat. In some Nordic countries, heat pumps now account for more than 90% of the sales of space heating equipment (EHPA, 2017). Countries also are exploring the use of heat pumps and electric boilers with storage for their district heating systems. Denmark, for example, announced plans in 2018 to set up 13 large district heat-pump projects across the country in order to reduce emissions from its heat networks. The aviation sector will need to address its rising emissions if the world is to meet climate targets. If it were a country, this sector would represent the eighth largest emitter of CO₂, and it is the mode of transport that is experiencing some of the largest growth in emissions. Many airlines, manufacturers and industry associations have committed to voluntary, aspirational targets that would collectively achieve carbon-neutral growth by 2020 and a 50% reduction in greenhouse gas emissions by 2050 (relative to 2005 levels) (IRENA, 2017b). Emissions in aviation could be reduced by around 1.5% annually through improved fuel efficiency, new aircraft, modifications to aircraft and optimised navigational systems. However, there is a need to further reduce emissions through the use of advanced biofuels, namely biokerosene, or “biojet”. In the last few years numerous tests have been conducted of airplanes flying routes fuelled with biojet, proving that the technology is feasible, but it requires further commercialisation and improvement in costs. The regulatory framework for transport biofuels has been uncertain, and investment activity has consequently been stagnant for the last decade. Visibility regarding future markets has been poor and changes have been frequent, hampering investment.

Finally, while it appears that coal use may have increased slightly in 2018, coal consumption has been declining year on year for the last few years, and there is an increasing trend by countries, corporations, traders and investors to shy away from coal investment (IEA, 2018b). Meanwhile, renewable energy investment continues, albeit slightly lower than in 2017, with Bloomberg New Energy Finance estimating total investments at USD 332 billion in 2018 (BNEF, 2019). There are also signs that even the oil majors are considering getting more into the electricity business. Royal Dutch Shell recently said it could develop a power business and mentioned that it could become one of the largest electricity companies globally by 2030 (FT, 2019b).

The global energy transformation makes economic sense

According to current and planned policies, the global energy sector will see cumulative investments of USD 95 trillion over the period until 2050. The transition towards a decarbonised global energy system will require scaling up investments in the energy sector by a further 16% (an additional USD 15 trillion by 2050). In total USD 110 trillion would be invested in the energy system, representing on average 2% of global gross domestic product (GDP) per year over the period. The types of investments will change, with a shift in the composition of investments away from the fossil fuel sector towards energy efficiency, renewables and enabling infrastructure. Crucially, the additional investments that are required are 40% lower than was estimated in the previous analysis (IRENA, 2018a), due largely to rapidly falling renewable power costs and the potential for further cost reductions, as well as the emergence of electrification solutions that are getting cheaper and more efficient. The additional investments needs are, however, front loaded. While additional investments are required in the first period of the transition (to 2030), as the year 2050 approaches, technology progress, better understanding of the power system and increasing electrification of end-use applications result in more optimistic, lower investment estimates.

Energy sector subsidies totalled at least

THE TRANSFORMATION OF THE GLOBAL ENERGY SYSTEM NEEDS TO ACCELERATE SUBSTANTIALLY TO MEET THE OBJECTIVES OF THE PARIS AGREEMENT.

THOSE OBJECTIVES ARE TO KEEP THE RISE IN AVERAGE GLOBAL TEMPERATURES “WELL BELOW” 2 DEGREES CELSIUS (2°C) AND IDEALLY TO LIMIT WARMING TO 1.5°C IN THE PRESENT CENTURY, COMPARED TO PRE-INDUSTRIAL LEVELS.
Highlights

Despite clear evidence of human-caused climate change, support for the Paris Agreement on climate change, and the prevalence of clean, economical and sustainable energy options, energy-related carbon dioxide (CO2) emissions have increased 1.3% annually, on average, over the last five years. The gap between observed emissions and the reductions that are needed to meet internationally agreed climate objectives is widening.

In the last few years the energy sector has started changing in promising ways. Renewable power technologies are dominating the global market for new generation capacity, the electrification of transport is showing early signs of disruptive acceleration, and key enabling technologies such as batteries are experiencing rapid reductions in costs.

Despite these positive developments, deployment of renewable solutions in energy consuming sectors, particularly buildings and industry, is still well below the levels needed, and progress in energy efficiency is lagging.

Structural change also plays a critical role in meeting global climate targets and enabling the high level of energy efficiency that is required. Changes include modal shifts in transport (e.g., from individual passenger cars to shared mobility and public transport), as well as efforts in industry such as the circular economy and industry relocation to areas where renewable energy is plentiful.

Investment in infrastructure needs to be focused on low-carbon, sustainable and long-term solutions that embrace electrification and decentralisation. Investment is needed in smart energy systems, power grids, recharging infrastructure, storage, hydrogen, and district heating and cooling in cities.

Circular economy practices can drive aggressive, and readily realisable, reductions in energy demand and emissions. Reusing, recycling and reducing the use of water, metals, resources, residues and raw materials in general should be amplified. Lifestyle changes can facilitate deeper emissions reductions which are challenging to implement and accurately forecast over decades.

The share of renewable energy in primary energy supply would grow from less than one-sixth today to nearly two-thirds in 2050 in the REmap Case.

Energy efficiency must be scaled up substantially; the rate of energy intensity improvement would increase to 3.2% per year, up from recent historical averages of around 2.0% per year.

Electricity would progressively become the central energy carrier, growing from a 20% share of final consumption to an almost 50% share by 2050, and renewable power would be able to provide the bulk of global power demand (86%) economically. As a result gross electricity consumption would more than double.

The transition to increasingly electrified forms of transport and heat, when combined with the increases in renewable power generation, can deliver around 60% of the energy-related CO2 emissions reductions needed to set the world on a pathway to meeting the Paris Agreement. When these measures are combined with direct use of renewable energy, the share of the emissions reductions from these combined sources reaches 75% of the total required.

However, emissions will still need to be reduced further, and bioenergy will play a role in sectors that are hard to electrify, such as shipping, aviation and certain industrial processes. Biofuel consumption must be scaled up sustainably to meet this demand.

Efforts also are needed to reduce non-CO2 greenhouse gas emissions and non-energy use emissions (such as by using waste-to-energy, bioenergy and hydrogen feedstocks); to reduce industrial process emissions; and to reduce fugitive emissions in the coal, oil and gas industries. Efforts are needed outside of the energy sector to reduce greenhouse gas emissions in agriculture and forestry.
Mixed Progress on the Energy Transition

Recent progress of the energy transformation
Key milestones over the past 20 years in renewables and digitalisation: gitalisation

1997 Kyoto Protocol

1999

Global share of electricity in TFE 17%

2000

Global renewable share in electricity 18%

Global wind capacity -50 GW

Oil and gas companies start investing in renewable power

2005

Solar PV auction price 80 US$/MWh

Wind turbine price -115 US$/MWh

2007

Global PV capacity 15 GW

2008

Solar PV auction price 20 US$/MWh

2011

Wind turbine price 21 US$/MWh

Global PV capacity -400 GW

2012

Global renewable share in electricity 20%

2014

540 USD/kWh

2015

Yearly EV sales surpass 500,000 units

2016

First solar plane flight around the world

2017

Heat pumps represent 10% of heating sales globally

2018

Almost 90 million smart meters installed this year

2019

20 GWh

5th Berlin Energy Transition Dialogue

Sources: (IEA, 2018c); (IRENA, 2018f); (GWEC, 2015); (Reuters, 2007); (IRENA, 2018b); (NISDIEEIV, 2018b); (IEA-PVPS, 2018); (EV Volumes, 2019); (Solar Impulse, 2019); (IRENA, 2016); (Economist, 2017); (IEA, 2010); (GlobalData, 2018); (EC, 2018a); (GWEC, 2019); (CleanTechnica, 2018); (IATA, 2018); (ISSET, 2018)
USD 605 billion in 2015 and are projected to increase to over USD 850 billion annually by 2050 in the Reference Case. In contrast the REmap Case would result in a decline in subsidies to USD 470 billion in 2050. The types of subsidies would change drastically, moving away from fossil fuels and renewable power technologies to technologies needed to decarbonise the transport and industry sectors.

The REmap Case would result in a cumulative reduction in fossil fuel subsidies of USD 15 trillion below what would have occurred in the Reference Case by 2050, and in a net reduction of USD 10 trillion when including the increased support needed for renewables in the REmap Case.

In total the savings from avoided subsidies and reduced environmental and health damages are about three to seven times larger than the additional energy system costs. In monetary terms, total savings resulting from the REmap Case could amount to between USD 65 trillion and USD 160 trillion over the period to 2050. Viewed differently, for every USD 1 spent, the payoff would be between USD 3 and USD 7.

The energy transition cannot be considered in isolation from the broader socio-economic system. For the transition to renewable sources and technologies to succeed, policies must be based on a more integrated assessment of the interactions between the evolving energy sector and the wider economy.

Changes in the energy system have impacts throughout the economy. Globally, the transition promises GDP, job creation and human welfare benefits. By year 2050, the REmap energy transition brings about relative improvements of GDP and whole-economy employment of 2.5% and 0.2% respectively. In cumulative terms from 2019 to 2050 the GDP gains of the REmap Case over the Reference Case add up to 99 USD trillion. The global welfare indicator measuring the improvement of REmap over the Reference Case reaches in 2050 a value of 17%.

As is the case with any economic transition, some regions and countries will fare better than others. Regions with high dependence on fossil fuel exports and/or weak, non-diversified domestic supply chains face an adjustment challenge. Failure to address distributional aspects can also introduce significant transition barriers.
Besides the energy transformation characteristics (energy balances and investments), many other policy inputs can have an important impact on the socio-economic footprint. Carbon taxes and fossil fuel subsidies are among these policy inputs. Carbon taxes on the level required for a 2°C global warming climate goal can have a significant socio-economic impact, which will be positive or negative depending on the policy framework that accompanies the deployment of carbon taxes. Special care needs to be taken concerning the distributional impacts of carbon taxes, both within and between countries, with policy frameworks aiming at reducing inequalities becoming important energy transformation enablers.

Across the world economy, overall employment increases between 2018 and 2050 for both the Reference and REmap cases, with CAGRs of 0.45% and 0.46% respectively. The REmap Case produces more jobs than the Reference Case, with relative gains peaking around 2035 and remaining around 0.2% until 2050. The employment impact of the REmap transition in the energy sector is very positive, with new jobs associated with the transition (i.e., renewable generation, energy efficiency and energy flexibility) significantly outweighing the jobs lost in the fossil fuel sector.

The geographic and temporal distribution of energy sector jobs gained and lost is unlikely to be well-aligned, while jobs in other sectors of the economy could decline. This calls for widening the conceptual framework to include just transition considerations and clearly requires addressing temporal, spatial and educational mismatches between new jobs and job losses throughout the economy. Therefore, specific policies will be needed to address these mismatches to ensure that transition outcomes are just both in the energy sector and beyond.

It should be noted that the main socio-economic results presented (GDP and jobs) do not capture the impacts of climate change, the very driver of the energy transition on the economy. The macroeconomic model assumes that economic activity is not influenced by climate change, and hence both the Reference and REmap cases are left to progress along their macroeconomic pathways. IRENA has made a first attempt to quantify the impacts of climate damage on GDP.

IRENA has been working to include the impact of climate damages into its macroeconomic modelling. However, the approach has to be understood as conservative because it does not include many of the potential impacts of climate change into the economy. Climate damage impacts increase with time as the climate system responds to the cumulative GHG emissions. Macroeconomic performance under both the Reference and REmap cases is significantly impacted by climate damages, leading to a global GDP reduction of 15.5% and 13.2%, respectively, by 2050. Despite this high impact, the global economy would still experience a significant growth due to the high growth rates achieved without climate damages under the considered socio-economic context: The CAGR between 2019 and 2050 with climate damages would be 1.8% and 2.0% for the Reference and REmap cases respectively, down from the 2.4% and 2.5% without climate damages.

When comparing the relative GDP performance of the REmap over the Reference case, since climate damages have more impact in the Reference Case than in the REmap Case due to the CO2 mitigation associated with REmap, a significant improvement is obtained when climate damages are factored into the analysis: by 2050 the incorporation of climate damages leads to an increase of the (GDPReMap–GDPReference)/GDPReference socio-economic footprint indicator from 2.5% to 5.3%.

Modifying the socio-economic structure incorporating fair and just transition elements improves the socio-economic footprint and prevents barriers that could ultimately halt the transition. The socio-economic footprint can be substantially improved through greater ambition in all countries and regions. This would reap the benefit of minimizing climate damages, while the associated investment stimulus can produce important socio-economic benefits.

Negative impacts on low-income countries must be addressed for the transition to be successful (e.g., ensuring adequate financing; addressing the distributional impacts of transition policies with justice and equity criteria; reinforcing domestic supply chains to reap indirect and induced effects from the transition).
Oman LNG posted a dramatic 60 per cent growth in revenues, which surged to $3.505 billion for fiscal 2018, up from $2.196 billion a year earlier. Net Income After Tax (NIAT) soared 68 per cent to $1.079 billion in 2018, up from $642 million in 2017, the majority Omani government-owned gas liquefaction company announced in its newly published Annual Report for 2018.

Driving the company’s growth were two key factors: Additional gas supplies that made possible the operation of the plant at its nameplate capacity of 10.4 mtpa for the first time, and an uptick in international crude prices.
Meanwhile, Qalhat LNG, which owns the third of the three liquefaction trains that together make up the LNG complex, posted revenues of $1.230 billion in 2018, up from $1.003 billion a year earlier. Driving this impressive turnaround in Oman LNG’s financial performance are two key factors: Additional gas supplies that made possible the operation of the plant at its nameplate capacity of 10.4 million tons per annum (mtpa) for the first time, coupled with an uptick in international crude prices.

The Annual Report also detailed major strides in Health, Safety and Environment (HSE) having notched nearly 30 million man-hours without Lost-Time Injury (LTI) by the year-end – a notable achievement given the sizable number of operational and civil projects the Company has embarked.

In his message, HE Dr Mohammed bin Hamad al Rumhy, Minister of Oil and Gas, and Chairman of the Board of Directors of Oman LNG, also credited the company’s success to a combination of factors that transcend its balance-sheet.

“Although price stabilisation has brought benefit to the bottom line, Oman LNG’s success is a product of multiple converging factors. It is a success articulated far broader than the balance sheet, one that resonates with continuous improvement, cost leadership, on budget, safety achievements, staff empowerment, and CSR with compassion. For these proud achievements, we can thank exemplary leadership and an exceptional workforce,” Dr Al Rumhy stated.

“Even more encouraging, however, are the production and safety records we continue to deliver, and that is where true expansion now lies. This spells brighter prospects for our company and its stakeholders, our most important stakeholder being, of course, the country we serve,” Dr Al Rumhy added.
Eng. Harib al Kitani, CEO of Oman LNG, commented: “It was a year of multiple challenges, but we have become accustomed to surmounting challenges, thanks to our robust workforce and the world-class environment in which we operate.
Our working environment is one in which modern facilities are amply complemented by initiatives that increase efficiency, promote sustainability and drive our progress towards renewables.”

A record 162 LNG cargoes (111 from Oman LNG and 51 on behalf of Qalhat LNG) were shipped from the Qalhat complex to an expanding network of destination worldwide in 2018, up from 134 cargoes (88 from Oman LNG and 46 from Qalhat LNG) a year earlier. Shipments of natural gas liquids (NGL) – a byproduct of LNG production – totaled 36 in 2018.

2018 was also a watershed year for Oman LNG as the company progressed a number of landmark initiatives designed to ramp up production safely, efficiently and sustainably well beyond its current concession period.

Notable are agreements to establish a new gas engine driven power plant at its facilities in Qalhat designed to help conserve natural gas. The project is on target for start-up in 2020, according to Oman LNG. Also making headway is a Debottlenecking Project developed by Oman LNG to enhance efficiency as well as create additional value from surplus gas in the grid.

A key highpoint of the year was Oman LNG’s success in operating at full capacity for the first time in its two-decades-long operational history. The CEO commented: “We achieved our production rate of 10.4 million tonnes per annum (mtpa) by a combination of regular plant maintenance activities” and “meticulous forward planning. The strength represented in this figure confirms our plant’s ability to process high volumes without cost to delivery or safety. Indeed, we have already pressed this capacity further, embarking on major projects, such as the Plant Rejuvenation Programme, the Power Project and the Debottlenecking Project, all of which are now running at full speed and all contributing to increasing plant efficiencies and boosting output.”

“ALTHOUGH PRICE STABILISATION HAS BROUGHT BENEFIT TO THE BOTTOM LINE, OMAN LNG’S SUCCESS IS A PRODUCT OF Multiple CONVERGING FACTORS

LONG-TERM BUYERS

- Union Fenosa Gas
- Senboku Power Fuel Co. Ltd.
- Mitsubishi Corporation

SHAREHOLDERS

- Government of Oman
- Oman LNG
- Union Fenosa
- Itochu Corporation
- Osaka Gas Australia Pty
- Mitsubishi Corporation

ALTHOUGH PRICE STABILISATION HAS BROUGHT BENEFIT TO THE BOTTOM LINE, OMAN LNG’S SUCCESS IS A PRODUCT OF Multiple CONVERGING FACTORS

Although price stabilisation has brought benefit to the bottom line, Oman LNG’s success is a product of multiple converging factors.
Oman LNG, Qalhat LNG prepay loans in reflection of robust fiscals

The early repayments demonstrate the robust financial underpinnings of Oman LNG and Qalhat LNG, and underscore confidence in the Oil and Gas industry and Omani economy at large.

Attesting to its strong financial credentials, Oman LNG has announced that it has successfully repaid its $2 billion loan facility obligation ahead of schedule, signalling a positive credit score for the Omani company while saving interest costs as well. The laudable achievement comes on the heels of sister-company Qalhat LNG's similar announcement that it had successfully repaid its loan ahead of schedule – back-to-back milestones that underscore the financial stability of the LNG companies notwithstanding the current economic environment. Furthermore, in proactively settling their debt obligations well in advance, Oman LNG and Qalhat LNG exemplify the Omani government’s efforts to showcase the Sultanate’s investment appeal and sound macroeconomic underpinnings.

HE Dr Mohammed bin Hamed al Rumhy, Minister of Oil and Gas, and Chair-
man of Oman LNG, commented, “The early repayment of the loan by Oman LNG demonstrates the financial robustness of the company and confidence in the Oil and Gas industry and Omani economy at large. The Oil and Gas industry provides a great investment opportunity like other sectors of the Omani economy.”

The story of Oman LNG’s project finance started in 1997 when lenders granted a loan of $2 billion. It was billed as one of the largest limited recourse financings arranged in the Middle East as the gas liquefaction project was the largest venture undertaken by the Sultanate at that time, with strategic importance to the national economy. The project construction in Sur was completed ahead of schedule and under budget and started operations in the year 2000.

Global reputation

Over the years, the company has witnessed a strong financial performance which enabled the company to make voluntary prepayments to its lenders and provide investors with increased confidence in the financial robustness of the company. This is in addition to the global reputation that the company has attained in the Liquefied Natural Gas (LNG) market since it started its operations in the year 2000.

Mr. Harib al Kitani, Chief Executive Officer of Oman LNG said, “This success is a testament of our commitment to our lenders and all our stakeholders. It provides confidence to them about our financial robustness, hence their willingness to continue their relationship with the company and the country at large.”

Mr. Al Kitani added: “The successful repayment of the loan will open a huge opportunity for more projects or expansion of this successful natural gas investment by the government and other shareholders.”

Oman LNG has managed to repay its loan obligations in full, without default and ahead of schedule, hence rendering the company debt free. These efforts provide clear evidence to investors world-wide that Oman is a safe haven for investments and help the Government’s ambitions to diversify the country’s economy and meet its 2040 vision through such healthy investment environment. LNG exports have become the largest income earner for the Sultanate after oil revenues.

With its key buyers in Asia and Europe, Oman LNG has run efficiently and reliably since its start-up of operations where last year reached successfully a record high production rate of 10.4 million tonnes per annum (mtpa). Since the inception, over 2,400 cargoes of LNG have been safely and reliably produced and delivered to various destinations around the globe.

Earlier, in February, majority government-owned Qalhat LNG, which operates under Oman LNG’s umbrella, announced that it had successfully repaid its loan facility obligation ahead of schedule in a testament to its strong financial credentials.

Creditable milestones

The story of Qalhat LNG’s repayment milestones started in 2005 and is one of many great achievements witnessed by the company since then. Firstly, the company completed the establishment of its production facility on time and under budget, adding to the cost savings and improved investment reputation. In the ensuing years, the company began to voluntarily prepay its lenders and help provide investors increased confidence in the financial robustness of Qalhat LNG.

HE Salim al Aufi, Under-Secretary of the Ministry of Oil and Gas, and Chairman of Qalhat LNG stated: “The achievement of this prepayment is attributed to many success factors that have been associated with Qalhat LNG from its inception. The final achievement was one of several voluntary financial prepayment initiatives by Qalhat LNG to forge a resolute pathway towards paying all debts on time. These milestones were achieved even during financial challenging times amid the recent oil and gas downturn.”

The final instalment has rendered Qalhat LNG debt-free, managing to repay, in full, its obligations, without default, ahead of the target date. These efforts are aligned in increasing the credibility of the nation in providing the assurance to investors worldwide that Oman is a safe haven for key investments. The efforts simultaneously further help the Government’s ambitions to diversify the country’s economy and meet its 2040 Vision through such healthy investment opportunities.

On September 1, 2013, Oman LNG and Qalhat LNG integrated to form a single operating unit under the name of Oman LNG. The LNG provided by Oman LNG’s facility contributes an estimated three per cent to the world’s LNG trade.
S-based technology and professional services giant KBR Inc has announced that it has secured a contract to support the debottlenecking of Oman LNG’s gas liquefaction complex at Sur – a strategic initiative that will contribute to a notable uptick in the plant’s LNG capacity and as well as extend its operational life.

The contract calls for the provision of Front-End Engineering Design (FEED) services, alongside licensor and vendor management services associated with the debottlenecking of the three-train liquefaction complex.

In a statement, KBR said it will act as an extension to Oman LNG’s project team and help manage the overall execution of the project including the management of the supply and ensure all areas of compliance and safety are adhered to.

“The contract underpins Oman LNG’s robust commitment towards knowledge sharing and boosting staff competency in dealing with such complex projects, while enhancing Oman LNG’s enriched In-Country Value (ICV) efforts,” the company said.

Mr. Jay Ibrahim, KBR President, Energy Solutions – Services, stated: “We are excited to be a part of this important project and to continue to grow and maintain our presence in Oman. This indicates KBR’s strategic commitment to deliver our differentiated services and develop our presence and long term commitment to Oman, support its in-country value initiatives and to develop a highly skilled in-country engineering capability.”

LNG production from the Sur complex soared, for the first time in the project’s nearly 20-year operational history, to 10.4 million tonne in 2018, corresponding to its nameplate capacity. This follows the sup-

Contract awarded for Oman LNG debottlenecking

FEED contract to contribute to uptick in plant capacity as well as operational life of Sultanate’s gas liquefaction flagship
ply of additional natural gas from BP Oman’s Khazzan field in Block 61 enabling the operation of the three-train plant to full capacity for the first time. The plant, given its strategic importance to the Omani economy in terms of the substantial revenue it brings via LNG exports, has been the subject of a landmark debottlenecking and rejuvenation programme, of late. In March, the Ministry of Oil and Gas announced that Oman LNG is exploring a modest upgrade, in addition to a major bottlenecks exercise designed to lift the plant’s overall output to its nameplate capacity or thereabouts. HE Salim bin Nasser al Aufi, Under-Secretary of the Ministry of Oil and Gas, stated: “In terms of an expansion, we are considering initially a debottlenecking – just to remove any potential bottlenecks in the system so we can operate at its original nameplate capacity or slightly higher, subject to the availability of additional gas. We are also considering a small expansion within the three trains. At the moment there is no plan to add an extra train.”

According to earlier media reports, the proposed debottlenecking exercise coupled with the upgrade could potentially boost output by 1.5 million tons per year (tpy). Debottlenecking is defined as the process of pinpointing specific areas in plant equipment or the workflow configuration that limits the flow of product in any refining or petrochemical plant. By optimizing plant operations, overall capacity can be ramped up.

"LNG PRODUCTION FROM THE SUR COMPLEX SOARED, FOR THE FIRST TIME IN THE PROJECT’S NEARLY 20-YEAR OPERATIONAL HISTORY, TO 10.4 MILLION TONNE IN 2018, CORRESPONDING TO ITS NAMEPLATE CAPACITY. THIS FOLLOWS THE SUPPLY OF ADDITIONAL NATURAL GAS FROM BP OMAN’S KHAZZAN FIELD IN BLOCK 61 ENABLING THE OPERATION OF THE THREE-TRAIN PLANT TO FULL CAPACITY FOR THE FIRST TIME"
Oman is set to host the World Heavy Oil Congress and Exhibition (WHOC) for the second consecutive year during September 2 – 4, 2019 at the Oman Convention & Exhibition Centre in Muscat. The prestigious event is supported by the Ministry of Oil and Gas and hosted by Petroleum Development Oman (PDO).

A Technical Committee that met in April examined 255 individual papers and selected submissions showing technical expertise for eight separate specialist categories which included two newly added categories, Project Management and Operational Excellence, Maintenance & HSE. As many as 110 papers will be selected and presented to more than 3,000 international experts and specialists.

Dr. Saleh al Anboori, Director General, Planning & Studies, at the Ministry of Oil and Gas and 2019 Congress Co-Chairman said, “The Ministry of Oil and Gas is proud to fully support the Technical Conference and WHOC.”
WHOC is an important event for Oman, as analysis suggests demand for global crude oil will rise to 89 million barrels per day by 2030 and approximately 30 per cent will be produced from heavy oil, which currently forms about 40 per cent of Oman’s total resource base and offers enormous future potential for the Sultanate.”

Echoing his thoughts, Junaid Ghulam, Field Development Manager, Petroleum Development Oman, and 2019 Co-Chairman said, “Oman has extensive expertise in developing heavy oil effectively and in an environmentally-friendly way. We are excited to share our experiences and expertise with the global heavy oil community, and also look forward to collaborating with other countries and companies to make heavy oil a sustainable fuel.”

Dr. Rifat al Mjeni, EOR Portfolio Leader, at Petroleum Development Oman, and the WHOC 2019 Technical Committee Chairman said, “The Sultanate of Oman has a number of full field developments of heavy oil using both thermal and chemical recovery processes as well as number of EOR trials, which will pave the way for the next set of heavy oil fields in which EOR will be implemented. WHOC is an excellent platform through which we – PDO – can share our own experiences, as well as learn from the visiting speakers, exhibitors, and delegates on ways to address the various challenges related to heavy oil production and processing. With PDO exploring every option to further drive energy efficiency forward, the successful WHOC submissions will cover the entire supply chain of heavy oil development and ultimately help us continue the great progress being made.”

He added, “The committee’s expertise and choice of submissions for WHOC will undoubtedly help stimulate the increased production of heavy oil from emerging energy efficiency initiatives, expansion developments, and new production fields.”

Some of the members of the 2019 Technical Conference Committee include Dr Abdulazim Marafie (Senior Research Scientist, Kuwait Institute of Scientific Research), Ali Mohammed Al Ansari, (Superintendent Oil Processing, Bapco), Dr Renke Rommerskirchen (Global Technical Manager EOR, Sasol), Dr Xudong Jing (Manager Shell Technology Oman, Shell Development Oman LLC), Erik Sellman (Domain Champion - Oil & Electro statistics, Schlumberger) and Muscat University’s Nader Mosavat (Director of Programmes, Faculty of Engineering and Technology).

They will be joined in Oman by Rafael E Hincapie (Senior EOR Engineer TECH Center & Lab, OMV), Sultan Al Amri (Reservoir Characterisation Manager, Occidental Oman), and PDO’s Nasser Al Arzi (Cluster Leader), Talal Aulaqi (EOR Front End Development Manager) and Vaclav Lastovka (Reservoir Engineer).
Duqm Refinery and Petrochemical Industries Company (DRPIC) has selected the UK-headquartered multinational energy services group, Wood plc, to undertake the Front End Engineering Design (FEED) work on its petrochemicals complex at Duqm.

The FEED services also include the NGL Extraction plant in central Oman and a connecting 230 km NGL pipeline.
finery and Petrochemicals Complex at the Special Economic Zone (SEZ) in Duqm. Dr. Salim Al Huthaili, Chief Executive Officer of Duqm Refinery and Petrochemical Industries LLC (DRPIC), said: “The award of FEED contracts came after a rigorous competitive tendering process. This key milestone enables Duqm Refinery to maximize the value of the refinery products and enhance its market competitiveness. This project is our further contribution to the Omani economy and will allow us to deliver against our strategic objective to ensure a sustainable and economic prosperity for both Oman and our shareholders.” The Duqm Petrochemical Project (DPP) represents the second stage of the integrated refinery and petrochemical complex planned by Duqm Refinery which comes as part of the strategic partnership between Oman Oil Company and Kuwait Petroleum International. The project will be located in the Special Economic Zone in Duqm (SEZAD) exploiting the established infrastructure and facilities in the zone. Oman Oil and Orpic Group will take the lead in developing the NGL extraction unit and the connecting pipeline. The NGL plant will be located in the concession areas in central Oman and connected with the gas network of Oman Gas Company (OGC). A pipeline will be constructed to transport the NGL stream from the NGL extraction plant to the petrochemical complex. At the centre of the project is a mixed-feed Steam Cracker with a capacity of 1,600 KTPA of ethylene processing selected Duqm Refinery product streams; Liquefied Petroleum Gas (LPG), Full Range Naphtha (FRN), off gases and Natural Gas Liquids (NGL) extracted from natural gas available in Central Oman. The project will produce a range of new commodities for the first time in Oman such as Ethylene Glycols, Oxo Chemicals, and Butadiene and increase the diversity of the existing petrochemical portfolio in Oman. The expected polyethylene and polypropylene grades produced by DPP would both differentiate and complement the current shareholder product portfolio. The diverse DPP products provide building blocks for a vast variety of value-added products, which in turn provide a foundation for downstream industries/projects within SEZAD, Oman and beyond, offering the potential to attract foreign direct investment and support domestic growth. Construction work of the Duqm Refinery project is progressing steadily across all three EPC packages with project progress estimated at nearly 20% complete.

Duqm Refinery and Petrochemical Industries LLC is a joint venture between Oman Oil Company and Kuwait International Oil Company. With a view to establishing a world-class fuel refinery, Duqm Refinery aims to be a catalyst for economic growth and effectively contribute to the prosperity and wealth of the Sultanate in the future. Upon completion, Duqm Refinery’s refining capacity will reach 230,000 barrels per day for various types of crude oil, with diesel, jet fuel, naphtha and liquefied petroleum gas (LPG) being the main products. The refinery will also serve as a key driver for the growth of the region by opening up investment opportunities for new projects.
Trailblazing CSR with a strategic national dimension
A flurry of agreements signed by Petroleum Development Oman (PDO) in recent months, under the auspices of its award-winning National Objectives programme and its equally trendsetting Social Investment Programme, is helping drive training and skills development, entrepreneurship and SME mentoring, Omanisation and job creation, and community development - all at an increasingly frenetic pace.
PDO is unquestionably the trailblazer in Oman’s CSR space, its focus moving beyond just social investment to strategic national goals, notably Omanisation and skills development. Since 2011, PDO’s National Objectives programme has secured more than 63,000 job, vocational training, redeployment, transfer and scholarship opportunities for Omani jobseekers. PDO has created around 8,000 job opportunities this year so far. The graduation of the 15th batch, numbering around 500 young Omanis, was celebrated in April at a ceremony held at the Oman Convention and Exhibition Centre in Muscat under the auspices of HE Abdulaziz bin Mohammed al Rawas, Advisor to His Majesty the Sultan for Cultural Affairs. The graduates were enrolled in different technical and non-technical training schemes, which are in line with the Company’s efforts to support the Government’s economic diversification drive, and have qualified to work in a range of sectors including aviation, banking, and hospitality.

Nation-building
PDO External Affairs and Value Creation Director Abdul-Amir Abdul-Hussein Al Ajmi said: “I would like to take this opportunity to congratulate the latest batch of National Objectives graduates. We are proud of their achievements and applaud them for their commitment to succeed in the training courses that will enable them to build careers, support their families and participate in building the nation.”

Having successfully completed training lasting from six to 18 months at six different training institutes, such as TATI and Dalma, the graduates were awarded international certificates in a variety of trades. The batch featured the first group of trainees to be employed at Mazoon Dairy, SalamAir and the new W Muscat hotel in Muscat. The 36 graduates, who will be working as cabin crew with Salaam Air, have also undergone practical training in Bahrain.

Also as part of its CSR commitments, PDO is funding a number of community projects that will boost sustainable development across the Sultanate. In agreements signed in May, the Company has committed to financing the construction of two fish markets in Adam and Yanqul, which come as part of the Ministry of Agriculture and Fisheries’ fish markets rollout plan across the Sultanate. The facilities, each of which will include storage facilities and an ice factory, will boost the fisheries industry in the area and create employment opportunities.

PDO opened its first funded fish market in Ibri at the beginning of this year and signed a commitment to construct another in Bahla last month. The addition of these latest two facilities in Adam and Yanqul will bring the total number of fish markets funded by PDO to four.

PDO is also building 13 new majlises in Bahla, Thumrait, Al Jazir, Manah, Haima and Adam as part of a second phase, which was mapped according to population density and beneficiaries in co-ordination with Wali offices. The buildings are being funded by the Company in an effort to provide safe and suitable community gathering spaces for the villages and the surrounding communities.

Fifteen Memorandums of Understanding (MoUs) confirming these commitments were signed at an official ceremony held under the auspices of
HE Khalid bin Hilal al Busaidy, Under-Secretary of the Ministry of Interior, at PDO’s Knowledge World venue in Muscat. PDO Managing Director Raoul Restucci said: “Our Social Investment programme aims to contribute to the sustainable development of Omani communities and to address their specific needs through a variety of different projects executed in co-operation with governmental and non-governmental bodies and focused on key themes. Our mantra is that we only succeed if the communities in which we operate succeed, and these new projects will undoubtedly serve citizens in their day to day lives for many years to come.”

Social investment

These MoUs come fresh off similar commitments in the key areas of health, safety and the environment, community infrastructure development as well as youth and women empowerment all of which are fully aligned with the UN Sustainable Development Goals (SDG). Ten Memorandums of Understanding
FEATURE

(MoUs) confirming these commitments were signed at an official ceremony at the Crowne Plaza Muscat in April. The package includes the backing of a new dairy factory in Taqah, which will be constructed to support women working under the umbrella of the PDO-backed Banat Oman initiative. This will enable them to meet high market demand for their products, including export opportunities to the regional market, and sustain and grow their current sales.

Among the range of infrastructure commitments, PDO is funding a new fish market in Bahla as part of the Ministry of Agriculture and Fisheries fish markets rollout plan across the Sultanate. The 1,000m² facility, which will contain an ice factory with an estimated production of five tonnes of ice per day, will boost the fisheries industry in the area and create around 50 employment opportunities.

HE Shaikh Ali bin Mansour al Busaidi, Wali of Bahla, said: “I would like to thank PDO for funding the construction of this modern facility and sponsoring other social responsibility projects which have had a positive impact on the community. There is no doubt that this market will serve locals by creating job opportunities and providing fresh fish and seafood.”

The Company is also stepping up its community health efforts by providing a new CT scan machine to Haima Hospital and funding the construction of related facilities such as waiting and preparation rooms which will improve the medical diagnosis and minimise current CT scan referrals.

The Company will also support the construction of a passenger building in Juzur Al Hallaniyat airport as the existing runway on the island, which is mostly used by the Royal Air Force, does not have one. Other infrastructure pledges include the construction of Reverse Osmosis plants in Qatbeet/Sadhoon and another in Wadi Arah, which have been designed to meet the current and future potable water demand of the local population, and the replacement of a damaged five-kilometre long water pipe from Shaleem to Wadi Hakka.

In addition, two buses will be provided for the Omani Women Association in Haima and Al Jazir, and a third for Al Wusta Club for youth to support these organisations in their activities.

Tawteen Initiative

Also in April, PDO signed an MoU with the Ministry of Education and Ministry of Higher Education to sponsor the training of a further 50 students as teachers so they can return to work in schools in their local towns and villages. The move is part of the Tawteen initiative launched three years ago with the aim of reducing teacher turnover and consolidating local education systems in some of the more remote parts of the Sultanate. By the end of the year, the total number of students enrolled in the
Tawteen programme will be 369, of which 175 are sponsored by PDO.
PDO External Affairs and Value Creation Director Abdul-Amir Abdul-Hussein al Ajmi signed the MoU to further support the initiative with HE Dr Abdullah Mohammed al Sarmi, the Under-Secretary of the Ministry of Higher Education (MOHE), and HE Saud Salim al Balushi, the Under-Secretary of the Ministry of Education.

HE Saud al Balushi said: “Tawteen programme for teaching staff in remote villages is one of the strategic initiatives adopted by the Ministry to provide Omani teachers in remote villages. It contributes to the stability of teaching staff and the development and improvement of the educational process as well as providing job opportunities in these villages.”

PDO also signed another MoU with HE Dr Abdullah al Sarmi to support a further 150 students under its Community Scholarship Programme (CSP). This gives students from PDO’s concession area the freedom to choose any undergraduate programme that suits their interests and provides a monthly allowance to support them for five years up to Bachelor degree level.
Managing gas portfolios on a commercial basis could boost revenues for GCC governments

Reallocating just 10 per cent of current production levels could increase the region’s GDP and foreign earnings by up to $10 billion a year, or support the creation of 100,000 jobs, says Strategy&.

Gulf Cooperation Council (GCC) governments could generate US$10 billion yearly in additional GDP and foreign earnings, or support the creation of 100,000 jobs, by applying commercial principles to the management of their gas portfolios, according to a recent report conducted by Strategy&, part of the PwC network. GCC countries have long benefited from an abundance of cheap gas that exceeded their needs. However, demand for this finite resource is growing, meaning GCC countries must start making hard decisions about how best to use it.

The report also finds that a modest increase in the gas price of just $0.5 per million British thermal units (mmBtu) would add more than $6 billion per year to GCC government coffers.

David Branson, executive advisor with Strategy& Middle East, said: “The days
of abundant cheap gas in the GCC are over. GCC governments now need to take a more strategic approach to managing the gas sector so that they use their gas resources more efficiently. The way forward is for GCC governments to apply commercial principles to the management of their gas portfolios to drive GDP growth and create employment.” The Strategy& Middle East report outlines three key areas where GCC countries must take action to capture the benefits and unlock significant value in the gas sector:

1) Allocate gas to create socioeconomic value. As the balance between supply and demand changes, GCC countries need to create more coherent, proactive strategies that allocate gas to end-use sectors based on their relative contribution to the country’s socioeconomic targets. “Conventional wisdom among governments is that the greatest economic benefit comes from providing gas to industry (as a feedstock for petrochemicals, which can include fertilizers and methanol, and as fuel for energy-intensive industries such as aluminum and cement). However, using gas to ensure a cheap and reliable source of power in the country can lead to a larger payoff because it supports economic diversification and the development of the services sector”, added Dr Shihab Elborai, partner with Strategy& Middle East.

2) Price gas to reflect its true value. A significant problem for the GCC is that overall gas pricing in these countries is opaque and prices remain artificially low by international standards. Growing gas demand and increased fiscal pressure on governments are making the issue more urgent. Rather than consider gas operations as cost centers linked to oil production, GCC governments must treat them as separate, profit-generating entities, with gas operations and wholesale gas prices that reflect the true value of gas. One approach to do this is ‘cost plus pricing’, which factors in all costs needed to deliver gas to an end-user, including supply and transportation costs, plus a government margin. Usually, cost-plus pricing is applied to gas destined for domestic consumption. A second approach is ‘net-back pricing’, which indexes gas prices to the price of the end-products that use gas as a raw material. This approach ensures that governments accurately capture the value of gas, rather than allowing a manufacturer to benefit from artificially low prices. Net-back pricing is commonly used for gas that is exported.

3) Implement structural reforms. GCC governments must ensure that the right market structure and institutions are in place to support more strategic gas allocation and accurate pricing. They could create a gas aggregation company, for example, to coordinate gas sales and purchase agreements. This would lead to greater transparency, higher government revenue and margins, and lower risk. An independent regulator could also be created, ensuring gas companies operate fairly and provide equal access and treatment to all sector participants. The regulator could also advise policymakers, conduct due diligence on all market participants, resolve disputes, and increase energy efficiency. “To successfully manage their gas portfolios, GCC governments must develop a comprehensive strategy to allocate gas among end-users, and price it to reflect its true value. These measures represent a large step forward in managing national gas assets on commercial principles, and would allow countries to start incorporating the benefits of fully competitive gas-hub pricing seen in developed markets. The country that moves first to embrace commercial principles will become the prime candidate to be the GCC gas hub of the future,” concluded Dr Raed Kombargi, partner with Strategy& Middle East.

Contributors

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A shared strategic direction

Interim CEO Fathy Al Mendhry sheds light on the new ‘strategic direction’ endorsed by the outgoing Board of Directors, which calls upon OPAL to, among other things, to engage effectively with all segments of its diverse membership base

It's been an exciting and eventful four months for Interim CEO Fathy Al Mendhry at the helm of OPAL. Receiving the baton from outgoing CEO, Mr. Musallam Al Mandhari, who retired on 31st January, Fathy lost no time in assuming the reins of an organization that is playing an increasingly pivotal role in aligning the Oil & Gas industry's growth with the government's strategies for the development of the Omani economy and the nation's human capital.

Given the sector's importance as the mainstay of the economy, OPAL stays
steadfast in its commitment to harnessing the full potential of the Oil & Gas industry in achieving the nation’s development plans.

For Mr. Al Mendhry, a veteran of Oman’s Oil & Gas industry and a longstanding member of OPAL’s executive leadership, the new responsibility as Interim CEO is more than just a professional challenge or a career milestone. It encompasses a profound opportunity to leverage OPAL’s much-vaunted professional experience and resources in advancing the industry’s, and indeed the wider national economy’s, strategic goals, based on invigorated and enhanced vision and remit.

That emboldened mandate, approved by OPAL’s Board of Directors, was entrusted to the Interim CEO at the outset of his tenure. Besides championing stronger and more effective engagement with all segments of the Oil & Gas fraternity, the new mandate calls for the enlargement of OPAL’s organizational remit to include businesses and companies operating in the electricity and renewables space. This is broadly in line with the incorporation of electricity and energy-related activities into the mandate of the Ministry of Oil & Gas in accordance with the provisions of Royal Decree No. 40/2018.

The Interim CEO explained: “The scope of OPAL’s new strategic direction (Vision, Mission and Strategic Goals) has been broadened from ‘Oil & Gas’ to ‘Energy’. Consequently, our membership base will now include electricity companies, as well as those engaged in renewable energy. To this end, OPAL will be collaborating with all key stakeholders and taking the lead in raising awareness among all parties involved in the country’s Energy Transition. This focus will not be limited to renewable energy development, but will also seek to advance goals in support of energy conservation, energy efficiency, and reduction of energy waste.”

**Strengthening Engagement**

Significantly, OPAL’s new strategic direction also mandates the Society to strengthen engagement with the different segments of its large and diverse fraternity in line with its new mandate. The goal, says Mr. Al Mendhry, is to ensure that the smaller players or those on the fringes of the industry are not left out.

“Enhancing the effectiveness of engagements with representatives of all stakeholders in the Energy/Oil & Gas sector is at the core of OPAL’s business and strategic direction,” said the Interim CEO. “Our plans include establishing a number of committees and forums that will focus on topics such as HR and HSE, as well as business areas like Drilling/Well Services, Construction in Oil & Gas, Logistics in Oil & Gas, and so on. A new forum will soon be launched to cover the topic of Energy Transition.”

However, none of these initiatives will distract from OPAL’s longstanding and overarching goal: Human Capital Development / Omanisation, says Fathy. “OPAL takes this topic very seriously, as the sustainability of our members, and indeed the wider industry, is intrinsically reliant on minimizing unemployment amongst Omanis. OPAL has been working closely with all stakeholders in the Oil & Gas sector on this fundamental objective.”

OPAL, according to the Interim CEO, is being called upon to play a more impactful role in supporting employment creation for Omanis. The Ministry of Manpower, together with the Ministry of Oil & Gas, are working hand in hand in tightening controls on Labour Clearances for expatriates, while urging companies to give every opportunity to Omanis before allowing new expatriates to enter the labour market. “OPAL’s role is mainly to support member companies to adopt best practices in managing the planning process for pre-employment training and post-employment development to minimize time-to-autonomy for job seekers and productive Omanis at all levels in order to achieve Omanisation targets set by the Government.”

OPAL is also broadening its efforts and services related to standardizing competency and skills development ensuring certification and
accreditation with relevant bodies in the country and internationally.”

**Hectic schedule**
Given these imperatives, OPAL’s executive team headed by Fathy has its work cut out as it presses ahead with an increasingly busy schedule that has become the hallmark of corporate life at the Society’s headquarters in Al Khuwair.

Opening his innings as Interim CEO, Mr. Al Mendhry’s first major order of business was to ensure that OPAL played its part in the organization of the 1st Annual Labour Forum for Enhancement of the Oil & Gas Work Environment – a first of its kind forum presented by the SASLO Legal Training Centre (SLTC). The daylong event brought together all major stakeholders - employees, employers, trade unions, legal firms, government agencies, and academic institutions – to share their perspectives on the importance of dialogue in harmonious industrial relations.

The partnership between OPAL and SLTC was strengthened with the signing of a Memorandum of Understanding (MOU), whereby SLTC committed to conducting Labour Law workshops for OPAL members over the next two years.

In March, OPAL rolled out a new HSE Standard, this time around focusing on Illegal Drugs and Alcohol. Top officials of major operators joined HE Salim Al Aufi at a ceremony where the new standard – the sixth in OPAL’s HSE series – was formally endorsed for implementation across the industry.

In April, OPAL supported a number of initiatives that are integral to its mandate. The Society participated in the first-ever DROPS Oman Forum organized by DROPS Oman Chapter with the support of DROPS Global. International experts specializing in the prevention of injuries and damage resulting from dropped objects presented at the daylong event.

OPAL’s subject-matter expert outlined the organisation’s DROPS Standard for the industry.

At the annual roundtable forum of the Gulf Petro Chemical Association (GPCA), which was held in Muscat with sponsorship support by Oman Oil & Orpic Group, OPAL took the opportunity to outline plans for putting regulations in place in the GCC countries on the transportation of chemicals and hazardous substances or dangerous goods.

**Another Milestone**
But the big highlight of the first half of the year was the Annual General Meeting of OPAL and the election of a new Board of Directors. Held amid the splendid settings of The Kempinski Muscat’s ballroom, the AGM pulled in around 300 executives representing OPAL’s diverse membership.

The Guest of Honour was HE Salim bin Nasser Al Aufi, Under-Secretary of the Ministry of Oil and Gas.

The smooth and event-free election of a new board of directors was a testament to the professionalism of OPAL’s executives, ably assisted by a jury of experts drawn from the industry. The indefatigable Dr Amer Al Rawas retained his position as Chairman of the Board of Directors.

Welcoming the results, the Interim CEO said: “Congratulations, once again, to the new board of directors! The results were outstanding: four of the previous board members nominated themselves for re-election and all of them were re-elected on the grounds that it was important to maintain the course articulated under OPAL’s new strategic direction, which aims to take OPAL to a new level in the coming few years.”

According to Mr. Al Mendhry, a three-year rolling plan – reviewable annually – that was endorsed by the AGM, envisions a strategy to bolster OPAL’s revenue-earning potential in the face of its burgeoning funding requirements.

“OPAL is a non-profit society that has a mandate to fulfill the needs of the sector, and more importantly, that of its members. To do so in a sustainable manner, OPAL can no longer survive on the nominal annual subscriptions that it earns from members. Consequently, it must levy minimal fees for value adding services to the sector. OPAL’s business plan aims to broaden...
the variety of these value adding services to cater for the needs of the majority of its members.”

**Signature Events**

Moving forward, OPAL will work toward delivering on the three signature events of each calendar year: OPAL Oil & Gas Forum; OPAL Sports; and OPAL Best Practice Awards. Plans are afoot to build on the success of last year’s editions by laying more impactful shows, says Fathy.

“Our plan is to make them even more successful this time around. With regard to the OPAL Oil & Gas Forum, for example, we are targeting to increase participation by our member companies as well as other local and international businesses. The exhibition area will be expanded, while member companies and SMEs will be offered discounted rates to encourage them to participate.”

The Best Practice Awards, which will be bundled with the Oil & Gas Forum, will feature new categories and create a more level playing field for contestants. “The intention is to recognize various innovations/contributions across the sector by the big and small companies. This will hopefully encourage greater improvements in the sector without diminishing the prestige associated with these awards,” the Interim CEO noted.

The scope of OPAL’s Sports Event is proposed to be ramped up as well, Fathy explained. “We are planning to maintain the exceptional level of success in getting as many employees and their family members from different companies together in a leisurely atmosphere to compete and enjoy themselves, thereby adding to their quality of life.”

Of late, OPAL has begun mulling the introduction of a fourth annual event that seeks to encourage young Omanis to explore technical vocations in the sector. The proposed event will serve as a platform for companies to showcase technical opportunities that will become available for Omani jobseekers upon the completion of their apprenticeship programmes.

“This event will complement OPAL’s ongoing efforts in persuading young Omanis to explore technical careers and secure career-fulfilling jobs in the industry. OPAL has been playing an important role on this front, together with other stakeholders, such as the Ministry of Manpower, Ministry of Oil & Gas, the operators and training providers. As part of this effort, OPAL has been striving to enhance standards, the quality of training programmes, and capabilities of training service providers with a focus on technical vocations,” the Interim CEO added.

**Information Hub**

In the interest of keeping members well-informed and better connected, OPAL’s website is being overhauled to serve as a one-stop information hub for the Oil & Gas and related energy sector, according to Fathy. The new website, presently in an advanced stage of development, will offer a wealth of information on topics of news and business interest. Users will have access to constantly updated commodity prices, public tenders, special offers and promotions, and announcements of potential interest to members.

Dedicated sections within the site will feature detailed profiles of members, an online business directory, assorted information about the Oil & Gas industry, insights into various laws and regulations relevant to the sector, investment guidelines, calendar of events, and news updates.

In essence, OPAL’s new website will serve as an indispensable information resource for members as well as other industry players. ♦
This year’s AGM was no different! More than 300 executives representing the vast majority of OPAL’s membership base filled the glitzy ballroom of the Kempinski Al Mouj Muscat where the AGM was held on 23rd March 2019. The Guest of Honour on the occasion was HE Salim bin Nasser al Aufi, Under-Secretary of the Ministry of Oil and Gas.

In welcome remarks, Mr. Fathy al Mendhry, Interim CEO – OPAL, noted that the commendable turnout for the AGM – the biggest in OPAL’s history – was an acknowledgment of the important strides that the Society has made in delivering on its mandate as the Voice of Oman’s Oil & Gas Industry.

He reaffirmed OPAL’s commitment to engaging with all sections of its diverse membership. This is also exemplified by OPAL’s new organisational structure, featuring four dedicated departments each shouldering a distinct part of the Society’s significantly enlarged responsibilities going forward.

Dr Amer al Rawas, Chairman of the Board of Directors, gave a comprehensive account of the important initiatives and programmes delivered by OPAL over the past year. He detailed achievements in the implementation of programmes in support of Employment Generation, Omanisation

Dr Al Rawas also outlined OPAL's new vision, based on an invigorated mandate that encapsulates the aspirations of members to serve as the unequivocal voice of the Oil & Gas industry in Oman.

Based on feedback received from the industry, there is broad consensus that OPAL should stay the course in the continued focus on its current mandate, which champions three key objectives: Omanisation and Human Capital Development, Best Practice and New Standards; and to serve as the Voice of the Industry, he said. Also on the occasion, elections were held for the new Board of Directors of OPAL. The new Board comprises Dr Amer al Rawas (who was re-elected as Chairman for a second term), Dr Aflah al Hadhrami (Deputy Chairman – also for a second term), Dr Hamoud al Tobi (Treasurer – for a second term as well), Mr. Abdullah al Harthy, Mr. Peter Hamel, Mr. Ali al Lawati, and Mr. Husam al Jahdhami. Significantly, a record 14 industry executives nominated themselves as candidates for a new three-year term on the Board of Directors.

The highpoint of the evening was a farewell in honour of Mr. Musallam al Mandhri, who retired as CEO of OPAL after a fruitful five-year term. The Chairman lauded Mr. Al Mandhri's role in transforming OPAL into a credible, results-oriented and forward-looking organisation that is truly representative of Oman's Oil & Gas industry. Mr. Al Mandhri, in response, credited his colleagues at OPAL as well as the industry and other stakeholders for making his tenure as CEO a successful one.
Sterling leadership

Under his watch as Chief Executive Officer, OPAL was transformed from a moribund organisation into a dynamic professional association for the energy industry, serving as a paradigm for other Omani economic and non-economic sectors to emulate.

The OPAL of today is a far cry from what it was a decade ago. Then, it was widely seen by members as a somewhat lacklustre and toothless organisation with a mandate that was limited to the delivery of compliance verification services and professional development programmes. There was little by way of initiatives that galvanise the industry around objectives and causes of strategic significance for the sector or the wider national economy.
Fast forward to 2015, when Mr. Musallam Al Mandhri assumed the reins of OPAL's executive management as CEO – a milestone that led to the Society’s complete makeover into the energy industry’s ‘go-to’ organisation for professional advice and industry support. Under Mr. Al Mandhri’s leadership, OPAL reinvented itself while forging a new vision and mandate that put its members at the primary focus of its efforts.

“From the outset, we decided to engage with our members, as well as our key stakeholders, in articulating a vision and mission for OPAL,” said Mr. Al Mandhri, who retired from OPAL at the end of January 30th after nearly four-and-a-half years of creditable service to the Society and the industry.

“We reached out to key sections of our membership base, asking them for their thoughts on what they expected of us, at the helm of OPAL,” said Mr. Al Mandhri, who retired from OPAL at the end of January 30th after nearly four-and-a-half years of creditable service to the Society and the industry.

“Many of them felt bitter that we had failed to represent them suitably although they judiciously paid up their membership fees. But there was a broad consensus that, if we were better focused on certain core objectives, then we could still play an important role in the betterment of the industry. We had a similar engagement with the operators during this period.”

Following weeks of deliberations with its membership base, OPAL crafted a new, landmark mandate enshrining three key objectives: (i) Developing and promoting common industry standards (ii) Serving as the voice of the industry, and (iii) Human Capital Development.

“Armed with this mandate, we charted a new course for the Society, a new chapter of sorts, which we called OPAL 2.0. These three pillars formed the new foundation of our organisation and, for the foreseeable future, will continue to guide us in the formulation, implementation and delivery of all our programmes.”

**Defining moment**

Not long thereafter, the adverse impacts of the international oil price crash began to roil the domestic Oil & Gas industry, presenting OPAL’s leadership with an opportunity to show its mettle. Galvanized by a tide of job redundancies and company bankruptcies, OPAL joined forces with the Ministry of Oil & Gas, the operators, and other stakeholders, in responding to the turbulence in the industry. A new Redeployment Strategy was put into motion, effectively providing a safety net for thousands of Omani workers imperilled by job cuts. The effective implementation of the strategy, despite the bruising downturn, earned plaudits for OPAL and its CEO.

“It was indeed a very difficult time for the industry, but we had to balance the collective interests of our members with the strategic national goal of safeguarding jobs in a manner that alleviate the distress and impact in an equitable manner for all. In this regard, we were guided by the maxim: You are best served if you yourself decide what kind of development you want for your people, rather than have it foisted upon you. By working collaboratively, we were able to weather the storm in the best manner possible without inflicting too much pain on our members.”

OPAL’s deft and professional handling of the contentious Redeployment Strategy was cited as an example of what a well-motivated professional association can accomplish during times of crisis. “The Ministry of Manpower, for example, saw of the benefit of having an organisation like OPAL to bring all of the players around the table for a discussion on redeployment or other such pressing topic. Other professional trade organisations are now looking at the OPAL model to effectively represent the interests of
their members,” said Mr. Al Mandhri. OPAL’s proactive and prudent handling of the impacts of the oil price slump on the domestic industry was one of the defining actions of Musallam’s legacy of CEO. Contractors, operators and other stakeholders rallied around his leadership to stave off the worst effects of the crisis on the industry. Rather than lament their misfortune, the industry – with strong leadership provided by Musallam and his team, and indeed the Ministry – explored the potential to turn the crisis into an opportunity to, for example, boost productivity and operational efficiency, eliminate waste, embrace best practice, and so on.

**Strong momentum**

It was amid these challenging times in the industry that the In-Country Value (ICV) programme – first spearheaded by the Ministry – received a powerful boost under the auspices of OPAL. “ICV, together with our Human Capital Development programme, have been signature initiatives of OPAL. Under our auspices, it gained solid traction. OPAL served as the secretariat of the Main ICV Committee. During this time, our executives joined PDO in visits to key capitals around the world with local ICV versions were hugely successful. The Ministry of Oil and Gas, and Ministry of Manpower, are immensely appreciative of the contribution we have made to this initiative.”

Mr. Al Mandhri is also credited with introducing a far-reaching suite of Occupational Standards designed to inject a high degree of professionalism in the industry. A total of nine Occupational Standards have been formulated and ratified ahead of their rollout. These cover standards for: Mechanical and Electrical Technicians; operators of Lifting Equipment, Drilling Technicians, and so on.

“These standards are a source of pride for OPAL and the industry. As part of these standards, training and work-related standards in a given discipline are streamlined across the industry, thereby enabling the careful evaluation of the competency development of the worker concerned in that respective field.” Standards for lifting equipment operators, once implemented, will require operators to hold special Identity Cards affirming their skills in the operating of, for example, forklifts, diggers, cranes, and so on, according to Mr. Al Mandhri. To this this, OPAL will be working with the Ministry of Manpower, and its proposed National Skills Testing Centre, to enable the rollout of this initiative.

All nine Occupational Standards are slated for implementation in 2019 and beyond, says Musallam, while stressing the need for their concerted and comprehensive rollout. “OPAL needs to be firmly behind this initiative, and to make sure it doesn’t unravel.”

Equally laudable is the formulation and approval of a large portfolio of HSE Standards – the culmination of a determined effort to introduce unified guidelines across the industry. First off the block were Road Safety Standards, encompassing not only safe driving guidelines, but also IVMS, vehicle repair and maintenance. The list also includes: Heat Stress, DROPS, Camp Standards, Alcohol Abuse, Occupational Health, and Environmental Standards.

Looking back on his tenure as CEO for the past four and half years, Musallam is confident that OPAL is well-positioned today, more than any other time in its past, to play a vital role in leading the industry to greater heights in the years ahead. “OPAL is now a brand in its own right,” he says. “Today, it’s the ‘go-to’ organisation for members who have professional concerns and challenges that they want redressed. We need to be receptive to their concerns and engage with them so their growth aspirations are aligned with the strategic developmental goals of the Sultanate.”

*Conrad Prabhu*
Ballooning growth

Demand from Asia is set to power the growth of the global gas industry over the next five years: IEA

After another record year, global demand for natural gas is set to keep growing over the next five years, driven by strong consumption in fast-growing Asian economies and supported by the continued development of the international gas trade.

Demand for natural gas grew 4.6% in 2018, its fastest annual pace since 2010, according to the IEA’s latest annual market report, Gas 2019. Gas accounted for almost half the increase in primary energy consumption worldwide. Demand is expected to rise by more than 10% over the next five years, reaching more than 4.3 trillion cubic metres (tcm) in 2024.

“Natural gas helped to reduce air pollution and limit the rise in energy-related CO2 emissions by displacing coal and oil in power generation, heating and industrial uses,” said Dr Fatih Birol, the IEA’s Executive Director. “Natural gas can contribute to a cleaner global energy system. But it faces its own challenges, including remaining price competitive in emerging markets and reducing methane emissions along the natural gas supply chain.”

China is expected to account for more than 40% of global gas demand growth to 2024, propelled by the government’s goal of improving air quality by shifting away from coal. Chinese natural gas consumption grew 18% in 2018 but is expected to slow to an average annual rate of 8% to 2024 as a result of slower economic growth.

The IEA also sees strong growth in gas consumption in other Asian countries, particularly in South Asia. In Bangladesh, India and Pakistan, the industrial sector is the main contributor to growth, especially for fertilisers to meet the needs of growing populations.

Industrial use of natural gas, both as a fuel and a feedstock, is set to expand at an average annual rate of 3% and account for almost half of the rise in global consumption to 2024. Power generation remains the largest consumer of natural gas, in spite of slower growth due to strong competition from renewables and coal.

Gas 2019 also focuses on the role of liquefied natural gas (LNG) at sea, which is set to emerge as a fast-growing alternative fuel because of stricter rules on sulphur content that take effect in January 2020.

Supplies to meet growing global demand for natural gas will come from both new domestic production in fast-growing economies but also increasingly from major exporting countries, led by the development of abundant shale gas resources in the United States.

The strong growth in LNG export capacity will enable international trade to play a growing role in the development of natural gas markets as they move towards greater globalisation.

Investment in LNG projects have rebounded in 2018 after several years of decline, and the large number of projects due to take final investment decision in 2019 is likely to further support trade and market expansion. However, more investment will be needed in the future.

The recent convergence in market prices in major regions gives an indication of the increasing globalisation of the natural gas trade. Establishing market-driven pricing mechanisms in fast-growing economies remains a challenge, however. Recent reforms in major markets are sending encouraging signals, but more will be required to ensure the sustainable market-driven development of natural gas in these economies.

In Numbers

Chinese natural gas consumption grew 18% in 2018 but is expected to slow to an average annual rate of 8% to 2024 as a result of slower economic growth.
Global oil markets are going through a period of extraordinary change. The United States is increasingly leading the expansion in global oil supplies. Meanwhile, the production of heavier crude grades is hamstrung by sanctions and production restraint in key producing countries. All this contributes to a transformation of global oil supplies, with critical implications for energy security and market balances throughout our forecast period to 2024.

Although the United States had the largest increase in global demand in 2018, growth continues to move away from developed economies and transportation fuels, confirming a shift towards Asia and petrochemicals. These changes will have profound consequences for trade and refining. That sector will also have to adapt to new marine fuel specifications mandated by the International Maritime Organisation, which take effect in 2020, and an impending overhang in refining capacity that will require significant adjustments from refiners globally.

**The United States leads global supply growth**

The United States continues to dominate supply growth in the medium term. Following the unprecedented expansion seen in 2018, when total liquids production increased by a record 2.2 million barrels per day (mb/d), the United States will account for 70% of the increase in global production capacity until 2024, adding a total of 4 mb/d.
Important contributions will also come from other non-OPEC countries, including Brazil, Canada, a resurgent Norway, and newcomer Guyana, which together add another 2.6 mb/d in the next five years. In total, non-OPEC production is set to increase by 6.1 mb/d through to 2024. Among OPEC countries, only Iraq and the United Arab Emirates have significant plans to increase capacity. These gains have to offset steep losses from Iran and Venezuela, which are subject to sanctions and political or economic turmoil. As a result, OPEC’s effective production capacity falls by 0.4 mb/d by 2024.

The US is also turning into a major player in the global oil trade

As a result of its strong oil production growth, the United States will become a net oil exporter in 2021, as its crude and products exports exceed its imports. Towards the end of forecast, US gross exports will reach 9 mb/d, overtaking Russia and catching up on Saudi Arabia. The transformation of the United States into a major exporter is another consequence of its shale revolution. Greater US exports to global markets strengthen oil security around the world. Buyers of crude oil, particularly in Asia, where demand is growing fastest, have a wider choice of suppliers. This gives them more operational and trading flexibility, reducing their reliance on traditional, long term supply contracts.

Global trade is not simply a story for the United States. The second-largest increase in crude exports comes from Brazil, which ships an extra 0.8 mb/d of oil by 2024. Following Brazil, Norway is enjoying a renaissance and will overtake Kazakhstan and Kuwait in the next five years a remarkable achievement.

While upstream investment increases again in 2019, more is needed

Our forecast for supply growth depends on investment. The International Energy Agency (IEA) has argued for many years that with the demand for oil increasing for the foreseeable future, continued investment is necessary to ensure adequate spare production capacity. Our analysis last year looked at the rates of decline in oil fields and found that to keep production steady, the equivalent of the output from the North Sea needed to be offset each year. This remains true today. It is therefore reassuring that 2019 upstream investment is set to rise for the third straight year, according to preliminary plans announced by key oil and gas companies. For the first time since the 2015 downturn, investment in conventional assets could increase faster than for the shale industry. While US production growth has exceeded expectations, we cannot be complacent about investment levels towards the end of our forecast period and beyond.

Oil demand growth eases in the next five years, but still no peak in sight

Fundamentally, oil demand depends on the strength of the global economy. Recently, the International Monetary Fund (IMF) downgraded its short-term outlook, reflecting weaker economic sentiment in many countries. Ongoing trade disputes between major powers and a disorderly Brexit could lead to a reduction in the rate of growth of international trade and oil demand. But while the economic mood is not encouraging, we expect oil demand to grow in our forecast, although at a more measured pace.

A key factor underpinning demand growth is that leading developing economies will continue to expand. China and India will account for 44% of the 7.1 mb/d growth in global demand expected to 2024. Despite its recent slowdown, China’s GDP has more than doubled in real terms in the past decade and is still growing at a healthy clip. Income levels have grown sharply and the structure of oil demand is moving away from heavy industrial sectors towards consumer needs. As for India, while its GDP per capita is still only a fifth of China’s, it is

Although the United States had the largest increase in global demand in 2018, growth continues to move away from developed economies and transportation fuels, confirming a shift towards Asia and petrochemicals

- June 2019

Iea Oil Market Report 2019 - Analysis and Forecast to 2024
growing more strongly: By 2024, India's oil demand growth will match China.

**As gasoline slows, petrochemicals and jet fuel are stalwarts of demand growth**

Around the world, more consumer demand means more plastic, which in turn means more petrochemicals. Despite efforts to curb plastics use and encourage recycling, demand for plastics and petrochemicals is growing strongly. Led by the United States and China, we have identified more than 50 major projects due to come onstream through 2024. These are expected to add 2.2 mb/d in oil consumption over the forecast period, accounting for 30% of global growth.

This supports expansions in the early part of our forecast at a rate close to today's level. While the lack of complete visibility on new projects causes our estimate to fall towards the end of the forecast period, it is highly possible that more projects will be announced and that demand could be higher than currently anticipated.

The other major growth sector is aviation. In recent years, the air travel industry has witnessed a spectacular expansion thanks to rising passenger numbers. Demand will continue to grow strongly, supported by rising incomes in developing countries, more airports being built and growing airline fleets. Asia accounts for 75% of this increase over our forecast period. In absolute terms, while China sees the largest jump in demand, India posts the fastest rate of growth, at an impressive 8.2% a year.

At the same time, efficiency improvements and fast-expanding markets reaching maturity will tamper the increase in the global jet fuel market, according to our forecast.

As for gasoline, ongoing efficiency improvements will cause the global rate of growth to slow to less than 1% per year. In developing countries, however, the rate is twice as high, as rising income levels lead to more vehicles on the road.

**The IMO regulations: Shippers and refiners prepare to comply**

The 2020 IMO marine regulation change is one of the most dramatic ever seen to product specifications, although the shipping and refining industries have had several years notice. We believe that industry players are in a strong position to adjust in the medium term, with the largest incremental volumes coming from the United States, the Middle East, and China. Still, the market will initially be tight and there will be some non-compliance. Orders for scrubbers to be fitted on ships have increased, and our analysis of refiners' plans suggests that, as demand for high sulphur fuel oil plummets, there will be enough availability of marine gasoil and, in time, a new ultra-low sulphur fuel oil to plug the gap.

Prices for gasoil could rise at first as demand from the marine sector increases, but sluggish growth from inland sources...
of demand will limit the pressure. Meanwhile, unwanted high sulphur fuel oil could find a home in the power sector, with the Middle East a likely market.

**Refiners face twin challenges: A capacity boom, and changes in crude and product quality**

The refining industry is facing a wave of new capacity additions in the period to 2024, with a net growth of about 9 mb/d. China will overtake the United States to become the global leader in installed capacity. Given that these new additions far exceed the increase in demand for refined products, plant closures might be necessary to rebalance the market, though questions remain as to where and when that will happen.

While the global average crude oil barrel produced remains predominantly a medium gravity sour grade, the availability of heavier crude from several countries is in doubt due to production cutbacks and geopolitical challenges. At the same time, the average global product barrel is getting lighter as fuel oil demand falls and petrochemicals grow in importance. As a result, the United States will be in prime position as a supplier of light types of crude oil that are in growing demand. Shale oil will also help meet the new IMO requirements and provide the quantities of naphtha required for the petrochemicals industry.
iven the increasing focus on staff welfare and workforce accommodation across the globe in recent past, Renaissance Village Duqm is a workforce solution with a difference, which not only provides accommodation to the residents but also provides a lifestyle which every human being deserves, whilst remaining commercially competitive.

The project, which was commissioned in 2017, has been recently awarded the Oman’s ‘Best Residential Project of the Year’ and ‘Best Social, Cultural and Heritage Project of the Year’ at the MEED 2019 Awards. It was also honoured with the ‘Best Large Private Sector Project’ at the 8th edition of the Al Raya Economic Awards in strategic partnership with Oman Chamber of Commerce and Industry (OCCI).

**Workforce well-being – not just accommodation**

Renaissance Village Duqm is being recognized for setting standards on how to look after staff workforce
Renaissance Village Duqm is the largest staff accommodation facility in Oman, built over 225,000 sqm of land with a built-up area of over 185,000 sqm, it has a capacity to house more than 18,000 residents. It is the first staff accommodation facility in Oman with complete free wi-fi coverage catering to all levels of employees in an organisation.

Renaissance Village Duqm has been established to provide high quality staff accommodation for all categories of workforce (from white collar to blue collar) to the various projects in the Duqm Special Economic Zone at very competitive rates. It adheres to international standards, whilst addressing local needs, and caters to all basic requirements relating to workforce accommodation such as clean and hygienic rooms, food, laundry, recreation, medical, maintenance, etc. It allows the clients to focus on their core area of business and have their staff well rested and motivated for delivering their best.

Commenting on the significance of the awards for the company, Stephen Thomas, Renaissance’s CEO said, “We are pleased to have won such eminent recognitions. These Awards will continue to motivate us to excel, while actively contributing to the overall development of Duqm and the region. I would like to take this opportunity to thank our Board of Directors for their guidance, our partners and clients for their trust in us, and our management and staff for their continued dedication and hard work.”

Adil Bahwan, COO of Renaissance remarked, “Our vision was to deliver a project with 100% In-Country Value for Oman. We focused on locating investments from Omani sovereign and pension funds, local investors and communities as well as contracting local contractors, SMEs and suppliers during Renaissance Village's construction and development.”

“It’s an economy of scale,” said Hussain Al Lawati, CCO at Renaissance. “If you were to build 25 different camps and introduce all these facilities on a smaller scale, it would cost more. With the mobilisation of the Duqm Refinery EPC works underway, our occupancy levels are rising steadily.”

“You hear all these stories about how workers are poorly treated in camps and we’re out to show that proper accommodation can be provided at a reasonable cost.”

Built around the motto, “looking after your people”, Renaissance Village Duqm serves as an ideal solution for small and large work-teams, that require accommodation for short or long-term project durations.
OPAL’S growing family

Be a proud member of the OPAL fraternity!
If you are vendor of products and services catering to the oil and gas sector, join OPAL and benefit from the Society’s expertise and reach to achieve your strategic and business growth objectives. Register now!
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Date: June 2019
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**WHAT NOT TO MISS**

**UPCOMING EVENTS**

- **21 - 23 October 2019**
  - OPAL Oil & Gas Conference 2019
  - Venue: Grand Ballroom, Oman Convention and Exhibition Centre, Muscat - Oman

- **27 - 29 October 2019**
  - GCC POWER 2019 Conference & Exhibition
  - Venue: Oman Convention & Exhibition Centre, Muscat - Oman

- **17 - 19 September 2019**
  - SPE Reservoir Characterisation and Simulation Conference and Exhibition
  - Venue: Abu Dhabi, UAE

- **23 - 24 September 2019**
  - 9th Gulf Intelligence Energy Markets Forum 2019: IMO 2020 - Megatrends & the Energy Transition
  - Venue: Novotel Hotel, Fujairah, UAE

- **17 - 18 September 2019**
  - SPE Workshop: Coiled Tubing Intervention - Feasible Applications for the Region
  - Venue: Muscat, Oman

- **21 - 23 October 2019**
  - OPAL Oil & Gas Conference 2019
  - Venue: Grand Ballroom, Oman Convention and Exhibition Centre, Muscat - Oman

- **27 - 29 October 2019**
  - GCC POWER 2019 Conference & Exhibition
  - Venue: Oman Convention & Exhibition Centre, Muscat - Oman

- **25 November 2019**
  - 7th Gulf Intelligence Oman Energy Forum 2019: Oman Energy Transition: Expanding the Fuel Mix in the 2020s
  - Venue: Grand Millennium, Muscat, Oman

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**The 9th Gulf Intelligence Energy Markets Forum 2019**

*September 30th & October 1st | Novotel | Fujairah*

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2019 Gas & Oil Technology Showcase and Conference

Venue: Dubai, UAE

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Gas Self Sufficiency by 2030 - How to Change to Unlock Potential?

Venue: Abu Dhabi, UAE
THE NATION'S ENERGY PIONEER
CELEBRATING 40 YEARS AS A GAS PRODUCER

40 YEARS OF GAS PRODUCTION

Proud to Serve Oman

Petroleum Development Oman
WE’VE BUILT OUR REPUTATION ON MAXIMIZING VALUE FROM OUR ASSETS