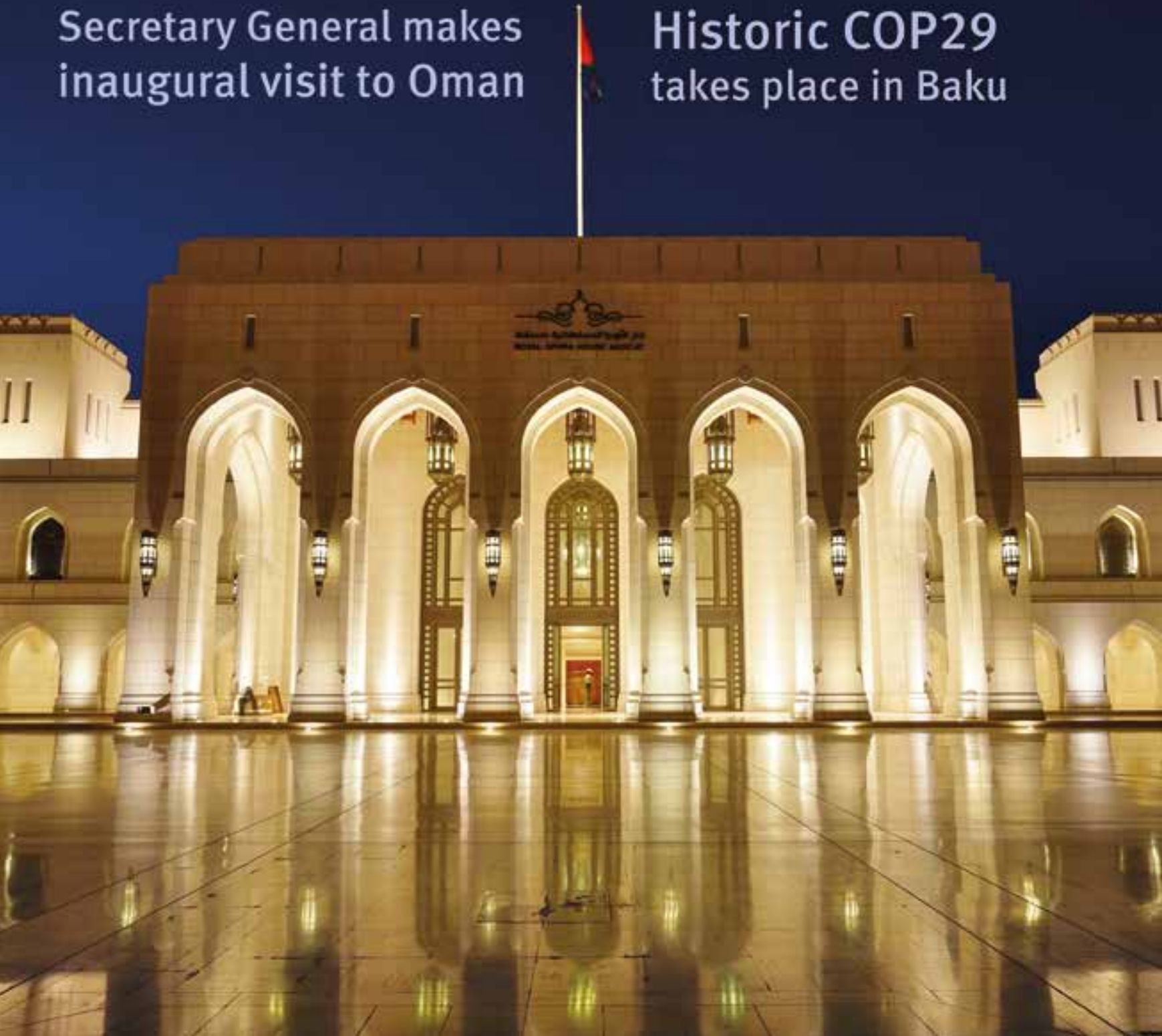


OPEC bulletin

11-12/24

Secretary General makes
inaugural visit to Oman

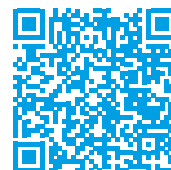
Historic COP29
takes place in Baku





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From one year to the next...

The final two months of 2024 saw a number of important events take place for OPEC Member Countries and non-OPEC countries participating in the Declaration of Cooperation (DoC).

The first took place in Baku, Azerbaijan, with the COP29 climate change meeting held from 11 to 22 November. It was an opportunity to recall how almost 180 years on from the birth of the oil industry in Baku, petroleum and petroleum-derived products continue to shape how we heat and cool our homes, construct our buildings, package food, undertake medical research and transport ourselves from ‘a’ to ‘b.’

Speaking at the event, Haitham Al Ghais, OPEC Secretary General, said that it was important to recognize that the focus of the Paris Agreement is on reducing emissions, not selecting energy sources. In reflecting on the great challenge of our age, he noted, it is vital “to ensure and expand energy accessibility, meet rising energy demand, improve energy security and maintain energy affordability, while reducing global emissions.”

He added that “what is clear is that no ‘one-size-fits-all’ prescription can overcome our climate and energy challenges. Inclusive dialogue and international cooperation, just as our Azerbaijani hosts have adopted, will be necessary as together we work towards building a sustainable future for all.”

The second event took place virtually, with the 38th OPEC and non-OPEC Ministerial Meeting (ONOMM), as well as an additional meeting on the sidelines among eight nations in the DoC group, held on 5 December.

In line with the approach of being precautionous, proactive, and pre-emptive, which has been consistently adopted by the DoC, the decisions taken were focused on helping achieve and sustain a stable oil market and provide long-term guidance and transparency for the market. The decisions can be found on the OPEC website.

Many of the issues inherent in the events highlighted will also be of vital importance as we head into 2025 and given the Secretariat’s agenda for the coming year.

From 9 and 10 July, the 9th OPEC International Seminar is set to take place at the beautiful Hofburg Palace in Vienna. Held under the theme ‘Charting pathways together: the

future of global energy’, the event is regarded as one of the premier events in the energy industry and brings together high-level speakers from across the world.

The event will look to shine a spotlight on the global energy agenda and its most pressing challenges and opportunities, including energy security, technological innovation, environmental issues, future energy pathways, investments, energy poverty alleviation and energy policies. It is a means to help expand networks and build bridges for future dialogue and cooperation.

The latter has been front and centre of OPEC’s approach in the past, is pivotal to its work today, and will no doubt be essential in the future. This will also be on display in two other key milestones for the Organization in 2025. The first is that the year will mark 60 years of the Secretariat being located in Vienna and the second is OPEC turning 65.

These events will enable us to reflect upon the very special relationship the Organization has built with our host city, and indeed, our host country, Austria, and celebrate OPEC’s long history, a 65-year journey that has seen it become an established part of the international energy community and multilateral system.

With a successful 2024 almost in the rear-view mirror, the Organization is looking forward to an exciting and productive 2025!



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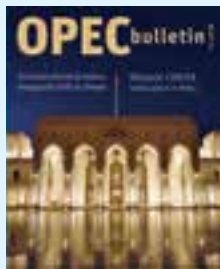
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Cover

This month's cover highlights the Royal Opera House in Muscat, Oman. (see story on page 10).

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Visit the OPEC website for the latest news and information about the Organization, and for back issues of the *OPEC Bulletin*, which are available free of charge in PDF format.

OPEC Membership and aims

OPEC is a permanent, intergovernmental Organization established in Baghdad, on 10–14 September 1960 by IR Iran, Iraq, Kuwait, Saudi Arabia and Venezuela. Its objective is to coordinate and unify petroleum policies among its Member Countries, in order to secure a steady income to the producing countries; an efficient, economic and regular supply of petroleum to consuming nations; and a fair return on capital to those investing in the petroleum industry.

Today, the Organization comprises 12 Members: its five Founding Members and Libya (1962); United Arab Emirates (Abu Dhabi, 1967); Algeria (1969); Nigeria (1971); Gabon (1975, suspended its membership in 1995 and reactivated it in 2016); Equatorial Guinea (2017); and Republic of the Congo (2018).



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The *OPEC Bulletin* welcomes original contributions on the technical, financial and environmental aspects of all stages of the energy industry, as well as research reports and project descriptions with supporting illustrations and photographs.

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HRH Prince Abdulaziz bin Salman Al-Saud, Minister of Energy of Saudi Arabia (below), takes the floor during the meeting on the sidelines of the 38th ONOMM.

OPEC+ takes proactive decisions to support oil market stability

The 38th OPEC and non-OPEC Ministerial Meeting (ONOMM), alongside a meeting on the sidelines among eight nations in the group, took a number of decisions in early December that reaffirmed the continued commitment of the OPEC and non-OPEC Participating Countries in the Declaration of Cooperation (DoC) to achieve and sustain a stable oil market, and provide long-term guidance and transparency for the market.



During the 38th ONOMM (l–r below): Dr Ayed S Al-Qahtani, Director of OPEC’s Research Division and Officer in Charge, PR & Information Department (OIC, PRID); Haitham Al Ghais, OPEC Secretary General; and Behrooz Baikalizadeh, Head of OPEC’s Petroleum Studies Department.

In line with the approach of being cautious, proactive, and pre-emptive, which has been consistently adopted by the DoC, OPEC and non-OPEC Participating Countries extended the level of overall crude oil production, as agreed at the 35th ONOMM, until 31 December 2026.

Alongside this, eight countries, namely Saudi Arabia, Russia, Iraq, the United Arab Emirates, Kuwait, Kazakhstan, Algeria and Oman, at a virtual meeting on the sidelines of the 38th ONOMM, decided to extend additional voluntary adjustments of 1.65 million barrels a day (mb/d) announced in April 2023, until the end of December 2026.

Moreover, these countries agreed to extend their additional voluntary adjustments of 2.2 mb/d – announced in November 2023 – until the end of March 2025. They also agreed that the 2.2 mb/d adjustments will then be gradually phased out on a monthly basis until the end of September 2026, and noted that this monthly increase can be paused or reversed, subject to market conditions.



Conformity and compensation

In a spirit of transparency and collaboration, the meeting on the sidelines also welcomed pledges made by overproducing countries to achieve full conformity and resubmit an updated compensation schedule to the OPEC Secretariat for overproduced volumes since January 2024, before the end of December 2024, as agreed at the 52nd JMMC meeting.

In addition, the 38th ONOMM reaffirmed the mandate of the Joint Ministerial Monitoring Committee (JMMC) to closely review global oil market conditions, oil production levels, and the level of conformity with the DoC, assisted by the Joint Technical Committee (JTC) and OPEC Secretariat.

Moreover, the meeting noted the importance of adhering to full conformity and the compensation mechanism. It also extended the compensation period until the end of June 2026, and the assessment period by the three independent sources to the beginning of

November 2026. The latter will be used as guidance for 2027 reference production levels.

In addition, the meeting agreed that the JMMC meeting will be held every two months, and the ONOMM every six months, with the JMMC retaining the authority to hold additional meetings or request an ONOMM at any time to address market developments.

It was also agreed that the 39th ONOMM will be held on 28 May 2025.

Leadership role

At the 38th ONOMM, participating countries thanked Saudi Arabia for its exceptional leadership and unwavering commitment to global oil market stability. Under the chairmanship of HRH Prince Abdulaziz bin Salman Al Saud, they noted that the DoC countries have successfully navigated challenges with strategic vision, fostered cohesion through consensus building and ensured balance and transparency in the oil market.



Haitham Al Ghais, OPEC Secretary General (l), speaks during the 38th ONOMM.





Haitham Al Ghais, OPEC Secretary General.

Tenure of OPEC Secretary General Al Ghais renewed at OPEC Conference

The 189th OPEC Conference, held via videoconference on 10 December, renewed the tenure of OPEC Secretary General Haitham Al Ghais for a further three-year period with effect from 1 August 2025. The Conference thanked Al Ghais for his distinguished achievements as Secretary General to date, as well as the staff members of the Secretariat operating under his able stewardship.

Al Ghais became Secretary General on 1 August 2022, bringing his own type of diplomacy and style to the position, backed by his long career as an oil industry technocrat. Before becoming Secretary General, Al Ghais held key positions worldwide and advised six Kuwaiti oil ministers on the global oil market and its developments. He was appointed Kuwait's OPEC Governor in 2017 and was in this position until 2021. He was also the first Chairman of the JTC under the DoC in 2017.

Thanks and welcome

The Conference was held under the presidency of Marcel Abeke, Minister of Petroleum of Gabon, and President of the Conference for 2024. The Conference thanked Minister Abeke for his exemplary leadership


throughout the year and elected its president and alternate president for 2025.

The President for 2025 is Eng Mohsen Paknejad, Minister of Petroleum of IR Iran, and the Alternate President is Hayan Abdulghani Abdulzahra Alsawad, Deputy Prime Minister for Energy Affairs and Minister of Oil of Iraq.

The Conference also welcomed new ministers to the Conference, including Paknejad, as well as Tareq Sulieman Ahmad Al-Roumi, Minister of Oil of Kuwait and Chairman of the Board of the Kuwait Petroleum Corporation (KPC) and Delcy Eloína Rodríguez Gómez, Vice President and Minister of People's Power for Petroleum of Venezuela.

Furthermore, the Conference thanked the ministers' predecessors – Eng Javad Owji of IR Iran, Dr Imad Mohammad Al-Atiqi of Kuwait and Eng Pedro Tellechea of Venezuela – for their contributions to OPEC.

Regarding the Board of Governors, the Conference appointed Ademola Adeyemi-Bero, Governor of Nigeria for OPEC, as Chairman of the Board of Governors for the year 2025, and Eng. Adeeb Al-Aama, Governor of Saudi Arabia for OPEC, as alternate chairman for the same period.

The Conference also noted that its next ordinary meeting will convene on 28 May 2025. 

OPEC Secretary General makes inaugural visit to Oman

OPEC Secretary General Haitham Al Ghais undertook his first official visit to the Sultanate of Oman, an original Declaration of Cooperation (DoC) participating member, from 8–9 December.

The Secretary General was received by (HH) Sayyid Fahd bin Mahmoud Al Said, Deputy Prime Minister for the Council of Ministers, on 8 December, in Muscat. Salim Al Aofi, Minister of Energy and Minerals of Oman, was also in attendance.

Sayyid Fahd stated Oman appreciated the great role of OPEC in coordinating and unifying the petroleum policies of participating DoC countries and helping determine the best ways to protect their interests.

He highlighted Oman's ongoing cooperation with OPEC in support of its efforts to achieve stability in the global oil markets, through contributing to the establishment of the DoC in 2016 and with its enduring support since then.

Al Ghais commended the Sultanate of Oman for its role in the global oil market and the DoC.

He stated: "Your Highness, the Sultanate of Oman has become a distinguished role model on how to handle critical issues with broad implications. This is evident through the approach that the Sultanate of Oman has adopted to the historic Declaration of Cooperation, established on 10 December 2016, including during the consultation period in the lead-up to the framework's inception."

The Secretary General also had an extra meeting with Al Aofi, at which he stated, "Your Excellency, the decisions taken at the 38th OPEC and non-OPEC Ministerial Meeting and the ministerial meeting of the DoC's Group of Eight held last Thursday (5 December) show exceptional cohesion and unity among participating countries and demonstrate their unique resolve and unwavering commitment, and I would like to

Haitham Al Ghais, OPEC Secretary General (l), met with HH Sayyid Fahd bin Mahmoud Al Said, Deputy Prime Minister for the Council of Ministers of the Sultanate of Oman.



use this opportunity to thank the Sultanate of Oman for its valuable contributions over the years to the historic collaborative efforts.”

Their Excellencies also discussed many other key industry issues, including energy security and energy transitions.

Said Al Suqri, Minister of Economy of the Sultanate also connected with Al Ghais. Discussions revolved around oil and energy market conditions, along with key industry issues, including energy security and the importance of market stability in supporting the global economy, along with energy transitions and the ‘all-energies, all-technologies and all-peoples’ approach.

Oman has been a reliable and steadfast partner throughout much of the Organization’s history, personifying the spirit of cooperation, and was participating in voluntary production adjustments long before the inception of the DoC. It has maintained observer status at many OPEC Meetings of the Conference.

The country always responded to the call for greater collaboration among oil-producing countries over the decades. During the 1980s, it was instrumental in supporting OPEC and non-OPEC energy dialogues. Later, it joined in technical dialogues, including meetings in 2002, 2003, 2004, 2007, 2025 and 2016.

It remains a key partner today in both the DoC and international energy dialogues, continuing to show courage and unity in supporting OPEC’s role in the oil market.



Haitham Al Ghais, OPEC Secretary General (l), met with Salim Al Afi, Minister of Energy and Minerals of the Sultanate of Oman.

Haitham Al Ghais, OPEC Secretary General (l), held a meeting with Dr Said Al Suqri, Minister of Economy of the Sultanate of Oman in Muscat, as part of the Secretary General’s first official visit to the country.



Royal Opera House Muscat lifts Oman to new cultural heights

One of Oman’s most iconic cultural landmarks today, the Royal Opera House Muscat (ROHM) – opened in the Sultanate of Oman in 2011 – has certainly achieved the goal of its planners, putting Muscat on the map as the first opera house on the whole Arabian Peninsula.

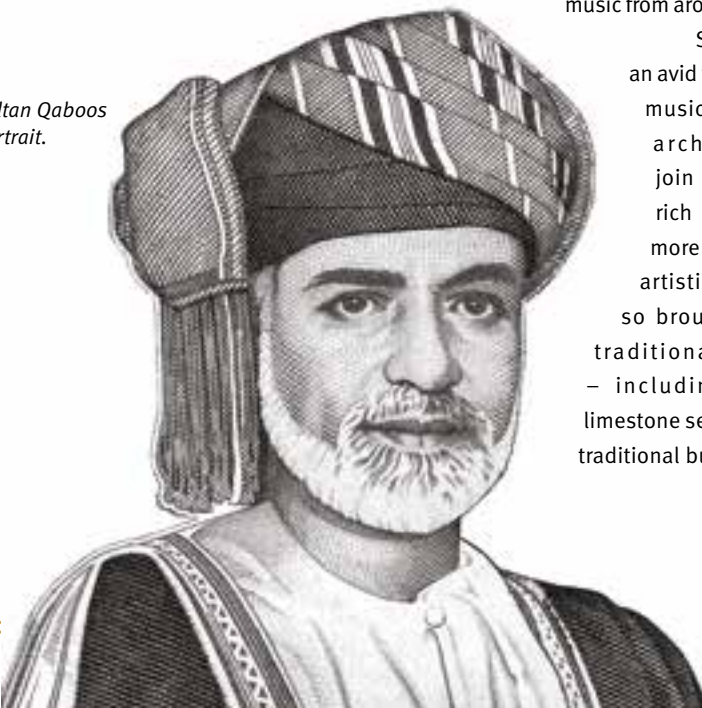
The visionary Sultan Qaboos – Sultan of Oman from 1970 until his death in 2020, and a revolutionary leader who catapulted the country into modernity – had a dream of to revive and deepen the country’s cultural life. The longest-serving leader in the Middle East and the Arab world at the time of his death, he saw the ROHM as a cornerstone for his dream.

The country was growing in economic significance and needed an accompanying centerpiece to showcase art and culture. The building opened in 2011 and is considered to be an historic milestone for the Arab world. It also embodies Sultan Qaboos’s desire to have a vehicle to celebrate human achievements and to promote collaboration and peace between nations.

Today it showcases the best operas, ballets, symphonic repertoire and world music from around the globe.

Sultan Qaboos, an avid fan of classical music, wanted the architecture to join the country’s rich history with a more contemporary artistic vision, and so brought together traditional elements – including the pink limestone seen in so many traditional buildings in the

Sultan Qaboos portrait.



The Royal Opera House at night.



country, which hails from the Omani desert – with modern design elements. The overall message is one of sustaining the great culture of the country while embracing innovation.

Deep significance

The building is not just a venue for classical music or song. Despite its title, the ROHM offers much more than opera, with the public having access to performing arts, exhibitions, workshops and family-oriented activities, to name a few.

In fact, the ROHM has a goal to build strong bridges within all communities, educational institutions and cultural organizations, through programmes that emphasize the importance of arts, music and culture in peoples' lives.



Oman's Sultan His Majesty Haitham bin Tariq.





Interior view of the Royal Opera House.

The Sultan also wanted to embrace the larger world of culture and art, promoting local artists while at the same time bringing international talent to the stage. Thus, the opera house has hosted some of the world's top artists and become a key international player.

Through this, it symbolically embraces Sultan Qaboos's vision of cultural transformation and the promotion of dialogue between cultures.

The ROHM is clearly the country's leading cultural centre and offers a diverse programme, including – of course – classical operas and symphonies. However, it also offers jazz, ballet and children's performances. International artists like Yo-Yo Ma, pianist Lang Lang, jazz icons such as Wynton Marsalis, along with world-famous opera singers such as Plácido Domingo, Anna Netrebko and Andrea Bocelli have graced its stage, among many others.

It also holds space for local artists and boosts their visibility, with a focus on the Royal Oman Symphony Orchestra. Sultan Qaboos deeply wanted to promote local talent, hence the ROHM also brings in special concert series and performances that are dedicated to local musicians and ensembles.

In addition, the centre is a hub for education and cultural development. Inside are a large library and educational centre. Here, aspiring young Omani artists can attend workshops, masterclasses and other programmes, led by internationally renowned professionals.

The ROHM also holds an "Emerging Talents" series, bringing in winners of worldwide competitions and thus expanding its international cultural exchange.

The theatre additionally goes outside the confines of its walls and into the community, for example with 'Open Doors', which brings performances to those in the community who can't attend in person, such as people at hospitals and care homes.

Other features

Other featured activities include open house events, allowing visitors to explore the wide variety of events offered at ROHM.

House tours reveal the hidden secrets and architectural beauty of ROHM, including its history and genesis, along with its decorative artistry and motifs and the mechanisms which switch the auditorium from theatre to concert hall. The display of a collection of rare instruments is also included.

The music library is the best library in the country for research on all aspects of music, with special emphasis on opera and Omani music culture. 'Let's Read' is a monthly event held at the library that allows children and families to explore fairy tales with expression and imagination.

'Opera Talks', held by musicologist Gaston Fournier with artists from the opera, has a focus on the history and music of opera. Pre-performance talks allow guests

attending performances to participate in educational discussions, with additional highlights on the performance at hand and creative processes behind the show.

Summer camp is held every year for two weeks and gives children the chance to step into the world of superheroes, where they will be introduced to music, theatre, dance, art and the technology of theatre. At the end they create a real show.

There are also coffee dates, lunch music (held Saturdays at lunch, where artists of the next stage production perform the most significant arias of the opera), school performances, summer music camp, seminars, absolute music, opera movie, student and family events and special projects.

In addition to all of this, the ROHM has several indoor and outdoor venues for rent by corporate and government sectors for high-level events.

Architecture

The ROHM has been carefully designed to blend the best of traditional and modern architecture. Its incredible and majestic exterior is similar to that of an Omani fortress. Massive stone walls, marble and fine mahogany carvings, along with ornate mashrabiya wooden screens emphasize the Islamic influence. These features harmoniously tie the building together with other historic Omani buildings, which feature the same elements.

The opera house's logo is made up of two opposing musical clefs, which join together to form an Omani arch, representing East-West dialogue, while wavy lines in the logo are meant to represent the flow of a conductor's baton.

Meanwhile, the interior design boasts more of the same combination, paying homage to Omani palaces and temples. Italian marble and Austrian crystal chandeliers and other interior intricacies bring glory and a majestic appeal.

The floor area of the building covers 15,380 square meters over six levels with three basement floors.

Meanwhile, the stage technology also sets a new world standard, with an adjustable stage and a 500-ton concert shell that can be moved away on rails to reveal a traditional theater. The orchestra pit is additionally



Audience seating.

adjustable in size. The concert and opera theater is massive, holding 1,000 seats.

The acoustics are of the latest design and capability, promising a heavenly sound experience, with speaker systems cleverly hidden inside columns, to preserve the aesthetics of the room.

It was the first opera house in the world to feature Radio Marconi's interactive multimedia display system, and the ROHM continues to invest in the latest technologies.

Shopping possibilities

The ROHM also includes a new shopping destination, with over 50 shops, including international brands and many international cafes and dining possibilities. Visitors to the opera house can have a fine meal or shop before attending their event.

It includes the Omani Artisan House of the Public Authority for Craft Industries, which sells outstanding products made by Omanis around the Sultanate, backed by the ROHM's commitment to support traditional crafts and local talent. Some Omani gift boutiques are also featured.

This incredible attraction brings sophistication and beauty to the artistic and cultural life of generations of Omanis and is a bright jewel attracting others in the region and around the world.

All pictures are courtesy of Shutterstock.



Forty years of ADIPEC

This year marked 40 years of ADIPEC. The UAE's premier energy exhibition and conference has gone from strength-to-strength across the decades and in 2024 it drew over 180,000 attendees. With 1,800-plus speakers contributing to over 370 conference sessions, the Abu Dhabi event is a must on the global energy calendar.

“For four decades, and throughout a fast-evolving energy landscape, [ADIPEC] has been a catalyst for action, transformation, progress and impact,” said Dr Sultan Ahmed Al Jaber, Minister of Industry and Advanced Technology and ADNOC Managing Director and Group CEO as the event opened.

The 40th anniversary event was held under the theme of ‘Connecting Minds. Transforming Energy’ and brought together stakeholders from around the world with a focus on collaboration, debate, challenges and opportunities. “[ADIPEC] is an opportunity to bring to the fore the diverse challenges and needs of different

energy markets from around the world and creates a global stage for solutions-oriented dialogue,” said Suhail Al Mazrouei, the UAE’s Minister of Energy and Infrastructure.

In his opening address, Al Jaber called on the energy industry to capitalize on the opportunities of global megatrends and said that harnessing these megatrends require unprecedented cross-sectoral integration to accelerate sustainable growth.

He said: “We stand at the dawn of a new era of hope and possibility, defined by three megatrends: first, the rise of the global south and emerging markets. Second,

UAE Minister of Energy and Infrastructure Suhail Mohamed Al Mazrouei speaks at the opening ceremony of ADIPEC 2024.





Participants of an ADIPEC Ministerial Session (l-r): moderator John Defterios, Professor of Business, New York University, Abu Dhabi; Giorgos Papanastasiou, Cyprus' Minister of Energy, Commerce and Industry; Haitham Al Ghais, OPEC Secretary General; Hon. Ruth Nankabirwa Ssentamu, Uganda's Minister of Energy and Mineral Development; and Edmond Nonie, Deputy Minister of Energy for Sierra Leone.

the transformation of energy systems, and third, the exponential growth of Artificial Intelligence (AI).

“These three megatrends present mega opportunities that demand mega solutions. By 2050, 1.7 billion people will join our planet, mostly in the Global South. As a result, energy markets must shift and grow and energy systems must be transformed.”

These were all themes that filtered through the conference schedule, with the OPEC Secretary General, Haitham Al Ghais, speaking across a number of ministerial sessions and roundtables.

OPEC hosts roundtable

As part of OPEC's participation at ADIPEC, the Organization hosted a roundtable under the theme 'Technological innovation: Fostering market stability, maintaining energy security while reducing emissions.' It was an opportunity to bring together a variety of stakeholders to share perspectives, ask

questions and highlight issues that are central to energy futures.

In his remarks, Al Ghais emphasized how intertwined the issues of energy security, market stability and reducing emissions were, and noted that technological innovation is vital in every aspect of the energy industry. “We need to significantly scale up the deployment of low-emission technologies to reach future country-specific emissions targets. In this regard, we need to subscribe to global best practices and cutting edge, best-in-class technologies,” he underlined.

He also reiterated that the world needs an all-energies approach, and an all-peoples approach, taking into account



Dr Sultan Ahmed Al Jaber, UAE's Minister of Industry and Advanced Technology, ADNOC Managing Director and Group CEO.



Participants of the roundtable hosted by OPEC.

the capacities, national circumstances and development priorities of all countries, and re-emphasized a key focus of the session, an all-technologies approach.

Here, he referenced a number of developments in OPEC Member Countries, stating that countries are investing heavily in carbon abatement technologies. This includes advanced carbon capture utilization and storage (CCUS) systems, hydrogen production technologies and direct air capture, alongside making major investments in renewables, all within the concept of the circular carbon economy.

He added that in the UAE, the government and its national oil company, ADNOC, are leading the way.

“This includes progress within the context of CCUS, such as the development of the Habshan facility, one of the largest carbon capture projects in the Middle

East and North Africa region; developing innovative technologies, such as turning CO₂ into rock; and investing in renewables, through Masdar,” Al Ghais said.

Furthermore, he highlighted that the experiences of OPEC Member Countries offer valuable insights into successful approaches for financing clean energies.

“To cite but one example, the Green Financing Framework from Saudi Arabia demonstrates how comprehensive financing approaches can attract significant investments in clean technologies. The Kingdom’s commitment to investing \$1.5 trillion in clean technologies by 2030, operated in tandem with its robust public-private partnerships, underscores the effectiveness of structured frameworks and international standards in mobilizing resources,” he said.

AI in focus

AI was a critical focus of ADIPEC 2024, with this year’s event also featuring an all-new AI Zone, where industry experts and business leaders were able to showcase the technology’s power to revolutionize energy systems, enhance grid resilience and unlock new investment opportunities.

Al Ghais, alongside HRH Prince Abdulaziz bin Salman Al-Saud, Minister of Energy of the Kingdom of Saudi Arabia, and the UAE’s Al Mazrouei, participated in a ministerial roundtable focused on energy transitions, AI and the role of emerging economies.

The Secretary General highlighted that the world will need more energy in the years and decades

“
We need to significantly scale up the deployment of low-emission technologies to reach future country-specific emissions targets. In this regard, we need to subscribe to global best practices and cutting edge, best-in-class technologies.”

— Haitham Al Ghais, OPEC Secretary General



Haitham Al Ghais, OPEC Secretary General, hosted the roundtable entitled 'Technological innovation: Fostering market stability, maintaining energy security while reducing emissions.'

ahead, and stressed that data centres and AI are playing a more dominant role in everyday life and becoming an increasingly important part of the global economy. He also noted that many people are not aware of the energy requirements needed to provide these services.

It was an issue picked up on by other oil industry executives at ADIPEC.

BP's Chief Executive Officer Murray Auchincloss highlighted the work his company has been undertaking

with US data analytics company Palantir, and what AI can help companies achieve.

"AI can go out and grab ... everything, and it can literally design 1,000 wells in three months. Whereas it would literally take years and years for engineers to do that. So, I think it's probably the biggest revelation that we will see in our careers on productivity and enhancements," he said.

However, he also referenced that this created a significant increase in energy demand growth. "We see



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Haitham Al Ghais, OPEC Secretary General (l), held a bilateral meeting with Hardeep Puri, India's Minister of Petroleum and Natural Gas, on the sidelines of ADIPEC 2024.



Haitham Al Ghais, OPEC Secretary General (l), met with Hon. Matt Jones, Alberta's Minister of Jobs, Economy and Trade, on the sidelines of ADIPEC 2024.

it in India. We see it in China. We see it in the US. We don't see it elsewhere yet. So, I think we're going to be surprised to the upside in other geographies as AI is brought in there. ... We really just do see incredible growth in demand," he said.

This was noted by Al Jaber too. "The exponential growth of AI is also creating a power surge that no-one anticipated 18 months ago. That's when ChatGPT took off. A single prompt on ChatGPT needs ten times more

energy than a google search. As AI expands, it will rely on a massive scale up of data centres for its huge and fast-growing computational needs. Over the next six years, data centres will more than double, requiring at least 150 gigawatt of installed capacity by 2030 and double that again by 2040," he said.

He added that no single source of energy is going to be enough to cater to this demand and meeting this demand sustainably will require the harnessing of diverse energy sources.

For more on AI, the UAE and ADNOC, see page 20.

Global South

Elsewhere, Al Ghais also participated in an ADIPEC ministerial session to discuss the issue of 'Increasing collaboration between the Global North and South for a successful transition'. The session was moderated by John Deferios, Professor of Business, New York University, Abu Dhabi.

The session examined issues of collaboration between the Global North and the developing economies





Haitham Al Ghais, OPEC Secretary General (l), met with Eng. Karim Badawi, Egypt's Minister of Petroleum and Mineral Resources, on the sidelines of ADIPEC 2024.



Abu Dhabi from above.

“ We need policies that deliver for consumers, producers, the Global North and the Global South; ones that enable societal mobility, economic growth and a reduction in emissions. ”

— Haitham Al Ghais, OPEC Secretary General

of the Global South, including financing, technology and clean energy skills.

During the session, Al Ghais underscored the need to remain realistic and pragmatic when addressing energy futures, noting that energy security, energy access and emissions reduction are intertwined. “It is clear there is ‘no one-size-fits-all’ solution when it comes to charting energy pathways,” he stated.

“We need policies that deliver for consumers, producers, the Global North and the Global South; ones that enable societal mobility, economic growth and a reduction in emissions,” Al Ghais added.

Bilaterals

The OPEC Secretary General also held a number of bilaterals on the sidelines of the event.

This included a meeting with Hardeep Puri, India’s Minister of Petroleum and Natural Gas, with discussions focused on global oil and energy markets and key industry issues, including energy security, the risk of underinvestment and the exceptional efforts undertaken


by the Declaration of Cooperation countries to support market stability.

The two also discussed possible avenues to enhance cooperation between OPEC and India, including through the ongoing OPEC-India Energy Dialogue.

Al Ghais also met with Eng. Karim Badawi, Egypt’s Minister of Petroleum and Mineral Resources, and Matt Jones, Alberta’s Minister of Jobs, Economy and Trade.

Forum for the future

ADIPEC 2024 spotlighted the pivotal role of AI, other technology developments, the importance of energy security and affordability, accelerating investment, the needs of the Global South, as well as youth perspectives, to promote a sustainable, secure and equitable energy future.

It delivered insights and innovations that have the potential to shape the future of the energy industry, and energy pathways for countries and populations across the world. 

AI and its transformative possibilities

With Artificial Intelligence (AI) a core focus at this year's ADIPEC event, the OPEC Bulletin highlights a number of AI-focused announcements made by the UAE's national energy group, ADNOC, during the week-long event.



HRH Prince Abdulaziz bin Salman Al-Saud, Saudi Arabia's Minister of Energy (l), and UAE's Minister of Energy and Infrastructure Suhail Mohamed Al Mazrouei, attended the roundtable.

“AI is one of those era-defining breakthroughs that is changing the pace of change itself. It is redefining the boundaries of productivity and efficiency,” said Dr Sultan Ahmed Al Jaber, Minister of Industry and Advanced Technology and ADNOC Managing Director during his opening remarks at ADIPEC 2024.

He highlighted the interconnectedness of energy and AI and urged an integrated, cross-sectoral response that meets the fast-growing energy needs of AI and leverages AI to help transform energy systems.

The issue of AI is evidently generating much discussion among oil and energy industry executives, and not only at ADIPEC. It was also on display at the previous week's Future Investment Initiative summit in Riyadh, where panel sessions focused on the technology.

Participants to the ministerial roundtable focused on the energy transitions, AI and the role of emerging economies.



Its transformative possibilities for the energy sector are evident, across all operations and sectors, and this can be viewed in a number of agreements announced by ADNOC during ADIPEC 2024.

ENERGYai

ADNOC announced the launch of ENERGYai – a company-wide AI strategy to drive efficiency, sustainability and growth across its operations and at the same time equipping its colleagues with the skills to take full advantage of the technology’s potential.

Described by the company as a “new transformative solution”, ENERGYai has been developed in partnership with Abu Dhabi-based tech firms AIQ and G42, and Microsoft. The company says the platform will be the first to apply agentic AI at scale within the energy industry, capable of autonomously analyzing vast datasets, making real-time decisions, and driving significant operational improvements.

Speaking at ADIPEC, Al Jaber said: “It will not only analyze petabytes of data, it will proactively and autonomously identify operational improvements. It will perceive, think, learn and act. It will speed up seismic surveys from months to days. It will increase the accuracy of production forecasts by up to 90 per cent. And it will be a powerhouse for value creation, efficiency and sustainable energy production that can benefit the whole industry.”

Additionally, ADNOC and Masdar announced further collaboration at ADIPEC with Microsoft to drive AI deployment and low-carbon solutions. This came in the form of the signing of a Strategic Collaboration Agreement (SCA) with Microsoft on a range of AI and low-carbon initiatives in the UAE and globally, aimed at enabling a sustainable energy system for the future. As part of the SCA, the companies said they will evaluate opportunities to power Microsoft’s data centres with renewable energy through Masdar, which ADNOC is a shareholder in. ADNOC also stated they will explore opportunities to use AI to advance carbon capture and storage projects, as well as low-carbon ammonia and hydrogen projects.

Furthermore, ADNOC said the SCA will explore opportunities to accelerate AI deployment across the company’s operations to enhance efficiencies, drive



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AI has the potential to transform energy systems.

methane reduction initiatives aligned to the Oil & Gas Decarbonization Charter, minimize emissions and strengthen biodiversity monitoring to better protect the environment.

AI-powered well digitalization

The ADIPEC event also witnessed ADNOC announce the award of an engineering, procurement and construction contract to Jereh Oil & Gas Engineering Corporation, worth up to \$920 million, to install remote sensing and well-operating equipment at its onshore Bab, Bu Hasa and Southeast fields, extending its AI-powered well digitalization programme to cover the fields.

The contract was awarded by ADNOC Onshore and the company said the agreement will see more than 80 per cent of the value flow back into the UAE’s economy under ADNOC’s In-Country Value Programme, supporting economic growth and diversification.

ADNOC said its AI-powered well digitalization programme, due for completion in 2027, will enable the remote monitoring and control of over 2,000 wells, enhancing operational efficiency and improving safety by reducing downtime and optimizing well performance.

Abdulmunim Saif Al Kindy, ADNOC’s Upstream Executive Director, said: “This award will accelerate our well digitalization programme and the automation of our operations, supporting our goal to become the world’s most AI-enabled energy company.”



Africa Energy Week soars to new heights

Under the theme ‘Invest in African Energies – Energy Growth Through an Enabling Environment’, Africa Energy Week convened in Cape Town from 4 to 8 November. The OPEC Bulletin’s Scott Laury reports.

The 2025 edition of Africa Energy Week (AEW), organized by the African Energy Chamber in partnership with AFREXIM Bank and the African Petroleum Producers’ Organization, took place from 4 to 8 November at the Cape Town International Convention Centre.

The event is held annually and attracts African and global energy leaders, investors and executives from the public and private sectors for four days of intense dialogue on the future of the African energy industry.

AEW was established in 2021 with the premise of helping eradicate energy poverty by 2030, and it continues to be a global platform for meaningful dialogue on energy issues crucial to Africa and its

growing energy industry. The event also features an exhibition where energy companies and organizations display their information and products.

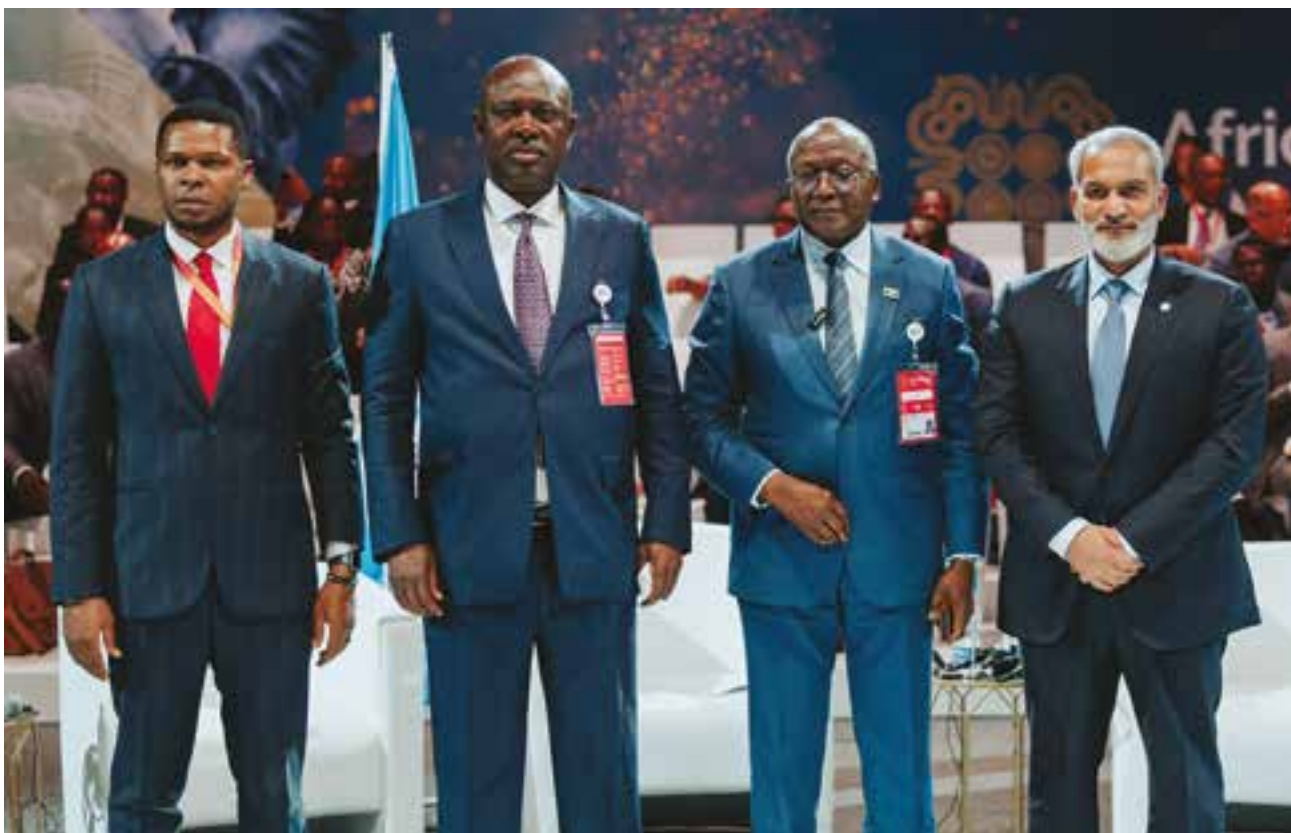
OPEC participation

On 6 November, OPEC Secretary General Haitham Al Ghais delivered a keynote address at AEW in which he shared OPEC’s views on the global oil market and issues relevant to the event’s theme of investment in Africa’s energy future.

He began by thanking the organizers and recognizing many of OPEC’s Heads of Delegation who were in attendance.

Haitham Al Ghais, OPEC Secretary General, delivers his keynote address.





At the OPEC-Africa Ministerial Roundtable held at Africa Energy Week 2024 (l-r): NJ Ayuk, Chairman of the Africa Energy Chamber; Sen. Heineken Lokpobiri, Nigeria's Minister of State for Petroleum Resources (Oil); Marcel Abéké, Gabon's Minister of Petroleum and President of the OPEC Conference; and Haitham Al Ghais, OPEC Secretary General.

“My compliments go to the organizers for the excellent and timely programme that has been developed for this year’s event and for the excellent arrangements and warm hospitality,” he said. “Africa Energy Week continues to go from strength to strength and is now a leading event on the global industry calendar. I am extremely pleased to see many of OPEC’s Heads of Delegation participating here, as well as some that are part of the OPEC-non-OPEC Declaration of Cooperation.”

Oil market outlooks

Al Ghais began by sharing some of the key outcomes from OPEC’s 2024 World Oil Outlook, which was launched on 24 September at the Rio Oil and Gas Show in Brazil.

“As far as the future of oil and gas is concerned, OPEC has a positive outlook,” he stated. “We see a bright future ahead with significant opportunities for robust long-term growth.”

To illustrate, he shared a few statistics, including OPEC’s forecast for global energy demand, which is expected to increase by an estimated 24 per cent by 2050. This, he added, will be fuelled by a world economy

that is expected to more than double in size, from \$165 trillion in 2023 to \$358 tn in 2050.

Also driving this robust growth is a rapidly expanding world population, which he said is expected to reach 9.7 billion people by 2050, with most of the growth seen in developing countries, such as those in Africa.

Additionally, he explained that the trend of urbanization will intensify, and over the next six years to 2030, an estimated half-a-billion people are expected to move to cities across the world.

“This urbanization drive will require the addition of approximately 105 cities the size of Cape Town. And by

“*We see a bright future ahead with significant opportunities for robust long-term growth.*”

— *Haitham Al Ghais, OPEC Secretary General*



Haitham Al Ghais, OPEC Secretary General, speaks at Africa Energy Week 2024.



Haitham Al Ghais, OPEC Secretary General (l), held a bilateral meeting with Anibor Kragha, Executive Secretary of the African Refiners and Distributors Association on the sidelines of Africa Energy Week 2024.

2050, more than 6.6 billion people are set to be living in cities,” he added.

All energies required

He went on to discuss prospects for the future energy mix, as well as the crucial issue of industry investment.

“These trends make it clear that the world will require all forms of energy to meet long-term energy needs. It is not one or the other, it is all,” he said. “Oil and gas are set to remain the predominant fuels in the energy mix, with a combined share above 53 per cent by 2050. Oil will retain the largest share at 29 per cent and gas will be at 24 per cent.”

To ensure security of supply to meet the forecasted rise in demand, he underlined the importance of boosting investment levels in the years to come.

“According to our research, cumulative oil-related investment requirements from now until 2050 will amount to approximately \$17.4 tn or around \$640 billion per year on average to meet growing demand requirements,” he stated. “The bulk of this is required in the upstream, where total investment needs are \$14.2

tn, while the downstream and midstream are estimated at \$1.9 tn and \$1.3 tn, respectively. Securing this vital funding is essential to maintaining security of supply and avoiding unwanted volatility.”

He complimented the organizers for putting this crucial issue front and centre at AEW and for integrating it into the event’s theme.

As far as Africa goes, the Secretary General emphasized the continent’s rich resource base and the key role it will continue to play in the global energy industry.

“For Africa, in the ground, the future looks bright. It has an estimated 120 billion barrels of proven oil reserves and around 18 trillion standard cubic metres of natural gas,” he said. “It is vital that African countries can develop these resources, with access to the necessary funding and financing. This will be vital for the economic and social development of these nations and their peoples.”

COP29

Moving on to climate change, the Secretary General said that OPEC and its Member Countries would be actively



Haitham Al Ghais, OPEC Secretary General (l), held a bilateral meeting with Maixent Raoul Ominga, Director General, SNPC of Congo, on the sidelines of Africa Energy Week 2024.



Haitham Al Ghais, OPEC Secretary General (l), held a bilateral meeting with NJ Ayuk, Chairman of the Africa Energy Chamber, on the sidelines of Africa Energy Week 2024.

engaged at COP29 to advocate for a balanced and fair process, particularly with regard to climate finance and technology.

“OPEC and its Member Countries, the majority of which are in Africa, will be in Baku to help promote fair and balanced climate and energy outcomes,” he stated. “Our goal is clear: to ensure the voices of our Member Countries are heard and that the unique circumstances of developing nations are taken into consideration and respected.”

This, he added, will be crucial for Africa, to ensure that any future energy pathways meet the unique needs of its citizens.

Energy poverty

In terms of energy poverty, an issue of crucial concern to Africa, the Secretary General pointed out that there is still much work to be done to achieve lasting change.

“The fact is that still today, billions of people around the world are playing energy catch up, with no access to modern energy services,” he stated. “For these people, many of whom call the African continent

home, talk of achieving net zero is neither a priority nor a reality. They are focused on simply attaining basic energy requirements, such as lighting their homes, figuring out clean cooking solutions or how to find motorized transport to school or work.”

In this regard, Al Ghais made an appeal to world leaders to unite and advocate for the necessary support and resources to make a difference in addressing this important matter.

In closing, the Secretary General emphasized the importance of ongoing global energy collaboration and dialogue, and said OPEC would continue to make this a priority going forward.

“We will continue to prioritize dialogue and cooperation with all of our energy partners, including here in Africa,” he said. “In this regard, we look forward to today’s OPEC-Africa Roundtable.”

OPEC-Africa Ministerial Roundtable

The OPEC-Africa Ministerial Roundtable took place after the Secretary General’s keynote address and provided a valuable forum to delve deeper into some of the



Haitham Al Ghais, OPEC Secretary General (l), held a bilateral meeting with Dr Omar Farouk Ibrahim, Secretary General of the African Petroleum Producers' Organization, on the sidelines of Africa Energy Week 2024.



Haitham Al Ghais, OPEC Secretary General (l), held a bilateral meeting with Hon. Minister Samson Gwede Mantashe, South Africa's Minister of Mineral and Petroleum Resources, on the sidelines of Africa Energy Week 2024.

key energy opportunities and challenges that Africa is facing.

The Roundtable featured the participation of Secretary General Al Ghais; Marcel Abeke, Gabon's Minister of Petroleum and President of the OPEC Conference; Sen. Heineken Lokpobiri, Nigeria's Minister of State for Petroleum Resources (Oil); and was moderated by NJ Ajuk, Executive Chairman of the Africa Energy Chamber.

Discussions focused on the important role Africa's Member Countries have played throughout OPEC's history, the promising future and myriad opportunities related to Africa's oil and gas industries, the crucial need for enhanced industry investment, addressing energy poverty, and the challenges of balancing energy security with addressing climate change in a fair and responsible manner.

Bilateral meetings


On the sidelines of AEW, Secretary General Al Ghais held several bilateral meetings, including with Anibor

Kragha, Executive Secretary of the African Refiners and Distributors Association and Maixent Raoul Ominga, Director General of Société Nationale des Pétroles of Congo.

Discussions centred on developments in the global oil and energy markets and key industry issues relevant to Africa, including energy security, energy poverty, COP29 in Azerbaijan and the need for increased investment in Africa's energy industries. The leaders also discussed avenues for enhanced future cooperation.

OPEC stand

OPEC hosted a stand at the AEW Exhibition Hall, where attendees were able to learn more about the Organization and pick up informational brochures and publications.

OPEC representatives were also on hand to answer any questions about the Organization, its history and its goals and objectives. 

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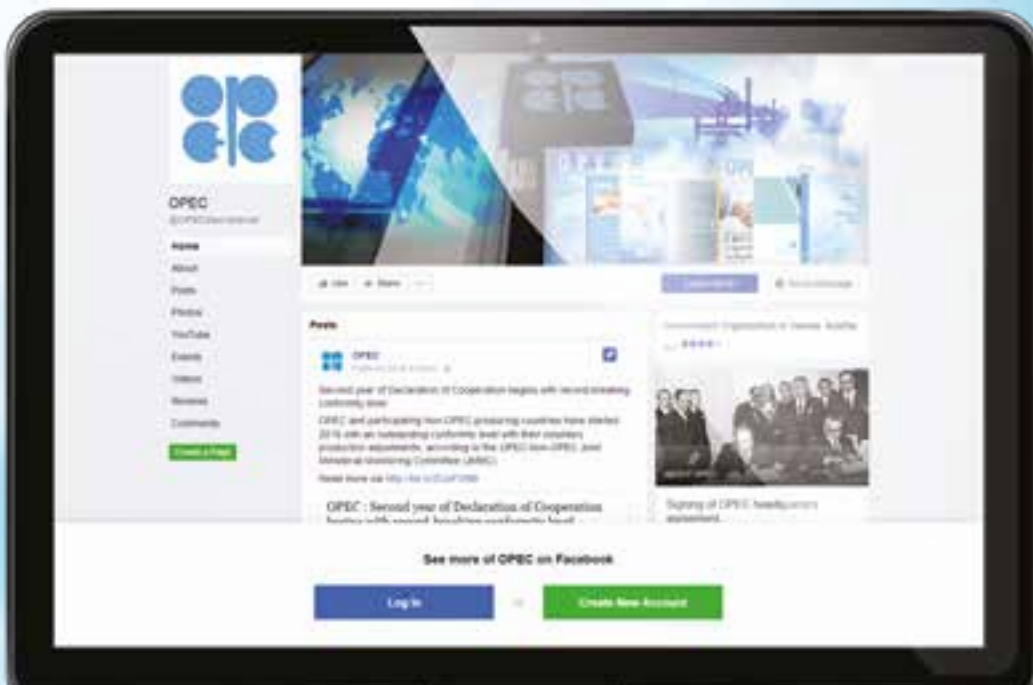
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Historic COP29 takes place in Baku

The 2024 United Nations Climate Change Conference or Conference of the Parties of the UNFCCC, more commonly known as COP29, took place in Baku, Azerbaijan, over two weeks in November 2024. It was attended by nearly 200 countries and over 555,000 participants. Mukhtar Babayev served as COP29 President. The Conference yielded significant outcomes and OPEC was well represented throughout the event. The OPEC Bulletin files this report.

President of Azerbaijan's Opening Speech

The opening ceremony included a speech by the President of Azerbaijan, Ilham Aliyev. He began his remarks by stating, "Many of our guests are visiting Azerbaijan for the first time. I hope they will have a chance to get acquainted with our country, its history, traditions, and culture." He paid tribute to the hosts of COP28, by saying "I congratulate my dear brother,

President of the United Arab Emirates (UAE), His Highness Sheikh Mohamed bin Zayed Al Nahyan, and all his team on the landmark UAE consensus achieved at COP28 in Dubai, and their support in the preparation for COP29 in Baku."

President Aliyev stressed the unique role that Azerbaijan has historically played in multinational diplomacy, stating, "Azerbaijan is a country where East and West, North and South meet, and this is not

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COP29

Ilham Aliyev, President of the Republic of Azerbaijan.

only about geography. We can build political, cultural, energy, trade, and transportation bridges between different international actors. The megaprojects initiated by Azerbaijan have already changed the energy and transportation maps of Eurasia and have led to the establishment of fruitful multinational cooperation formats.”

The President also touted Azerbaijan’s constructive role in international forums, “As the President of COP29, Azerbaijan will do its best to find a common understanding between developed and developing countries, between the Global South and the Global North. For four years, by unanimous decision of 120 countries, Azerbaijan successfully chaired the Non-Aligned Movement, the second international institution after the United Nations.”

He stated that Azerbaijan is an active member of the Organization of Islamic Cooperation and has signed agreements and adopted declarations on strategic partnership with ten members of the European Union, adding, “All this allows us to think that we may be very helpful and useful in building bridges between different important actors on the issue of climate change. Azerbaijan is an active supporter of multilateralism.”



COP29

Mukhtar Babayev, Azerbaijan’s Minister of Ecology and Natural Resources and COP29 President.



*Haitham Al Ghais,
OPEC Secretary General.*

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Ilham Aliyev, President of the Republic of Azerbaijan.

At the same time, we play an active role in intercultural dialogue.”

The President outlined the progress Azerbaijan has made in the field of renewables, often in partnership with OPEC Member Countries. The country’s technical potential for renewable energy is estimated at 135 gigawatts (GW) onshore and 157 gigawatts offshore. In 2023, Masdar from the UAE inaugurated a solar power plant with 230 megawatts. ACWA Power from Saudi Arabia is currently constructing a wind power station with a potential capacity of 240 megawatts. By 2030, Azerbaijan plans to build solar, wind and hydropower stations of approximately 6 GW. Contracts and Memorandums of Understanding for a further 10 GW of renewable energy projects have been signed.

Oil and gas in the energy mix

President Aliyev spoke frankly about the importance of oil and gas in the energy mix, saying, “Now, a couple of words I’d like to say about another segment of energy security, which is oil and gas. I understand that this topic is not very popular at a climate change conference, but without that, my comments would not be complete. Just to begin with information, the world’s first industrial oil well was drilled in Azerbaijan, in Baku, in 1846. It is situated not far from this place. Maybe it may take a 10–15 minute drive. The first offshore oil well was also drilled by Azerbaijani oilmen in the Caspian Sea in the middle of 20th century. In the 19th century, Azerbaijan produced more than half of the world’s oil.”

The President deconstructed the notion that some Western commentators describe Azerbaijan as a ‘petrostate’. He said, “If, then, [in the 19th century] some Western politicians and media called us a petrostate, that would probably have been acceptable. But when they call us a petrostate now, today, this is not fair, and it only demonstrates a lack of political culture





Haitham Al Ghais, OPEC Secretary General (l) held a bilateral meeting with Mukhtar Babayev, Azerbaijan's Minister of Ecology and Natural Resources and COP29 President.



and knowledge. Today, Azerbaijan's share of global oil production is 0.7 per cent, and its share of global gas production is 0.9 per cent. But the fake news media of the country, which is the number one oil and gas producer in the world and produces 30 times more oil than Azerbaijan, calls us a petrostate.”

He added, “I have to bring these figures to the attention of our audience because right after Azerbaijan was elected as the host country of COP29, we became the target of a coordinated, well-orchestrated campaign of slander and blackmail. Western fake news media, so-called independent NGOs, and some politicians seemed to be competing in spreading disinformation and false information about our country. To accuse us of having oil is the same as accusing us of having more than 250 sunny days a year in Baku.”

In a widely cited reference, the President referred to a country's natural resources, including oil and gas, as ‘gifts from God.’ He continued by saying, “Every natural resource, whether it's oil, gas, wind, sun, gold, silver, copper, they are all natural resources. Countries should not be blamed for having them and should not be blamed



Haitham Al Ghais, OPEC Secretary General, delivers his remarks at COP29.

“
The great challenge at hand is ensuring energy accessibility, meeting rising energy demand, enhancing energy security while maintaining energy affordability, as well as reducing global emissions.
 ”

— Haitham Al Ghais, OPEC Secretary General

for bringing these resources to the market because the market needs them. The people need them. So, this is my message. As the President of COP29, of course, we will be strong advocates for the green transition, and we're doing it, but at the same time, we must be realistic.”

OPEC SG Remarks

OPEC Secretary General, Haitham Al Ghais, began his remarks by echoing the comments of President Aliyev, saying, “Today, almost 180 years on from the birth of the oil industry in Baku, petroleum and petroleum-derived products continue to shape how we heat and cool our homes, construct our buildings and transport ourselves from ‘a’ to ‘b.’ Oil and gas remain vital to producers and consumers around the world. As Azerbaijan’s

President, HE Ilham Aliyev emphasized at the opening of COP29, they are indeed a ‘Gift from God.’ They impact how we produce, package and transport food and how we undertake medical research, manufacture and distribute medical supplies.”

Al Ghais highlighted the difficulties in reconciling the different components of the energy trilemma, saying, “Access to the benefits of these products – benefits often taken for granted – is

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The Flame Towers
 seen in Baku.

far from universal. There remain 685 million people who do not have access to electricity and 2.1 billion who continue to rely on unsafe and inefficient fuels for cooking.”

The SG concluded his remarks by saying, “The great challenge at hand is ensuring energy accessibility, meeting rising energy demand, enhancing energy security while maintaining energy affordability, as well as reducing global emissions. OPEC has consistently advocated a balanced approach where nothing and no-one is dismissed.”

Outcomes

COP29 paid particular focus to the issue of climate financing. There was agreement to triple finance to developing countries from the previous goal of \$ 100 billion annually to \$ 300 billion annually by 2035. There will be efforts to scale up finance to developing countries, from both public and private sources, to the amount of \$ 1.3 trillion per year by 2035. All eyes now turn to COP30, scheduled to take place next year in Belem, Brazil. It is the third year in a row where the COP has been held in a country participating in the Charter of Cooperation, following the UAE in 2023 and Azerbaijan in 2024.



Information Centre for COP29 in Baku.



Delegates seated at COP29.



GECF and OPEC strengthen collaboration at COP29 in Baku

OPEC and the Gas Exporting Countries Forum (GECF) held their third coordination meeting on 19 November during COP29 in Baku, Republic of Azerbaijan. The meeting underscored the ongoing cooperation between the two organizations and highlighted the significance of their collaboration in addressing the dual challenges of climate change and energy security.

Haitham Al Ghais, OPEC Secretary General (r), meets with Eng Mohamed Hamel, GECF Secretary General.





Haitham Al Ghais, OPEC Secretary General (r), with Eng Mohamed Hamel, GECF Secretary General.

The meeting was co-chaired by Eng Mohamed Hamel, Secretary General of GECF, and Haitham Al Ghais, Secretary General of OPEC.

In his opening remarks, Hamel stated, “The GECF and OPEC are like-minded intergovernmental organizations, and it is vital to provide a platform for our members to exchange views and expertise on the critical negotiating streams of COP29. The outcomes of these negotiations hold profound implications for their socioeconomic development.”

Al Ghais reiterated the importance of collaboration between the two organizations, stating that “these meetings continue to allow us to coordinate together, giving our interventions increased impact and clarity. We value this cooperation, as OPEC continues to support its members on several fronts during the UNFCCC processes,” adding, “We hope that our meeting today will add to the collaborative spirit and the goals of fairness and equality.”

Al Ghais stated that negotiations on climate finance are particularly crucial for energy-exporting developing countries, which face aggravated challenges going forward.

The meeting centered on key topics related to sustainable development, energy and climate change. Participants acknowledged the importance of advancing critical issues under the Paris Agreement framework that are particularly relevant to developing countries, including climate finance; mitigation; adaptation; loss and damage; just, realistic and equitable energy transitions; and technology transfer and capacity building.

Participants reaffirmed the pivotal role of oil and natural gas in driving global economic growth, alleviating poverty and enhancing prosperity. Together, these energy sources currently account for over half of the global energy mix.

“
*We value this cooperation,
 as OPEC continues to support its
 members on several fronts during
 the UNFCCC processes.*”

— *Haitham Al Ghais, OPEC Secretary General*



The coordination meeting in session.

View of Crescent Bay in Baku.



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- The discussion reviewed negotiations on:
- Climate finance, with a focus on the New Collective Quantified Goal (NCQG);
 - The Mitigation Ambition and Implementation Work Programme;
 - The Work Programme on Just Transition Pathways;
 - Unilateral trade measures and the adverse impacts of response measures;
 - Cooperative approaches under Article 6 of the Paris Agreement, including market and non-market mechanisms.

Delegates stressed the need for an equitable, inclusive, rational and balanced outcome from COP29 that addresses climate change while preserving sustainable development, energy security and affordability. They agreed that no one should be left behind in the energy transitions.

The meeting reaffirmed the importance of ongoing collaboration between GECF and OPEC Member Countries in engaging effectively in climate negotiations and addressing shared challenges. Both organizations recognized that cooperation is essential to ensuring their members' interests are upheld, while contributing meaningfully to global climate goals.

The meeting ended with a shared commitment to strengthening ties between the two organizations, including at the technical level, as they navigate the complex intersections of energy, climate and development.

The extensive contact with the GECF at the event included the OPEC Secretary General Al Ghais welcoming GECF Secretary General Hamel to the OPEC pavilion at COP29.



Other bilateral engagements

Al Ghais additionally met Parvis Shahbazov, Azerbaijan's Minister of Energy, in Baku, to discuss developments in the global oil and energy markets and climate change negotiations. He praised Azerbaijan's leadership, exceptional wisdom and facilitative efforts in the Declaration of Cooperation (DoC) framework in the interest of oil market stability.

"Aside from its instrumental role in the DoC, Azerbaijan is a strong believer in cooperation and dialogue, two key principles that have underpinned OPEC's work since its inception. Both principles are evident in Azerbaijan's approach to COP29," he stated. The Secretary General and the Minister underscored the importance of adopting an 'all-energies, all-technologies and all-peoples' approach when addressing energy transitions.

Josué Lorca Vega, Minister of Ecosocialism of the Bolivarian Republic of Venezuela, also met with Al Ghais on the sidelines of COP29. During the talk, the Secretary General thanked OPEC Founder Member Venezuela for its valuable contributions to the Organization and its affairs over the years, including at the highest level. They additionally talked about developments related to the global oil and energy industries and COP29, including ongoing climate change negotiations and the importance of agreeing on a common position to ensure a constructive and successful outcome. ■■



Haitham Al Ghais, OPEC Secretary General (l) with Parvis Shahbazov, Azerbaijan's Minister of Energy, on the sidelines of COP29.



Haitham Al Ghais, OPEC Secretary General (r) met with Josué Lorca Vega, Minister of Ecosocialism of the Bolivarian Republic of Venezuela.



Haitham Al Ghais, OPEC Secretary General (r), with Eng Mohamed Hamel, GECF Secretary General, at the OPEC pavilion at COP29.



Haitham Al Ghais, OPEC Secretary General (l), with Alexander Novak, Deputy Prime Minister of the Russian Federation.

OPEC-Russia Energy Dialogue takes place in Moscow

The Ninth High-level Meeting of the OPEC-Russia Energy Dialogue took place in Moscow on 22 November 2024 under the co-chairmanship of Haitham Al Ghais, OPEC Secretary General, and Alexander Novak, Deputy Prime Minister of the Russian Federation.

The Meeting constitutes a crucial element in the Secretariat's external dialogue programme, which includes regular exchanges with a great number of producing and consuming nations, as well as international organizations, aimed at gaining insights, exploring emerging trends and examining a wide range of industry issues.

In his opening remarks, Al Ghais highlighted the importance of the partnership between the Russian

Federation and OPEC at all levels and commended Russia's leadership role in the historic Declaration of Cooperation (DoC), and as a co-chair of both the OPEC and non-OPEC Ministerial Meetings and the Meetings of the Joint Ministerial Monitoring Committee. The Secretary General lauded the OPEC-Russia Energy Dialogue as a dynamic platform that facilitates discussion, knowledge sharing and exchange of views between the two parties.



The OPEC-Russia Dialogue in session.

Novak underscored that “Russia will continue to be a key player in the oil market, maintaining its status as a reliable supplier. OPEC Member Countries and participants in the DoC are in constant contact, monitor the market and are ready to respond to any changes in market conditions in a flexible and prompt fashion. The current mechanism for implementing the DoC OPEC+ agreement is the most effective tool for maximizing the efficiency of oil production and state revenues.”

The discussions that followed centered around developments in the global oil and energy markets, the outcomes of recent negotiations at COP29, held in November 2024 in Baku, Azerbaijan, as well as key issues such as energy security and the risk of underinvestment, as well as the crucial importance of ensuring market stability and driving economic growth on a global scale. The Meeting also examined short-, medium-, and long-term energy market outlooks.


Substantiating the crucial nature of such impartial and candid exchanges, the Secretary General stressed that “...fueling a better understanding of our energy futures, and all of the intertwined issues that filter into this, was central to our recently launched World Oil Outlook 2024... It is important to highlight the fact that ‘futures’ is plural. Energy futures means different things to different countries and peoples. There is no one-size-fits-all solution, there is no singular road ahead, and there are different national circumstances that cannot simply be ignored... our energy future must



Heads of delegation meet in Moscow.

not be shaped by ideologically driven agendas and forecasts.”

The Meeting also highlighted the significance of cooperation at the technical and research level and noted the positive outcome of the Fifth Technical Meeting of the OPEC-Russia Energy Dialogue held one week prior via videoconference.

It was agreed that the next High-level Meeting of the OPEC-Russia Energy Dialogue will take place in 2025 in Vienna, Austria. 

Technical Meeting of Charter of Cooperation discusses the downstream sector

The 16th Technical Meeting of OPEC and Non-OPEC Countries Participating in the Charter of Cooperation (CoC) took place on 13 November in Vienna. Participating Countries were well represented both in-person and online, and presentations were delivered by a diverse range of leading international experts. The OPEC Bulletin files this report.

Technical expertise

The CoC has a high-level commitment to facilitate dialogue among Participating Countries, aimed at promoting oil market stability, cooperation in technology and other areas, for the benefit of oil producers, consumers, investors and the global economy. It is a means of enabling the long-term use of oil as a key component in the evolving global energy mix, as well as improving the environmental and efficiency credentials of oil.

The Charter was signed at the 6th OPEC and non-OPEC Ministerial Meeting, on 2 July 2019, by OPEC Member Countries and ten non-OPEC oil-producing countries. One of its provisions states that technical experts from participating countries will meet at least twice a year to fulfil the objectives of the Charter.

These meetings have evolved into one of the ‘jewels in the crown’ of the Charter, with stimulating discussions undertaken in an atmosphere of openness. The 16th edition of the technical meeting was no different.

The focus of the meeting was recent developments in the downstream industry, including petrochemicals. The meeting discussed the current status of China’s and India’s refinery sectors and the implications of newly started refineries, including in Kuwait, Nigeria and Mexico. It also discussed current challenges and short-term outlooks for the global downstream industry, including petrochemicals, and explored the increasing

trend towards the integration of petrochemical complexes within the global refining system.

The meeting additionally focused on the latest biofuel developments in transportation fuels – both in terms of biodiesel and ethanol blending in road transportation, as well as with regard to sustainable aviation fuel.

Downstream sector in the WOO

In scene-setting remarks, OPEC Secretary General, Haitham Al Ghais, outlined some key conclusions in the World Oil Outlook (WOO) 2024 related to the downstream sector.

He noted that the WOO states that global oil demand is forecast to grow to 120.1 million barrels per day (mb/d) by 2050 and within this, the petrochemical sector is critical, seeing growth of 4.9 mb/d. Global required refining additions to 2050 are projected at 19.2 mb/d, including creep capacity expansions.

Significantly, almost 90% of new refining capacity is set to be located in the Asia Pacific, Africa and the Middle East, continuing a trend that sees refining capacity migrating from developed to developing countries.

Al Ghais stated, “This growth will necessitate significant investments in the oil industry. The oil sector



(l-r): Dr Ayed S Al-Qahtani, Director of OPEC's Research Division and OIC, PRID; Haitham Al Ghais, OPEC Secretary General; and Dr Amrita Sen of Energy Aspects.

requires cumulative investments of \$17.4 trillion (\$ tn) by 2050 and, of this, \$1.9 tn will be required in the downstream sector.” He also stressed the often-overlooked fact that petrochemicals will be essential for the extremely ambitious net-zero targets advocated by some energy stakeholders.

Al Ghais said, “From the thermoplastic resins used for the blades of wind turbines, to the ethylene in solar panels, to the insulation materials used for

underground cables connecting electricity grids, the renewables industry is very much closely bound to the petrochemical industry.”

A range of fascinating presentations followed, along with stimulating discussions. Two further technical meetings of countries participating in the CoC will take place in 2025. The CoC continues to succeed in delivering on its promise to be a platform for dialogue and technical exchange.

Participants at the Technical Meeting.



Tenth session of the Technical Meeting on Asian Energy and Oil Outlook focuses on country developments

The 10th Technical Meeting on Asian Energy and Oil Outlook, held in hybrid fashion on 11 November, brought an insightful exchange of ideas, including country platforms on how to manage the energy transitions and their upcoming oil requirements. The OPEC Bulletin's Maureen MacNeill reports.

With Asian oil and gas demand predicted to substantially expand over the long term, the technical meeting becomes ever more important. Already the continent accounts for more than half of global fossil fuel consumption.

OPEC Secretary General Haitham Al Ghais was very enthusiastic about the deepening bonds between the Organization and Asia, as a key energy stakeholder, over time.

The region is undergoing economic growth, population expansion and an urbanization drive, he stated, and there are many in the region who continue to go without access to energy.

"Figures from our OPEC World Oil Outlook (WOO) 2024 show that India and China alone will account for more than 38 per cent of global GDP in 2050. In addition, India's GDP growth rate is set to average 5.9 per cent annually between 2023 and 2050, the fastest among all regions."

The WOO sees expansion in all Asian regions in oil and natural gas demand.

"From the perspective of oil, India is on a strong growth trajectory. The country's demand is foreseen to more than double between 2023 and 2050, moving from 5.3 million barrels per day (mb/d) to over 13.3 mb/d. And although China's oil demand growth is expected to somewhat moderate, it is still set to increase from 16.4

mb/d in 2023 to 18.9 mb/d by 2050, or over 15 per cent of global oil demand by then," said the Secretary General.

"In Other Asia (countries outside of India and China), oil demand is expected to rise from 9.3 mb/d in 2023 to 14.5 mb/d in 2050. This makes it the second-largest global contributor to incremental demand, after India, over the period to 2050."

Asia, and in fact the entire world, requires security of supply, continued Al Ghais, and this depends on adequate and timely investments. This calls for industry policymakers and stakeholders to work together to ensure a long-term, investment-friendly climate.

The Secretary General added: "We have all been hearing some ill-advised calls to stop investing in new oil and gas projects. We believe this is irresponsible and could lead to future supply shocks and heightened volatility."

Asia and the world will need more oil and gas, not less, and the responsibility to continually reduce emissions is also recognized.

"The challenge is how to balance sustainable, equitable development with energy affordability and energy security, while addressing climate concerns. These intertwined issues have led to a great deal of debate among key stakeholders, and at times unfortunately also polarization."



(l-r): Dr Ayed S Al-Qahtani, Director of OPEC's Research Division and OiC, PRID; Haitham Al Ghais, OPEC Secretary General; and Dr Ken Koyama, Senior Managing Director, Chief Economist, IEEJ.

He alluded to Sustainable Development Goal 7, which continues to be an elusive goal, with 685 million people having no access to electricity and 2.1 billion lacking clean cooking fuels. South Asia is one of the areas hardest hit, he added.

“Altogether, this is hampering economic growth and social development, and limiting access to education and employment.”

First session

The first session, entitled ‘Oil and energy market developments: drivers, challenges and long-term global outlooks (Asian perspectives, key drivers and strategies)’, was moderated by Dr Ayed S Al-Qahtani, Director of OPEC’s Research Division and Officer in Charge, PR & Information Department (OiC PRID).

An OPEC analyst talked about the Organization’s WOO, stating the most recent edition was more realistic about environmental goals and considers pushback on energy goals. It also considers that recent policy shifts increase the range of uncertainty and that inequality between the Global North and Global South creates both challenges and opportunities.

There are no signs of oil demand peaking soon, he stated, adding that one-sided narratives are not helpful. Realistic trajectories need to be combined

with a balanced approach and cooperation is critical.

A discussion ensued about how skyrocketing artificial intelligence and data center requirements could strain already vulnerable energy systems.

A spokesperson from the Institute of Energy Economics of Japan (IEEJ) stated that since he started visiting OPEC in 1987, the energy future has become full of uncertainty. “The energy price/market is under uncertainty and volatility, there are global challenges around carbon neutrality, a deepening global divide and geopolitical tensions, along with the expectation of advanced and innovative technologies.

The institute practiced a bottom-up approach in its 2025 outlook, highlighting liquefied natural gas in the energy transition and risk scenarios for energy security, he said.

“
The challenge is how to balance sustainable, equitable development with energy affordability and energy security, while addressing climate concerns.”

— Haitham Al Ghais, OPEC Secretary General

It sees China playing a different role than it has for the past few decades, becoming less central to energy growth. He added that no matter the various scenarios, security of fossil fuel supply remains necessary during the energy transitions.

“Adequate investment in fossil fuels is necessary to protect economies and the life of civil societies.”

He added that CO₂ reduction will be led by energy efficiency, renewables and carbon capture, utilization and storage (CCUS). He stated that a big improvement in energy efficiency will be important in the developing world. CCUS has major potential according to Japanese and IEEJ experts.

He saw the biggest energy security threats as underinvestment in fossil fuels, more serious and complex geopolitical risks, the IT revolution and electricity supply, critical minerals and clean energy investment risks and cyberattacks.

“Without enough fossil fuel investment, there will be serious problems in the energy transitions,” said the expert. “This has implications for poorer economies and is an important political issue...rising energy prices will hit them much harder.”

Session II

The second session was called ‘CCS, CCUS and other negative emissions technologies’.

The role of fossil fuels is being revisited, so how to decarbonize the system with these technologies is becoming more important, said the moderator.

Various Asian countries brought forth their policies and attempts to introduce new technologies to curb greenhouse gases. While Direct Air Capture is still a nascent technology, there are robust programmes for CCS and CCUS in many of the Asian countries that spoke on the subject.

Some countries have problems with not enough storage capacity because of the scale required and

geological features of domestic storage sites for large-scale CCS projects, thus cross-border projects are important. Some have also faced a crisis of public acceptance, said one speaker.

Many of them depend heavily on CCS to meet the goals of their nationally determined contributions under the Paris Agreement.

CCS projects in the countries that spoke have seen massive gains in very recent years, with many large-scale projects in development and many opening or about to open. These projects span across many hard-to-abate sectors, including cement, steel, chemicals and refining, among others.

China wants to become a CCUS powerhouse, after achieving great success in photovoltaic solar, wind power electric-vehicle-related industries. “We have come to the tentative conclusion that net-zero before 2060 (in China) is possible with all of this, with decarbonization technology and CCUS,” said an expert.

The most important challenge facing CCUS is its cost in the full value chain, according to all the speakers. “If the cost is higher than the carbon price, it won’t be used,” said one speaker, adding this makes the role of government more important, in terms of strengthening important initiatives.

“A fully functioning carbon market will make it economically feasible,” stated Al-Qahtani. “Policy drives investment and consumer demand.”

A spokesperson from the Global CCS Institute stated that in its recently released CCS flagship report, CCS is seen to be growing rapidly across the globe, with diverse geographic and industrial sector coverage. Carbon dioxide removal has a growing, but small base, he said.

“Global CCS commercial-scale projects have seen massive growth in the last five to six years,” he said. “There’s been 57 per cent year-on-year growth of capacity in construction over 2023–2024, so double the projects in a few years.”



“
Policy drives investment
and consumer demand.”

— Dr Ayed S Al-Qahtani, Director of OPEC’s
Research Division and OiC, PRID, on CCUS.



The Technical Meeting in session.

The number of projects past Final Investment Decisions show a promising future for CCS, he added. There are 60 projects in operation or under construction in the Middle East and Asia Pacific regions. Waste-to-energy CCS is also emerging, he said, with carbon dioxide removal applications in Europe and North America.

The speaker confirmed that policy support plays an essential role in CCS. It requires a substantial capital investment, and this only occurs if there is a suitable business case, he said.

“It only works if there are incentives to encourage investment and legislation and regulations to regulate CCUS activities.”

A CCUS plant.



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In Memoriam: Dr Omar S Abdul-Hamid

It was with great sorrow that the OPEC Secretariat learned of the passing of the former Director of OPEC's Research Division, Dr Omar S Abdul-Hamid on 25 November 2024. OPEC extends its deepest condolences to his family, friends and colleagues, and we mourn the sad passing of a dear brother to the Organization.

Dr Abdul Hamid was a much-respected colleague at the OPEC Secretariat, with a collaborative spirit, great integrity and an unwavering commitment to the Organization and its objectives.

Dr Abdul-Hamid was Director of OPEC's Research Division from 29 May 2013 until he left the Organization on 10 July 2016. He was responsible for leading the formulation and overseeing the execution of OPEC's

strategic and annual research programmes, aimed at addressing the shifting dynamics and emerging challenges in global oil and energy markets, especially those likely to impact OPEC and the interests of its Member Countries.

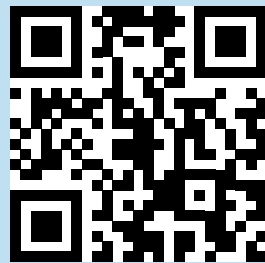
Before taking up his appointment at the Secretariat in Vienna, Dr Abdul-Hamid was Manager of the Consulting Services Department at Saudi Aramco, the national oil company of Saudi Arabia. Earlier in his career, he held various managerial and technical positions with the Saudi Aramco Research and Development Centre, the King Abdullah University of Science and Technology (KAUST) and in various operating facilities. 



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Strengthening Ties and Expertise: Lawyers from Saudi Arabia Complete Secondment at OPEC Secretariat Legal Office

In a significant step toward enhancing collaboration and professional development, the OPEC Secretariat Legal Office recently hosted four young lawyers from the Ministry of Energy of the Kingdom of Saudi Arabia (KSA). The month-long secondment programme underscored the OPEC Academy’s commitment to capacity-building and knowledge sharing with its Member Countries.



Haitham Al Ghais, OPEC Secretary General (third l), and Leonardo Sempértegui (far r), General Legal Counsel, welcomed the four visitors from the Ministry of Energy of the Kingdom of Saudi Arabia.

The OPEC Secretariat’s secondment programme is a capacity-enhancement initiative hosted by the OPEC Academy and aimed at providing participants with professional and career development prospects. It is open to all nationalities. It presents secondees with an opportunity to engage in the activities of different departments, broadening their scope of work and expanding their career options.

A dynamic month of engagement in the Legal Office

The secondees were actively involved in a work programme designed by the OPEC Secretariat’s Legal Office, which offered insights into the distinct nature of legal work at an international organization and a chance to participate in resolving existing legal challenges faced by OPEC. Over four weeks, participants gained comprehensive exposure to OPEC’s regulatory framework, ongoing projects and policy objectives, contributing to key initiatives while broadening their understanding of global energy dynamics.

The participants began their secondment with an introduction to the OPEC Secretariat, led by the General Legal Counsel and members of the Legal Office. In the first week, they learned about OPEC’s founding documents, the OPEC Statute and the Headquarters Agreement between OPEC and its host country, the Republic of Austria, along with other regulations governing various matters. With this background knowledge, the secondees contributed to topics and cases highlighted in OPEC’s Monthly Legal Newsletter and participated in the preparation of the 6th OPEC-OPEC Fund Annual Legal Workshop Report.

Building on their foundational understanding, participants became familiar with the Organization’s contracting system and engaged in contract review exercises during the second week. They conducted legal analysis on pressing topics in the energy sector.


The focus of the third week was on OPEC's Personal Data Protection Policy, one of the products of the OPEC Secretariat's objective in upholding the rule of law. Participants later shifted to assessing organizational risks, proposing mitigation strategies that demonstrated their aptitude in legal risk due diligence.

In the concluding week, the participants analyzed a pressing legal energy topic, culminating with a presentation and discussion with all members of the OPEC Legal Office. This deliverable not only highlighted their analytical capabilities, but their presentation skills as well.

The participants visited the OPEC Fund for International Development, where they learned about its Legal Department's mandate and stream of work.

Looking ahead

The success of this initiative paves the way for future secondments at the Legal Office under OPEC's capacity-building framework. By equipping professionals with the knowledge and skills to address emerging challenges in the energy sector, OPEC reaffirms its role as a hub for excellence and innovation.

As the secondees return to their roles in the Kingdom of Saudi Arabia's Ministry of Energy, they carry with them not only enhanced expertise but also strengthened professional relationships that will undoubtedly contribute to the shared objectives of OPEC and its Member Countries. 

OPEC concludes kick-off of fellowship programme with IBP

A major collaboration platform was recently created following an agreement signed by OPEC Secretary General Haitham Al Ghais and the Brazilian Institute of Petroleum and Gas (IBP).


During an initial technical exchange, IBP's Manager of Oil and Gas Technical Analysis, Isabella Costa, and IBP's Industrial Policy Specialist, William Clavijo, joined the OPEC Secretariat in Vienna as visiting researchers and shared insights with OPEC's Research Division.

The IBP was recognized at the end of September by Al Ghais during his opening remarks at ROG.e in Brazil, a leading energy event held in Rio de Janeiro. At that time, he commended the vital efforts and contribution of the IBP in the advancement of the global energy industry.

In particular, he thanked and expressed appreciation to President Luiz Inácio Lula da Silva; Minister of Energy and Mines Alexandre Silveira; and Roberto Ardenghy, the President of the IBP, for hosting one of the world's leading exhibitions and conferences devoted to the energy sector.

"Like Brazil, let me say that OPEC Member Countries are investing in renewables, and in oil, to ensure that consumer needs are met", he said in Brazil.

On the sidelines of ROG.e, Al Ghais and Ardenghy met and signed a memorandum of understanding to foster cooperation and dialogue between the two organizations.

Additionally, they discussed market perspectives over the short and long term, the crucial efforts of OPEC and non-OPEC in ensuring sustainable market stability, and Brazil's leading participation in global energy markets. 



William Clavijo (c) with analysts from the Energy Studies Department.



IBP's Manager of Oil and Gas Technical Analysis, Isabella Costa (l), and IBP's Industrial Policy Specialist, William Clavijo (r), with Haitham Al Ghais, OPEC Secretary General.

OPEC honours long-serving employees

OPEC Secretary General Haitham Al Ghais honoured 18 OPEC Secretariat employees during a Long Service Awards Ceremony held on 6 December 2024 at the Ballsaal Theophil, Anantara Palais Hansen Hotel in Vienna.



The Long Service Awards Ceremony was held alongside an end-of-year event to celebrate a successful year for the Secretariat. In looking back over 2024, Al Ghais said that “the year has been an eventful one. It is a year of accomplishment, in which the contributions of all the departments and divisions of the Secretariat have been vital.”

In turning to the Secretariat’s staff, he stated that, “Our staff members are our greatest asset and each and every one of them continues to play an essential role in the success of our organization.” In acknowledging the





Attendees at the event.

outstanding work throughout the year, he added that “I am always impressed that no matter how arduous the task, the long hours or the volume of work, you consistently rise to meet and exceed expectations.”

A core part of the evening was dedicated to honouring those who have achieved career milestones at the Secretariat, this year ranging from ten to 25 years of service.

The colleagues recognized were:

- Faissal Ayoub – 25 years*
- Samir Najjar – 25 years*
- Zaineb Al-Yasiri – 25 years*
- Pantelis Christodoulides – 20 years*
- Suela Shala – 20 years*
- Viveca Hameder – 15 years*
- Joerg Spitzzy – 15 years*
- Hataichanok Leimlehner – 15 years*
- Scott Lairy – 10 years*
- Tara Starnegg – 10 years*
- Mohsien Bakhit – 10 years*
- Carola Bayer – 10 years*
- Olajumoke Aregbor – 10 years*
- Alexander Hofstaetter – 10 years*
- Desiree Zeumer – 10 years*
- Vedran Hrgovic – 10 years*
- Carlos Manuel Mommer – 10 years*
- Eman Bilal – 10 years*



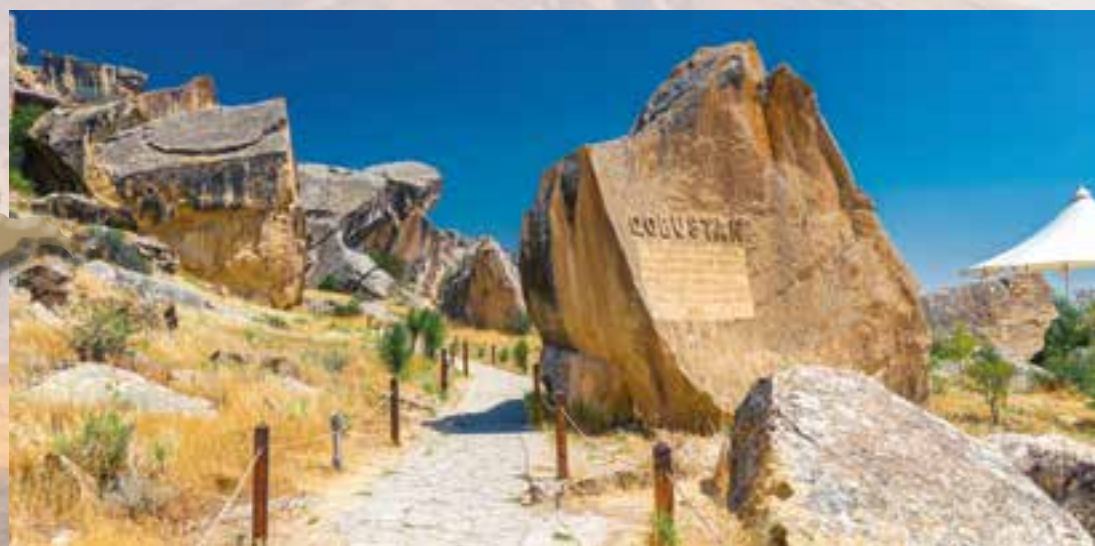
Haitham Al Ghais, OPEC Secretary General.

In looking ahead to 2025, Al Ghais said that the year will be a special one for the Organization, with its 65th Anniversary, the 60th anniversary of the Secretariat moving to Vienna and the 9th OPEC International Seminar.

Throughout the year, he noted, we will have events and activities that will be forward looking, but also commemorate and honour our heritage and history. He concluded in his words to the staff gathering that “when we contemplate that history, that almost 65 years of achievement, we know the indispensable role that you and your predecessors have played in making this Organization what it is.”

Gobustan: 40,000 years of human activity engraved in stone

While many come to Azerbaijan to see the architectural wonders of Baku Old City, the Heydar Aliyev Cultural Centre, or the Flame Towers, others come to behold unique rock carvings spanning over 40,000 years of humanity.



Located a one-hour drive south of Baku, amid the Boyukdash, Kichikdash and Jingirdagh mountains, the Gobustan Rock Art Cultural Landscape is home to more than 6,000 rock carvings or 'petroglyphs'.

The word petroglyph comes from the Greek words *petra*, meaning rock or stone, and *glyphein*, meaning to carve – thus, rock carving. *Petro* comes from the Greek word *petra* and the Latin word *oleum*, meaning oil – thus, rock oil.

While Azerbaijan continues to go from strength to strength as an exporter of hydrocarbons, it is also seeing a surge in the number of foreign tourists visiting. This year alone, from January to August, over 1.4 million

visitors experienced the country's famous hospitality and culture. Home to so many unique experiences, it is little wonder that so many tourists are flocking to the Land of Fire, and to Gobustan in particular.

Listed as one of Azerbaijan's five UNESCO World Heritage sites since 2007, the Gobustan Rock Art Cultural Landscape spans over 530 hectares (5.3 kilometres). It is also home to the award-winning Gobustan National Park Museum, which contains many insightful exhibits that visitors are recommended to see before exploring the petroglyphs.

On the latter, it is hard to disagree with the UNESCO World

Heritage Convention website, which states that: “Gobustan has outstanding universal value for the quality and density of its rock art engravings, for the substantial evidence the collection of rock art images presents for hunting, fauna, flora and lifestyles in pre-historic times and for the cultural continuity between prehistoric and mediaeval times that the site reflects.”

Azerbaijan Travel also provides a good introduction to the petroglyphs, noting that they depict “scenes of people, warriors, animals, boats, dances, hunting, camel caravans and more... they chart ways of life dating back between 5,000 and 20,000 years.”

Bordering the eastern edge of the semi-arid desert of central Azerbaijan, and today offering spectacular views over the Caspian Sea, Gobustan translates as the ‘Land of the Dry Riverbed’. However, the petroglyphs demonstrate

in the ancient Kvalyn Sea (encompassing today’s Caspian Sea) up until the beginning of the last Ice Age at least. Furthermore, skillful carvings dating back to over 10,000 BC depict small reed boats carrying up to six people, and even multi-seat longboats with the symbol of the sun present on their bows.

The rock carvings also provide valuable societal cues. For example, it is only later in the Mesolithic period, known as the Middle Stone Age, in which carvings of men – usually armed with bows and arrows – start to appear in the petroglyphs. In contrast, older petroglyphs, dating back as early as 15,000 BC, depict women in a variety of forms, including with tattoos, during pregnancy, or adorned with belts and necklaces.

In another fascinating glimpse of life in the more recent past, an inscription from the first century AD made

Ancient rock carvings in Gobustan.



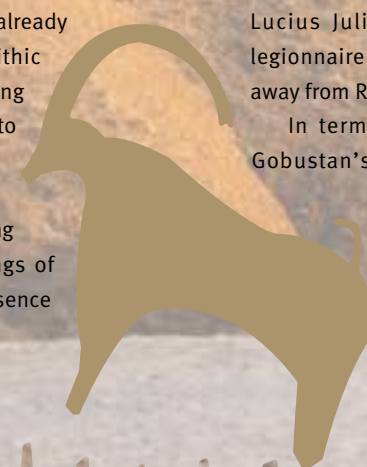
that Gobustan could clearly support many water-intensive animals like cattle thousands of years ago.

Many of the oldest petroglyphs depict aurochs – an extinct ancestor of modern domestic cattle – with rope around their necks, suggesting that they were not only present in the region but already domesticated during the Neolithic period. Petroglyphs of men riding horses provide similar insights into humanity’s early relationships with equines.

Rock carvings related to fishing can also be seen, while carvings of dolphins demonstrate their presence

by a passing Roman centurion from the 12th Lightning Legion – still perfectly legible – is said to be the easternmost Roman inscription ever found. Named Lucius Julius Maximus, the legionnaire was over 3,200 km away from Rome, as the crow flies.

In terms of culture, another of Gobustan’s most famous petroglyphs resembles Azerbaijan’s traditional ‘Yalli’ dance, a group dance where participants gather in a chain or line while holding each other’s hands





The Gaval Dash natural musical stone in Gobustan.

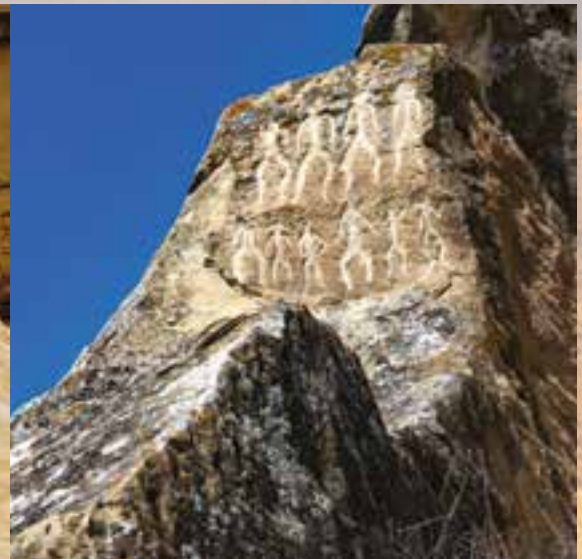
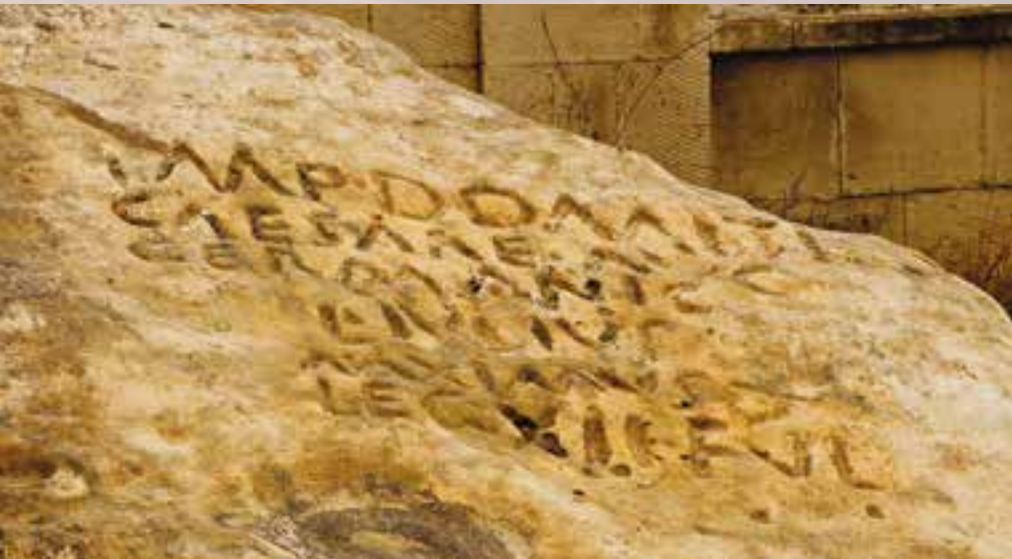
or shoulders. Incredibly, the Yalli is still danced in Azerbaijan to this day, including at weddings.

Gobustan is also home to four musical stones, including the famous ‘Gaval Dash’. This elevated, two-metre-long stone makes a hollow sound that can be heard from afar when struck with smaller rocks. Its

remarkable natural phenomenon known as ‘mud volcanoes’, with Azerbaijan as a whole containing about 400 of the world’s estimated 1,000 mud volcanoes.

The BBC states that: ‘mud volcanoes are similar to normal volcanoes but without lava. They are caused by

An inscription from a Roman soldier in the first century AD.



sound resembles a tambourine, and it is likely that this musical rock was ‘played’ during ancient dances resembling the Yalli.

It is not just the fascinating ancient rock carvings, musical stones and museum that bring visitors to the region, however. Gobustan is also home to a

water being heated deep within the Earth that mixes with rocks and minerals – when they erupt, this mixture is forced to the surface and can catch fire.’

Regarding their scale, Azerbaijan Travel notes that the “diameter of mud volcanoes is typically around ten metres, and their height can reach up to 700 metres (the





Tourists visiting a mud volcano in Gobustan.

world’s largest mud volcanoes – Boyuk Kanizadag and Toraghay – are located in Azerbaijan)”.
 Visitors to Azerbaijan who are interested in learning more about this unique natural phenomenon can visit the Mud Volcanoes Tourism Complex, which is located a mere seven-minute drive away from the Gobustan Rock Art Cultural Landscape.

In Gobustan, the echoes of ancient lives carved in stone stand aptly alongside nature’s ever-changing, bubbling mud volcanoes. This unique intersection of human history and geology make Gobustan a true testament to Azerbaijan’s timeless allure. Indeed, with fascinating attractions like these, it will not be a surprise if visitor numbers to the country continue to grow. 🏠

All pictures courtesy Shutterstock.



A mud volcano in Gobustan up close.



OPEC bulletin 11-12/24

The need for speed

Ferrari's iconic brand is known the world over, celebrated for its elegant designs, its red livery, its Formula One prowess and to put it simply, speed. This is all on display at Ferrari World Abu Dhabi, with its unique Ferrari-branded structure, over 40 thrilling rides, unforgettable driving experiences, and its most recent addition, an esports arena.


Ferrari's roots can be traced back to 1929 when Enzo Ferrari formed the Scuderia Ferrari racing team. Its racing history is littered with many victories and firsts, particularly in Formula One (F1). Since 1952, it has fielded 15 F1 champion drivers, won 16 Constructors' Championships, and accumulated more race victories,

1–2 finishes, podiums, pole positions, fastest laps and points than any other team in F1 history.

On F1 race weekends, its distinctive red livery is a stand-out among the cars.

According to Ferrari, "there is one shade of red in particular that sears out of Ferrari's colour swatch





catalogue: Rosso Corsa, which translates as ‘Racing Red’. The inference is clear: as the historic international colour of Italian racing cars, red represents the very lifeblood of Ferrari.”

The team also has a passionate support base, known as the tifosi. This comes to the fore at the Italian Grand Prix at Monza, which is regarded as the team’s home race.

There is much more though, with the Ferrari’s prancing black horse logo a distinctive symbol on its road cars across the world. The company has produced sports cars since 1947, including such models as the Ferrari 365 GTB/4 Daytona, the Ferrari Dino 246 GT, the Ferrari Testarossa, the Ferrari F40 and the Ferrari 355.

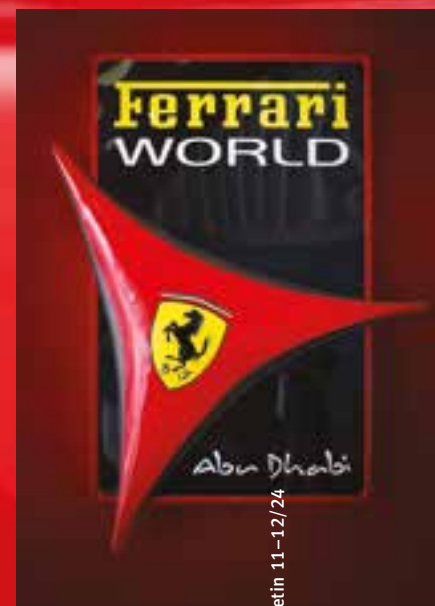
It is a name and logo that transcends cars. It does

not matter whether you like cars or not, it is a brand that everyone’s heard of.

Ferrari in Abu Dhabi

All of this history and all of the need for speed is on display at Ferrari World Abu Dhabi on Yas Island in the United Arab Emirates. The park is dotted with iconic four-wheelers throughout the venue, alongside adrenaline-pumping rides that cater to both adults and children, and a variety of driving experiences.

It is an adventure playground for everyone, with the world’s fastest rollercoaster, the highest loop ride and the tallest space-frame structure ever built on the planet. A destination that delivers history, adrenaline and heart-racing fun.



Ferrari in Abu Dhabi.



Ferrari in Abu Dhabi, aerial view.

Rollercoasters and rides

With over 40 thrilling rides, there is something for everyone, but a number of rollercoasters and rides stand out.

‘Misson Ferrari’ is described by the theme park as “a multisensory 5D rollercoaster experience set within a top-secret international spy headquarters, including high-speed launches, backward inverted loops and the world’s first sideways coaster drop.”

Labeled the “world’s most immersive mega-coaster” the mission is “to safely deliver a top-secret Ferrari spy car to a Ferrari Factory hidden deep in Maranello, Italy.”

Elsewhere, there is ‘Turbo Track’, which is described as taking a “seat as a Ferrari test driver as you and your loved ones experience back-to-back thrills, a vertical climb and an epic zero-gravity fall, all in 30 action-packed seconds.”

The rollercoaster shoots riders through the theme park’s roof and back down in reverse. The climb is 64 metres above the ground, and it is said to propel riders at 102 kilometres

per hour. The ride is designed to seat 12 riders, who sit back-to-back or facing each other, spread across two different ride vehicles.

Then there is ‘Flying Aces’, which the theme park describes as follows. “Board your military bi-plane and scale 63 metres at a spectacular 51-degree incline. Feel your pulse race as you fly through the world’s highest rollercoaster loop at speeds of up to 120 kilometers an hour (km/h).”

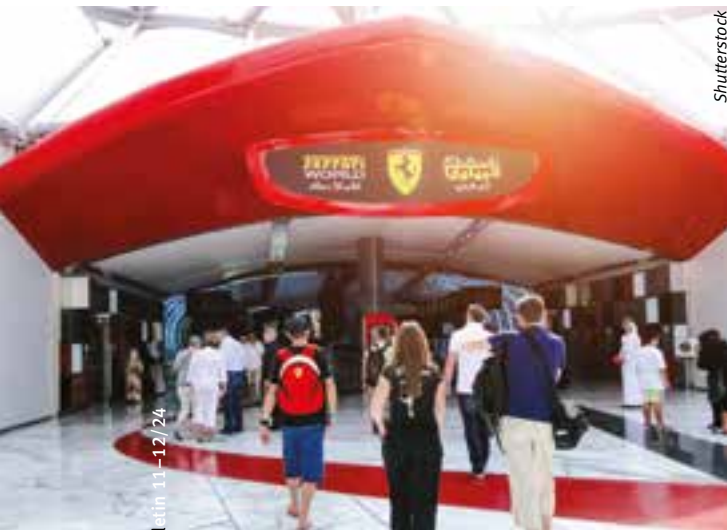
The ride is inspired by the legendary ‘ace of aces’ aviator, Count Baracca, who it is said painted a horse on his biplane for luck and inspired Enzo Ferrari to do the same on his car. This eventually gave rise to Ferrari’s prancing horse logo.

And for those wanting a true Ferrari car experience, there is the opportunity to feel the adrenaline of going around Yas Island behind the wheel of a Ferrari. The theme park says: “Buckle up and drive on with one of our Ferrari-trained instructors. Or choose the Passenger Experience to enjoy a luxury Ferrari Passenger Experience in Abu Dhabi’s Yas Island with one of our Ferrari-trained instructors driving you around.”

For the younger generation

The theme park also has many rides for kids. This includes ‘Formula Rossa Junior’, which is based on the actual track of the great Formula Rossa, where speeds can reach up to 45 km/h, and the ‘Junior Grand Prix’,

Entrance to the Ferrari World Theme Park in Abu Dhabi.



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where the theme park says “kids can hone their racing skills in these perfectly scaled-down Ferrari F1 racing cars”.

Additionally, there is ‘Flying Wings’, which the theme park says “lets you be the captain of your own flight and soar through the park for the ultimate ride filled with excitement! Take on your sail, as you get to control the movement of the glider all on your own.”

And for an F1 race experience there is the ‘Speedway Race’. The theme park says this “gently simulates the forces felt by F1 drivers when they take a corner hard and fast! Seated in a bright red two-seater race car, your kids go around a track. Whenever the car turns a corner, it accelerates and the occupants feel as though they are being pushed in an outward direction, while still being firmly strapped into their seats.”

Esports

Ferrari World also now hosts the world’s first Ferrari esports arena. It is an industry that is thriving, with viewership in the hundreds of millions for top esports events, and Ferrari World says its esports arena “promises to be the ultimate haven for racing enthusiasts, Formula 1 fans and adrenaline junkies alike.”

The arena has 20 simulators, 14 for adults and six for kids, and is open to all those who crave a rush for speed. The simulators include those for Gran Turismo

Racing and F1 and enable participants to challenge friends or other racers. “Whether you’re a first-timer or a seasoned pro, our simulators will put you right in the driver’s seat,” the theme park says.

The Ferrari World Esports Arena, which opened to the public in September 2024, is the latest in a long line of attractions that provides visitors with an unparalleled experience of Ferrari, thrill-inducing rides and racing encounters.

All pictures courtesy Shutterstock.

Ferrari and Warner Bros. Studios Amusement Park.



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OPEC bulletin 11-12/24

From Baikonur to the Stars: Kazakhstan's Key Role in Space Exploration

Kazakhstan, a valued participating country in the Declaration of Cooperation (DoC), is not only famous for oil and gas, or indeed for being the world's ninth-largest country or largest landlocked nation. It is also famous for being one of the cradles of humanity's efforts to punch through the Kármán line — the boundary located 100 kilometres (km) above sea level that separates Earth's atmosphere from outer space. This is richly deserved, given that it is estimated that more than 5,000 missions have been launched since the mid-1950s from the Baikonur Cosmodrome, located over 1,300 km from Astana in south-central Kazakhstan. This prolific spaceport, which translates from the Kazakh language as 'rich valley', sits in the middle of a vast Central Asian desert. The Bulletin shines a spotlight on the Baikonur Cosmodrome as the world's primary spaceport and epicenter of Kazakhstan's past, present and future pioneering roles in space exploration.

Soviet era

In the mid-1950s, Baikonur's location was chosen by the Soviet Union for many reasons. These included its proximity to the equator — which boosts rocket launch efficiency due to the Earth's rotational speed — its low population density, strong radio communication possibilities and existing railway infrastructure.

Construction at the secret site began in what was then the Kazakh Soviet Socialist Republic in 1955. Using the existing railway infrastructure, thousands of labourers built several facilities, including a set of launch pads, and what the BBC has labelled 'the biggest artificial crater on the planet' — a 250-metre-long, 100-metre-wide, 45-metre-deep pit designed to withstand the infernos created by rocket engines.

It would be from this crater that some of humanity's first steps into the great unknown were taken. Sputnik-1, the world's first artificial satellite, was launched from Baikonur on board a modified intercontinental ballistic missile on 4 October 1957. Weighing just over 83 kilograms (kg) during its 1,400 orbits of Earth, it provided invaluable data on atmospheric density, temperature and radio signals in the upper atmosphere before its orbit decayed after 92 days. The Space Age had begun.

Less than a month later, Baikonur was again the launch site for a world first. Sputnik-2, weighing just over 508 kg, became the world's first spacecraft to house a living organism in low orbit upon being launched on 3 November 1957. The 4-metre-long cone-shaped capsule contained the first being to orbit Earth, a tough 6 kg mixed-breed dog found on the streets of Moscow. Named Laika, she was instrumental in demonstrating that living organisms could indeed survive the conditions of spaceflight.

Although it was sadly not possible for Laika to return, Sputnik-5 proved three years later that technology had advanced enough to allow living organisms to return safely to Earth after entering orbit. Following re-entry



Sputnik-1, the first artificial satellite, was launched into an elliptical low Earth orbit from the Soviet Union in 1957 as part of the Soviet space programme. Science Museum, London.

Model of the Sputnik-2 spacecraft with Laika, Cosmos Pavilion, in Moscow, Russian Federation.



Left: The Soyuz MS-25 spacecraft launches to the International Space Station (ISS) from the launch pad of the Baikonur Cosmodrome. Kazakhstan, 23 March 2024.

In a fascinating footnote to the end of Baikonur's Soviet era, the Soviet answer to the US space shuttle programme, Buran (lit. 'Blizzard'), took off on top of an Energia rocket and landed autonomously at Baikonur in 1988. The huge Buran was designed with reusability in mind and represented one of the most ambitious projects in the history of Soviet space flight, weighing around 80,000 kg.

All launches, maintenance and landings of the five planned Buran models were supposed to take place at Baikonur, but Buran ultimately only flew once into orbit, in 1988. The Soviet Union collapsed in 1991, and the programme was cancelled in 1993. The flown Buran prototype was stored in a hangar at Baikonur until a roof collapse on 12 May 2002 destroyed it, tragically killing eight maintenance workers.



Model of the Soviet space shuttle called Buran, on display in Moscow. Buran made one test flight in space on 15 November 1988.



Inside view of a Vostok capsule from the early Soviet space programme, seen in the Science Museum in London.

to Earth's atmosphere after 17 orbits, the many mice, dogs, rats and plants on board were recovered alive and well on 20 August 1960. The stage was set for humanity.

Less than eight months later, Baikonur made history once again by playing host to a young Soviet Lieutenant named Yuri Gagarin and a 4,725 kg spacecraft known as Vostok-1 (lit. 'East'). Despite last-minute delays related to an issue with a seal, Gagarin was described as calm while waiting. Indeed, his pulse was recorded at a mere 64 beats per minute thirty minutes before liftoff!

Shouting "Poyekhali" (lit. 'Let's go'), Cosmonaut Gagarin lifted off from Baikonur's Launch Pad 1 on 12 April 1961. Ten minutes later, he became the first human to begin orbiting Earth. Travelling at 27,400 km per hour, his single orbit lasted 108 minutes. Afterwards, he successfully landed via parachute in the Saratov region of Russia after ejecting 7 km above the Earth's surface. Humanity had passed the Kármán line and returned; the seemingly impossible was now possible.

After Gagarin, Baikonur supported several other human spaceflights as part of the Vostok and Voskhod (lit. 'Sunrise') programmes in the 1960s. These included Valentina Tereshkova's three-day flight in 1963 aboard Vostok-6, making her the first woman in space, and Alexei Leonov's 12-minute spacewalk in 1965 from Voskhod-2, making him the first human to perform an ExtraVehicular Activity (EVA) in space.

The late 1960s also saw Baikonur being used to test large rocket systems like the Proton launcher, which remain in use to this day, and acting as the hub for the Luna programme. Stretching into the 1970s, 24 spacecraft ultimately received Luna designations, many of which went on to break records for humanity. Luna-9, for example, became the first spacecraft to perform a soft landing on the Moon in 1966, while Luna-16 became the first robotic probe to return lunar soil to Earth.

Despite the Cold War, the 1970s and 1980s also witnessed the beginning of a new era in space cooperation and space station development. The aforementioned Cosmonaut Leonov went on to command Soyuz-19 (lit. 'Union'), which launched from Baikonur in 1975 to dock with the American Apollo spacecraft in a joint mission that inspired millions of people across the world.

Building on this cooperation, Baikonur was also the launch site for the core module of the Mir (lit. 'Peace' and/or 'World') space station on 19 February 1986. Mir went on to host 125 cosmonauts and astronauts from 12 countries, including Toktar Aubakirov, the first ethnic Kazakh in space, and Valeri Polyakov, the record holder

for the longest single stay in space — 437 days and 18 hours, achieved in 1994.

Post-Soviet era: A new chapter for Baikonur and Kazakhstan

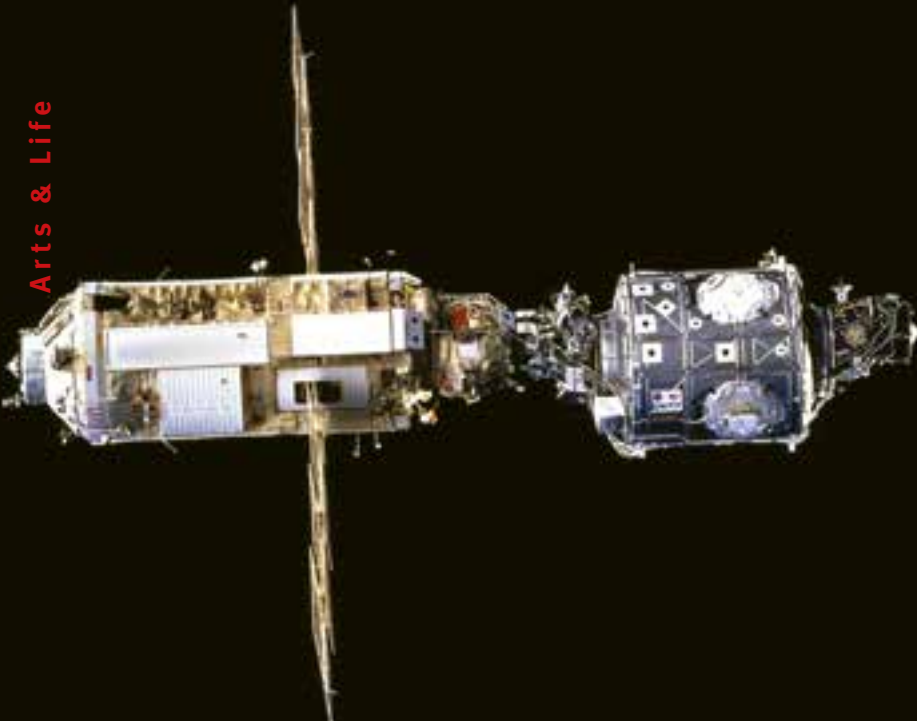
Following the collapse of the Soviet Union in 1991, Baikonur faced a difficult transitional period that saw the number of launches rapidly decline. However, despite economic difficulties in the local city and at the Cosmodrome itself, Baikonur continued to achieve success.



Model of the space ship Vostok-1 in Moscow.



Luna-9 became the first spacecraft to perform a soft landing on the Moon in 1966. This model is on display in Moscow.



The Zarya (lit. 'Dawn') Module was launched on a Proton-K launch vehicle from Baikonur on 20 November 1998, for example. This date is often celebrated as the birthday of the International Space Station (ISS), as the 19,323 kg Zarya Module was the first component of the ISS to be placed into orbit. On 12 July 2000, the 20,320 kg Zvezda (lit. 'Star') Service Module was also launched from Baikonur on a Proton-K. Today, Zvezda continues to provide living quarters for ISS crewmembers, who began to arrive in October 2000.

In the almost 25 years since, over 280 astronauts representing 23 countries and five international partners have visited the ISS, including from Saudi

Arabia and the United Arab Emirates. Many of these visits to the ISS would not have been possible without Soyuz rockets launched from Baikonur, especially as the US space shuttle was retired in 2011.

Aside from supporting crewed missions to the ISS over the last 25 years, Baikonur has also hosted numerous commercial launches for international clients, including satellites for telecommunication, navigation and a myriad of other purposes.

The post-Soviet era also saw an agreement signed in 1994 between the newly independent Republic of Kazakhstan and Russia that enabled Russia to lease Baikonur for approximately \$115 million per year for a period of 20 years. This agreement, and many others between both countries, has since been updated and extended a number of times, with Russia's lease of the Baikonur space launch facility now running until 2050.

Kazakhstan's Growing Role in Space Exploration

Since the early 2000s, Kazakhstan has also sought to develop its own independent capabilities as a spacefaring nation, building on its Soviet-era infrastructure, like the Baikonur Cosmodrome. To further develop its aspirations, Kazakhstan formed a cosmonaut corps on 7 January 2000 and established the National Space Agency of the Republic of Kazakhstan, or Kazcosmos, in 2007.

Kazcosmos was crucial in launching the country's KazSat series of satellites, which significantly improved Kazakhstan's telecommunications infrastructure. While KazSat-1 (launched in 2006) faced technical issues, KazSat-2 (2011) and KazSat-3 (2014) were successful in providing satellite communication services across Kazakhstan.

The country's expanding capabilities have also enabled Kazakhstan to broaden its focus to Earth observation. The launch of KazEOSat-1 and KazEOSat-2 in 2014, for example, enhanced its ability to monitor land use, agriculture and environmental changes through high-resolution optical imagers.



International collaboration has been key to Kazakhstan's space growth and will continue to be, moving forward. Russia remains a key partner, particularly as part of the Baiterek (lit. 'Poplar tree') project, which aims to modernize Baikonur's infrastructure for the Soyuz-5 rocket. In addition, Kazakhstan has formed partnerships with other countries to foster cooperation and exchange expertise.

In summer 2024, for example, on the sidelines of the Shanghai Cooperation Organization summit, Kazakhstan signed an agreement to become the 12th member of the International Lunar Research Station (ILRS). The ILRS envisions the construction of a permanent base on the moon in the 2030s. In addition, in September 2024, at the Asia-Pacific Conference on Digital Transformation in Astana, Kazakhstan discussed launching a group of satellites into space together with Uzbekistan.

These are just some of the many examples of how Kazakhstan is actively shaping its future in space. Just as the Baikonur Cosmodrome was pivotal in many of humanity's early ventures into space, Kazakhstan is well placed to remain a key player in space exploration long into the 21st century and beyond. Indeed, all evidence points to the fact that Kazakhstan's journey from Baikonur to the stars is far from over.

All pictures are courtesy of Shutterstock.

Soyuz in flight, a launch vehicle from the Baikonur Cosmodrome.



Space communication station at the Baikonur cosmodrome.

To understand the scale of the Baikonur Cosmodrome at the beginning of the 1990s, official data released at the time — and now available on russianspaceweb.com — noted that Baikonur had 11 assembly buildings and nine launch complexes, along with 15 launch pads for space boosters. It also had an oxygen and nitrogen plant, a power station, three fuelling facilities, 600 energy converting stations, 92 communication sites, two airports, 470 km of railways, 1,281 km of roads and 6,610 km of communication lines. The facility was said to consume 600 million kilowatt/hour of electric power annually, with the entire operation covering 6,717 square kilometres (km²).



When in Cape Town...

*Cape Town again entered the spotlight during the first week of November as energy leaders from around the world converged on the South African city to attend the 2024 edition of Africa Energy Week. In this feature article, the Bulletin's **Scott Laury** takes you outside the official venues to discover some of the South Africa's most famous cultural and natural wonders.*

In many ways, you could say that Cape Town has it all. In addition to being South Africa's second-largest city, after Johannesburg, Cape Town is the country's oldest city, steeped in history and tradition. It is also South Africa's legislative capital and the seat of its Parliament. On top of this, it is renowned for its spectacular coastal location and magnificent natural landscapes.

In 2014, Cape Town was named the best place in the world to visit by The New York Times, and the UK's Daily Telegraph newspaper similarly ranked the city as the number one destination in 2016 and 2023.

A bit of history

Cape Town was first established as a supply station by the Dutch East India Company for Dutch ships sailing to East Africa, India and the Far East.

Dutch merchant and explorer Jan van Riebeeck founded the trading colony after his arrival on 6 April 1652. It was the first permanent European settlement in South Africa. The city later expanded to become the economic and cultural hub of the Cape Colony. It remained the largest city in southern Africa until the Witwatersrand Gold Rush and the subsequent development of Johannesburg.

Cape Town's history has been marked by several rounds of colonization, first by the Dutch who were in charge for roughly the first century and a half, and then by the British who took over in 1795. The colony returned to Dutch control in 1803, and three years later, was back in Britain's hands, where it remained for approximately the next century.

In the early 20th century, South Africa was granted independence, but it was not until 90 years later that the first democratic elections occurred.

Aerial view of Cape Town and Table Mountain.



Natural wonders

In addition to the city's rich history, cosmopolitan flair and many cultural sites, the vast natural beauty surrounding Cape Town is a big draw for visitors.

Some of the most popular destinations in the so-called Cape Floristic region include Table Mountain, Cape Point, Kirstenbosch National Botanical Garden and the many protected natural areas, including the Stony Point Eco Venue, as well as the De Hoop, Walker Bay, Kogelberg and Swartberg nature reserves.

The city and surrounding region are also renowned for their pristine beaches along the Atlantic Ocean and on False Bay, which are very popular during the summer months.

Table Mountain

Table Mountain is located within the city boundaries and features a plateau with magnificent views of the city and surrounding coastline.

It is one of Cape Town's top tourist attractions and can be reached by taking a cable car or hiking to the top. Located at roughly 1,000 metres above sea level, the plateau stretches roughly three kilometres from side to side, from Devil's Peak on the east to Lion's Head on the west and features dramatic cliffs overlooking the city and the ocean below.

The highest point, at 1,086 metres of altitude, is marked by Maclear's Beacon, a stone cairn built in 1865 by Sir Thomas Maclear. More adventurous visitors can hike up the Platteklouf Gorge, which is the most popular trekking route to the top and takes between two to three hours depending on your level of fitness.

Another great way to discover Table Mountain is to hike part or all of the Hoerikwaggo Trail, which opened in 2006. The roughly 75 kilometre (km)-long trail follows the spine of the mountains that run the length of the peninsula. There are four camps along the way where hikers can spend the night.

Hiking the entire distance typically takes five days/ four nights, and the route goes from Cape Point, in the Cape of Good Hope Nature Reserve, to the western side of Table Mountain on the outskirts of the city.

Table Mountain is located within a national park that spans a vast geographic area covering 220 square km and features stunning beaches, a variety of hiking



Cape of Good Hope.

trails and several famous landmarks, including the beloved Cape of Good Hope, as well as the Boulders and Silvermine sites.

The park also offers a highly diverse range of flora and fauna, with an estimated 8,200 plant species, of which around 80 per cent are called fynbos, or fine bush.

Cape of Good Hope

The Cape of Good Hope is part of a natural reserve covering an area of 77.5 square kilometres.

With breathtaking scenery, this is a perfect destination for nature lovers. There are ample hikes, walks and plenty of sandy beaches.

Birdwatching is also very popular here, with an estimated 250 species of birds located in the reserve, including cormorants and ostriches.

The highlight for many is Cape Point, with its dramatic promontory and stunning ocean vistas.

Hikers who really want to discover the Cape can tackle the two-day roundtrip Cape of Good Hope Trail, which spans 33.8 km with one night spent in a basic hut along the course.

Chapman's Peak Drive

Reminiscent of California's scenic coastal Highway 1, many tourists drive along this narrow, scenic road that links Noordhoek with Hout Bay, for the stunning views of the Atlantic Ocean and nearby mountains.

It is also possible to either drive or hike up Signal Hill for closer views of the City Bowl and Table Mountain.

Beaches

You can't leave Cape Town without visiting at least one of its many beautiful beaches, which straddle False Bay and the Atlantic Ocean.

The Atlantic coast, known as the Cape Town Riviera, stretches along the slopes of the Twelve Apostles to Llandudno and is dotted with boulders and white sand beaches.

Hout Bay, at the upper end of the peninsula, is a popular destination with a harbour for boating and fishing. The area is also known for its colony of African fur seals.

Kirstenbosch National Botanical Garden

The 36-hectare Kirstenbosch National Botanical Garden features over 7,000 of Southern Africa's estimated 22,000 plant species, including the native fynbos. There are also swaths of protected natural forest and a variety of animals and birds.

Some of the fragrant plants are in elevated displays so visitors can more easily sample the scents. Other unique aspects include a Braille trail; a kopje (or hill) covered in pelargoniums, a sculpture garden, a section with medicinal plants, two hiking trails up to Table Mountain and the remains of Van Riebeeck's wild almond hedge, which was planted by Jan van Riebeeck in 1660 as a boundary line for the Dutch outpost.

Another favourite activity among visitors is the popular Tree Canopy Walkway, which was launched in 2013 to celebrate the garden's centenary. The path features a high timber bridge that is elevated in the tree canopy providing impressive views of the garden's property.

In summer, concerts are held outdoors at sunset and have become a popular event for locals and visitors alike. Finally, the gardens offer three cafes, including the popular Kirstenbosch Tea Room.

Kirstenbosch National Botanical Garden with a view of Table Mountain.



Whale watching

Whale watching is another popular activity on the coastal areas around Cape Town.

Southern right whales and humpback whales can be spotted off the coast during the breeding season from August to November, while Bryde's whales and orcas can be seen any time of the year.

The town of Hermanus hosts an annual Whale Festival, but whales can also be seen around the False Bay region.

Dolphins are also native to the area and can be seen along the coast north of Cape Town. This includes dusky dolphins, which can at times be viewed from the ferry to Robben Island.

Victoria and Alfred Waterfront

The Victoria and Alfred (V&A) Waterfront, constructed within Cape Town's port area, has become one of the city's most visited tourist attractions and a hub for shopping.

Other main attractions in the district include the popular Two Oceans Aquarium, the Nelson Mandela Gateway, from which ferries depart for Robben Island, as well as boat trips to Hout Bay, Simon's Town and the Cape.

Two Oceans Aquarium

This is considered one of the finest aquariums in the world and uniquely features marine life from both the warmer Indian Ocean and the icy Atlantic.

Through interactive exhibits, visitors are able to touch marine life, including penguins, and even dive into a large ocean exhibit with turtles, stingrays and shoals of fish swimming around them.

There are also tanks displaying different types of sharks, a large jellyfish display, as well as endangered Knysna seahorses and spider crabs.

Robben Island

Robben Island, or 'island of the seals' in Dutch, was made famous by activist, lawyer and freedom fighter Nelson Mandela, who was jailed there for 18 years during the Apartheid era.

In addition to being a prison, Robben Island was also a leper colony, a mental institution and a military base at various times throughout history. In 1997, the

site was inscribed as a UNESCO World Heritage site.

The oval-shaped island is 3.3 km long north to south and 1.9 km wide, with a total area of five square kilometres.

Boat tours to the site last approximately four hours and start at the Nelson Mandela Gateway at the V&A Waterfront.

The museum chronicles the island's dark history through photographs of the prison and snapshots of prison life, in addition to exhibits on Mandela and other political prisoners who were incarcerated there.

Visitors can tour the prison facilities and see where Mandela and other leaders were imprisoned.

Zeitz Museum of Contemporary Art Africa

The museum opened in September of 2017 and is South Africa's first major museum dedicated to contemporary art from Africa and its diaspora.

The museum features a one-of-a-kind design by architect Thomas Heatherwick and is housed in a renovated grain silo, making it one of the most unique architectural buildings in the waterfront district.

Adderley Street

Located in Cape Town's central district, Adderley Street is the city's main thoroughfare and commercial hub for office buildings, franchise stores, and hosts one of the city's oldest markets at Trafalgar Place.

Visitors will find sidewalk vendors selling a wide variety of goods, as well as fresh fruit and vegetables. This is Cape Town's version of central London, where you will feel the hustle and bustle of everyday life.

Church Street Galleries and Arcade

The city's art and antiques businesses are located at the Church Street pedestrian mall, where visitors will find art galleries, antique dealers, cafés, restaurants and boutiques. There is also a daily flea market, where antiques are sold.



Two Oceans Aquarium in Cape Town.



Rooftop sculpture garden of the Zeitz Museum of Contemporary Art Africa.

Sports and recreation

For those that love the outdoors and sport, Cape Town offers helicopter rides, paragliding, skydiving, snorkeling, scuba diving, game-fishing, hiking, mountain biking and rock climbing.

Surfing is also a very popular sport, and the city hosts the Red Bull Big Wave Africa surfing competition every year.

All pictures are courtesy of Shutterstock.



The pursuit of efficiency: the ‘dieselization’ of the railways

It remains a spectacle that still captures the imagination: a bucolic English setting. Sheep gently graze in the fields. The morning lark sings its beautiful birdsong. All seems right with the world. In the distance, a faint whistle can be heard. It is joined by the familiar rattling and clackety-clack which grows ever louder. White or black smoke broaches the trees. The thrilling sight of a steam locomotive pulling a train comes into view as it thunders down the line. Although the age of steam has long since passed, the child inside all of us cannot help but watch such a sight with awe and wonder.



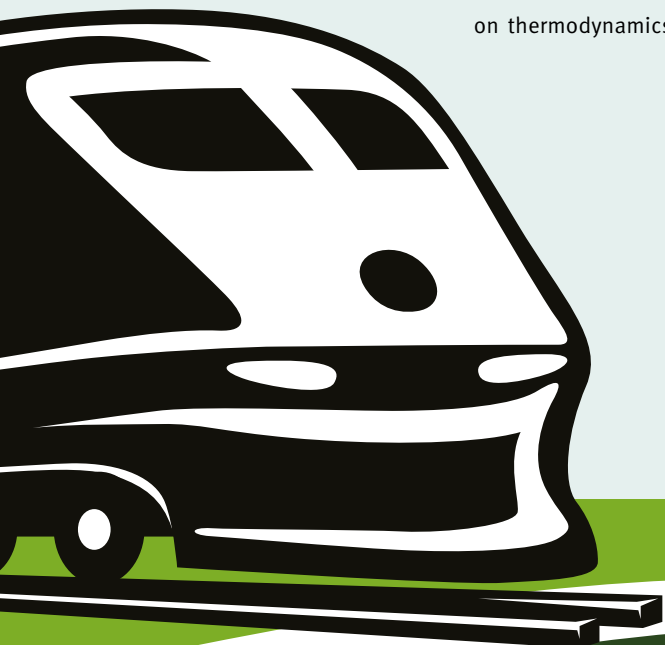
In the present day, steam locomotives can mostly be seen in museums or preservation centres. Their successor, the diesel engine, still retains quite a hold on rail transportation, although many countries have ambitious targets for the electrification of their rail networks. The process by which rail turned from steam to diesel is a story of innovation and technological progress, with much to reveal about the future direction of travel for the industry. The OPEC Bulletin looks back in this article.

‘Leave steam in the dark’

The year is 1872. Steam is the dominant energy source for trains and factories. Horses reign supreme for urban transport. A city of half a million people would depend on approximately 100,000 horses. However, this would raise public health issues, given the need to remove manure and could leave city life exposed to the vagaries of diseases like the equine flu.

Debates about an alternative to the horse coalesced around two modes of urban transport: the steam engine and the internal combustion engine, which was in a very nascent stage of development. The issue was that they were, at that time, woefully inefficient, with only ten per cent of their heat being converted into useful work.

Improving energy efficiency was a challenge that a young student at the Royal Bavarian Polytechnic of Munich was fascinated with ever since he took a lecture on thermodynamics.



‘Fliegender Hamburger’, DRG 778, 1933.

His name was Rudolf Diesel and his great passion was research into thermal efficiency, particularly fuel efficiency. In his letters describing his work, he wrote of his commitment to “fighting the steam engine.” His goal was to “create an engine which will leave the steam engine [in] the dark.”

While never achieving a 100 per cent engine, Diesel did succeed in creating an engine with 25 per cent efficiency. In 1892, he invented and patented this eponymous engine. It was over twice as efficient as rival sources of energy. Rather than using a spark plug, it used air heated by high compression to ignite the fuel. Two types of diesel engine for railways are currently in use: one that provides power directly and the other, known as the diesel-electric, uses a diesel engine powered by a generator, which in turn provides electricity for propulsion.



Rudolf Diesel depicted on a commemorative postage stamp.

Diesel’s invention and the railways

Although steam was in the ascendancy in the late 19th century for rail transportation, steam engines had a few detractors — rolling stock required extensive maintenance, locomotives could be temperamental, and, as Diesel recognized, they were inefficient. It was



media Commons

Maryland and Pennsylvania locomotive No. 81 (1946), an EMD NW2 at the Railroad Museum of Pennsylvania. One of the the first diesel electrics to see widespread use.

almost inevitable that Diesel's engine would be applied to rail transport.

Numerous technical obstacles prevented experimentation with diesel engines from making much progress until after World War One. Although wide experimentation occurred on US and Canadian railways in the 1920s, it was in Germany that major progress was achieved. Eventually, the two-car unit called the 'Fliegende Hamburger' was launched, which represented the cutting-edge of technology, speed and efficiency. For the 286-kilometre distance from Berlin to Hamburg, the 'Fliegende Hamburger' required 2 hours and 20 minutes, at an average speed of 122 kilometres per hour (km/h). The streamlined design of the train was modelled on the Zeppelin airship.

It was in the US, however, that the diesel train evolved at a different speed, perhaps because of intense competition from the automobile. In marking the clearest break with the past, the new diesel trains were very different to steam-hauled services. They were almost exclusively used for passenger trains and were built in a sleek style from light stainless steel and alloys. They connected major cities, with limited between-stops to improve journey times.

One of the most significant technological breakthroughs for the diesel engine was using alloys rather than steel, which greatly improved the power-to-weight ratio. This was developed by General Motors, the automobile company. This invention was showcased

at the Chicago Fair of 1932, and inspired the creation of the Pioneer Zephyr, which was launched in May 1934. The advantages over steam were obvious, with a more comfortable experience for passengers, as well as cheaper fuel costs. A family of Zephyrs and other trains sprang up across large and sparse geographical territories in the West of the US and along the East Coast. Further advances in lightweight body design were made by the Budd company.

The Union Pacific launched its own diesel train in 1936, which could run more than 145 km/h for long distances, with an average of 148 km/h on its run through the Nebraskan plains. As more cities were connected by these trains, the difference in fuel costs became more pronounced. For the novel journey from New York to Los Angeles, which took 56 hours and 55 minutes, the fuel costs were only \$80 compared with \$280 for coal.

Amenities provided for passengers became ever more luxurious, usually satisfying affluent clientele. However, a fierce competitor in the form of air travel was emerging in the 1950s. Diesel, however, remains a significant energy source for US rail. Even today, it is not uncommon to see enormous freight trains, consisting of more than 100 wagons being pulled by two or three powerful locomotives.

The picture in Europe is different, where in recent decades, electrification supplanted the diesel model. Some countries even converted directly from steam to electric. However, diesel remains important for heavy



freight or lines that are seldom used, and the costs of electrification would be prohibitively expensive.

Dieselization in the birthplace of the railway

Britain, as the birthplace of the railway and the Industrial Revolution, chartered an interesting dieselization path. In 1948, all forms of mass transportation were nationalized under the moniker British Rail. By the early 1950s, British Rail was running a profit, though a somewhat marginal one. The question of dieselization was complicated by the fact that Britain could produce coal domestically but relied on imports for crude oil. This added a political edge to the dieselization question.

By the mid-1950s, British Rail was increasingly under pressure from competition from road and air transport. Trucks were increasingly being used for hauling freight. In 1955, British Rail published the 'Modernization Plan,' one of the central features of which called for large-scale dieselization to replace steam. This involved a plan to procure 2,500 locomotives for mainland services, plus replacing much of the existing pre-war passenger rolling stock. The plan also involved mass electrification of the rail, with diesel being a stop-gap measure between steam and electrification.

Transport historians have long debated the effectiveness and long-term ramifications of the 'Modernization Plan.' However, as British Rail continued to experience financial and political pressure, electrification became too expensive, and demands were made to speed up implementation of the plan. British Rail began bulk ordering untested prototypes of diesel locomotives. Rather than a standardized fleet, these were a hodge-podge assortment of incompatible types from a diverse range of builders. In one of the greatest of ironies, it became a familiar sight to see a broken-down diesel locomotive being towed by a steam engine.

Advances in technology, the reduction of the overall size of the fleet and the reduction of lines under the 'Beeching Report' in 1965 meant that over subsequent decades, steam was gradually replaced in Britain. The last steam-hauled trains in service ran on 11 August



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Wide angle view of classic diesel engine at the Sacramento railroad museum.

1968. Although the UK plans to ban diesel-only trains by 2040, in terms of kilometres, about 60 per cent of the British rail network still uses diesel.

Railway as industrial heritage

Railway has played an important role in shaping the history of the energy industry. It is a story imbued with the constant pursuit of efficiency gains, where technological progress has the potential to reap enormous change. There are interesting lessons about the link between technology, policy and envisioning a transport system for the future. Who knows what unknown future innovation will transform the industry the way Diesel's engine has done.



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Pioneer Zephyr train, route Burlington. Non-stop "Dawn to Dusk" speed run from Denver to Chicago. The Museum of Science and Industry, Chicago, USA.

Jean-Baptiste Fressoz: *'More and More and More: An All-Consuming History of Energy'*

Rethinking the 'Energy Transition' Concept

It is often said that there is no universally accepted definition of an 'energy transition', despite the omnipotence of the term in newspapers, policy documents, analysis and daily discourse. Perhaps this is because the term rests on shaky conceptual foundations and a distorted reading of energy history. This is the central argument in the book, 'More and More and More: An All-Consuming History of Energy,' by Jean-Baptiste Fressoz. The OPEC Bulletin files this review.

Energy history: More than succession events



Wikimedia Commons

Jean-Baptiste Fressoz.

It is a well-worn narrative that is taken for granted but badly needs a rethink.

When framing the history of energy, the overwhelming majority of accounts stick to the 'stageist' theory of history: wood dominance was replaced by coal dominance, which is replaced by oil dominance, which will be replaced by renewable dominance. Such thinking underpins much of the rationale for the energy transition. As there is a precedent for energy sources replacing each other and given the pressing need for action to tackle climate change, hydrocarbons can be painlessly replaced by other energy sources, or so the reasoning goes.

Even the International Energy Agency (IEA) has been swayed by this thinking. In launching its World Energy Outlook 2024 (WEO), the IEA stated that "the future of the global energy system is electric." This follows its assertion that demand for coal, oil and gas will peak by the end of the decade. Furthermore, the IEA's Executive Director stated, "In energy history, we've witnessed the Age of Coal and the Age of Oil – and we're now moving at speed into the Age of Electricity, which will define the global energy system."

Jean-Baptiste Fressoz, a historian of science and technology based at the *Centre National de la Recherche Scientifique* in Paris, has clearly and articulately demonstrated why such categorization does not bear up under scrutiny. As he writes, "The notion of energy transition makes a radically strange future seem natural ... as if echoing the transition of the past – from wood to coal, then from coal to oil – we should, in the face of global warming, be making a third transition to nuclear power and/or renewable energies. The climate crisis demands that we continue the history of capitalism and innovation, even accelerate it, to hasten the advent of a carbon-free economy. Thanks to the transition theory, climate change calls for a change of technology, not a change of civilization."

'Transition' as a slogan

Fressoz's compelling argument is summed up early in his work: "After two centuries of 'energy transitions', humanity has never burned so much oil and gas, so much coal and so much wood. Today around two billion cubic metres of wood are felled each year to be burned, three times more than a century ago. Wood currently provides twice as much energy as nuclear fission, twice as much as hydroelectricity and twice as much as solar and wind power combined."

He continues by writing, "The concept of the energy transition is preventing us from thinking properly about climate change.

For half a century now, this notion has produced more scientific confusion and political procrastination than anything else. Transition projects a past that does not exist onto an elusive form of future.”

The book includes interesting statistics about why the linear idea of different stages of time being defined by energy sources does not correspond to reality. The US currently burns twice as much wood as it did in 1960 and Europe three times as much as it did at the beginning of the 20th century.

Is the ‘Age of Coal’ over?

The notion that the age of coal is over is challenged by Fresso. The overwhelming majority of coal was mined after 1900 (95 per cent). The strongest growth in its history occurred between 1980 and 2010 (+300 per cent), leading to an increase in its share of the global energy mix. It is interesting to note the complementarity of this sentiment with the IEA’s recent Report, ‘Coal Mid-Year Update – July 2024’ which states, “global coal demand grew by 2.6 per cent in 2023, to reach a new record of 8.7 billion tonnes”, which is notable for being an all-time high. Furthermore, the IEA report, ‘Coal 2023 Analysis and Forecast to 2026’, published in December 2023, stated that “coal remains the largest energy source for electricity generation, steelmaking and cement production.” In an article entitled, ‘What the past decade can tell us about the future of coal’, the IEA wrote, “the 2000s had seen the largest growth in coal demand in history.”

America under President George W Bush consumed four times as much coal as it did under President Franklin Delano Roosevelt. Europe still consumes 400 million tonnes of coal a year. Angela Merkel’s Germany consumed three times as much coal as Bismarck’s Germany. Europe is also a key exporter of mining and manufacturing equipment, which is used to extract coal throughout the world.

Energy synthesis

A key argument in the book is the notion that rather than work competitively against each other, energy sources complement and promote one another. Fresso provides a diverse range of case studies showing this. He argues, “To understand the history of energy, we need to get rid of the Schumpeterian Darwinism – the too simple idea of ‘creative destruction’ and the dialect of winners and losers. In the 19th and 20th centuries, renewable energies did not put up barriers to fossil fuels, but progressed and developed thanks to them.... Energy sources are as much symbiotic as they are in competition, and their symbiotic relationship explains why over the course of the 19th and 20th century, primary energy sources tended to add up rather than substitute each other.”

To frame it differently, technological innovations up to the present day have never caused “any flow of material consumption to disappear.” As different energy sources complement each other, consumption tends to rise. As Fresso writes, “The problem is not periodization in general, some of which are perfectly legitimate,

Sawmill.



but this empirically unfounded way of singling out certain materials, energies or innovations as defining their era. Take ideas about the age of coal. Between 1830 and 1900 coal consumption increased tenfold. The problem is that the use of many other materials grew in the same decade; wood consumption increased by a factor of six and bricks by a factor of five.”

The ‘stage theory’ or the idea that history can be read as a succession of distinct material epochs, can be disproven if one looks at the role of wood in coal production in the 19th century. As Fressoz writes, “Instead of its use (wood) being eliminated by coal and industrialization, wood was consumed more and more for construction, railways, mine timbering, crates, barrels, cardboard, paper, newspapers, hygiene products.”

Fressoz stresses the importance of timber in propping up coal mines, leading to an exponential increase in wood consumption in the UK throughout the 19th century. There is an illuminating chapter in the book outlining the close links between forestry and the use of wood in the mining industry. Notably, timber production is much more land intensive than firewood. Pine trees were also being used for resin.

If we consider another icon of the so-called ‘Age of Coal,’ the steam locomotive, huge amounts of wood were used in construction of railway infrastructure. Wood was used in constructing the bodies of engines themselves, as well as railway sleepers, stations, platforms and bridges. As Fressoz argues, “Without abundant wood, Europe would simply have had no coal ... the dynamic that governs the relationship between coal and wood is not that of a transition. Rather we should be talking about a symbiotic relationship that intensified during the 19th century...in today’s open cast mines, coal is extracted by shovels and lorries, which consume a huge amount of diesel.”

Coal and oil in symbiosis

In the cleverly titled chapter, ‘Liaisons carbone,’ Fressoz outlines the ways in which coal has driven many advancements for the oil industry. He writes, “The history of oil cannot be understood without the history of coal. Most materials in the 20th century are produced, extracted and transported using steel machines, manufactured using coal and powered by oil.” This needs to be seen in the context of the importance of coal for steel production. Even today, 70 per cent of steel globally is produced from the combustion in blast furnaces of coke, a product derived from coal. Oxygen is removed from iron ore by the burning coke, heated to 1,650°C, leaving iron.

The automobile, the icon of the purported ‘Age of Oil,’ embodies this synthesis. Coal was used in the production of steel, aluminum, copper, glass, nickel, tin, lead and electricity. Roads throughout the 20th century continued to use materials

dependent on coal – layers of aggregates, hydraulic binders, cement, concrete and tar.

Throughout the 20th and 21st century, oil is pumped by machines of steel, transported by ships, railway tank wagons or pipelines made of steel, refined in plants made of steel and burned in engines made of steel.

Conversely, as the oil industry stimulated an expansion in coal consumption, it made coal mining more efficient. The expansion of opencast mining and diesel-powered mining equipment and machinery made the extraction of coal expand exponentially. ANFO, a mixture of ammonium nitrate and petrol, is used as an explosive by the mining industry. Excavators powered by diesel bring up coal from the pits. Then they are moved by special dumpers that remove the coal. As Fressoz writes, “In surface mines, it takes between 1 and 2.5 liters of diesel to extract one tonne of coal.”

Oil and wood in symbiosis

The expansion of the petroleum industry in the 19th century also saw an increase in wood production. Derricks were made of wood, as were tanks, barrels, barges and boats. Yet it was in the field of petrochemicals that some of the most significant innovations took place. For example, in the 1940s, plasterboard began to be used on a wide scale. As Fressoz writes, this revolutionary material meant that “instead of applying several layers of plastic to paneling with a trowel and waiting for it to dry, large factory-made cardboard panels covered with a skim of plaster were simply nailed or placed on rods.”

Plywood is an example which Fressoz describes as taking the “synthesis to a molecular level”. It was developed as a result of new formaldehyde-based adhesives that could penetrate deep into wood, making it waterproof, resistant to rot and more rigid, creating stronger and more durable panels. Additionally, petroleum products are used to make cardboard packaging waterproof and impact resistant.

Petroleum-derived products have also had an impact on the forestry industry, including bulldozers, diesel -powered chain saws, transportation of logs and other equipment. Recent studies show that two to three litres of diesel are consumed per cubic metre of wood extracted.

Having outlined the symbiosis between energy sources, Fressoz states, “the tripling of wood-energy use in the rich countries in the 20th century, the explosion of charcoal use in Africa



since 1960, the tripling of coal worldwide since 1980, oil use that continues to grow year after year ... and the crucial fact that these phenomena are interlinked – all these factors should have led us to abandon the ‘energy transition’ as an analytical tool a long time ago, or to use it very cautiously as a normative (or even downright utopian) concept.”

Fressoza has several interesting chapters on the origins of the ‘energy transition’ concept. He charts the history with discussions of nuclear scientists and futurologists in the 1950s and 1960s and its emergence as a concept for climate modelers and analysts. The term was deployed and used by a group of what Fressoza calls Malthusian atomists who saw it as a gradual evolution, elapsing over a century or more, primarily affecting wealthy countries and “dictated by the rising costs of fossil fuels and technological progress.”

To shoehorn this concept as it was originally conceived to address climate change meant reducing the time frame, removing the ‘gradual’ nature of the transition, and asserting that the process would take place in the context of abundance rather than scarcity. As Fressoza writes, “A neo-Malthusian technological futurology for rich countries had suddenly become a safeguard plan for the entire planet ... How was this scientific and political scandal possible?”

No silver bullet

Fressoza’s work makes for sobering reading. The notion that renewables alone can solve the climate challenge does not bear up to reality. As the book puts it, “it is unreasonable to expect more from solar panels and wind turbines than they can deliver.” He raises some interesting questions about ambitious net-zero plans,

writing “to believe that innovation can decarbonize the steel industry, the cement works, the plastics industry and fertilizer production and use in 30 or 40 years, when recent trends have been the opposite, is a very risky technological gamble.”

‘More and more and more’ offers a useful contribution to discourse about the energy future and the need for policy based on the reality of our energy past and present. ■■



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Coal mining.



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OPEC Secretary General's diary

*In the course of his official duties, **Haitham Al Ghais**, OPEC Secretary General, visits, receives and holds talks with numerous dignitaries. The following records some of those events.*



26 November: Al Ghais (l) received Salah Boucha, Ambassador Counsellor, Head of the Permanent Observer Mission of the League of Arab States, at the OPEC Secretariat.



26 November: Al Ghais (l) welcomed Shambhu S. Kumaran, Ambassador of India to Austria and Permanent Representative to the UN in Vienna, to the OPEC Secretariat.



2 December: Al Ghais (l) met José Antonio Zabalgoitia, Ambassador of Mexico to the Republic of Austria and its Permanent Representative to the International Organisations in Vienna.



3 December: Al Ghais (l) received Ryuta Mizuuchi, Ambassador Extraordinary and Plenipotentiary of Japan to Austria and Kosovo.

Visits to the Secretariat

Students and professional groups keen to know more about OPEC visit the Secretariat regularly in order to receive briefings from the Public Relations and Information Department (PRID). PRID also visits schools under the Secretariat’s outreach programme to make presentations on the Organization and the oil industry. Here we feature some snapshots of such visits.



29 October

Students from the Mathias Corvinus Collegium Management Academy, Hungary.



31 October

Students from the Konkuk and Dankook Universities, South Korea.



7 November

Students from the US visiting via DIS Stockholm.



11 November

Visitors from the King Fahd University of Petroleum and Minerals, Saudi Arabia.



28 November Students from the Technical University in Vienna, Austria.



OPEC bulletin 11-12/24

3 December Law students from ELSA Vienna, Austria.



5 December Law students from ELSA Brno, Czech Republic.



9 December Students from International Relations Club KAU, Kuwait.

OPEC bulletin 11-1/24

Exploring new opportunities in the Philippines and Thailand

Stepping up engagement with a region of large needs and huge potential

The OPEC Fund is stepping up its efforts to re-engage with the Philippines, where it has been for 15 years, since the institution last approved a loan agreement. Following a series of bilateral meetings, including by President Abdulhamid Alkhalifa at the World Bank/IMF Spring Meetings in Washington, DC, Public Sector Country Manager Driss Belamine visited the Philippines for a fact-finding mission.

His goal was to gauge the potential for co-financing a Public Financial Management Reform Programme through policy-based loans together with the Asian Development Bank (ADB). The programme is a critical fiscal strategy for the government and aims to transform fiscal resources into sound fiscal management and macroeconomic stability, as envisaged in the Philippine Development Plan 2023–28.

Belamine explains: “Despite a forceful recovery from the COVID-19 pandemic, the Philippines is still in a transition phase, where the country faces serious challenges in achieving the Sustainable Development Goals (SDGs) on eradicating poverty and reducing inequalities. While growth of six to seven per cent in recent years has made the country one of the fastest-expanding economies in Asia, these gains have hardly been inclusive. Inadequate public service delivery exposes the poor and underprivileged

groups to high and rising levels of insecurity, inequality and informality.”

The government’s fiscal reform programme, articulated around three reform areas, represents a major step forward to enhance efficient and inclusive national and local public service delivery. It aims to first

improve the efficiency of the national public financial management system through digitalization and, second, foster private sector participation in public service delivery. Decentralization is the third important aspect to boost the delivery of public services at local level, together with measures to attract local investments in climate resilience and readiness.

“*The Philippines...faces serious challenges in achieving the Sustainable Development Goals (SDGs) on eradicating poverty and reducing inequalities.*”

Driss Belamine, Country Manager, Public Sector, OPEC Fund

The reform also addresses the needs of the Bangsamoro Autonomous Region in Muslim Mindanao in order to foster fiscal autonomy and trust between citizens and the authorities. The region was severely affected by decades of armed conflict. A governing political entity was established in 2019 following a referendum.

Home to some four million people, the post-conflict area has the highest poverty rates in the country.

During his visit, Belamine met with representatives of the central government, local authorities and ADB colleagues at their headquarters in Manila. The OPEC Fund is considering supporting the reform programme with two loans of US\$150 million (\$ m) each, with a





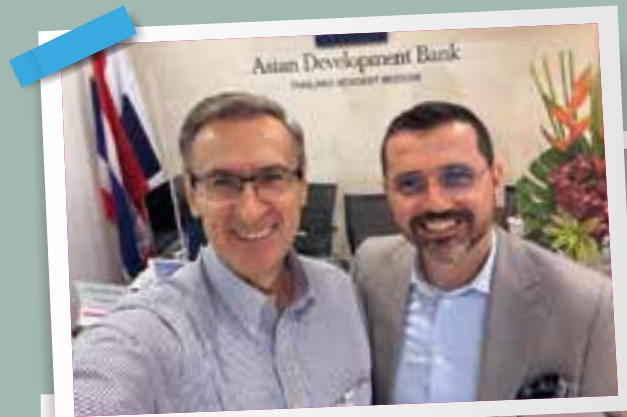
first consideration by the Governing Board potentially envisaged before the end of 2024. The ADB, as a co-financing partner, has been requested to provide two \$500 m loans, and the institutions are closely coordinating their steps.

Belamine arrived in the Philippines from Thailand, where he had attended a workshop on resettlement for the ‘Lower East Chao Phraya Irrigation System Improvement – Climate Adaptive Strengthening’ project. The operation is part of the multi-billion dollar ‘Chao Phraya 9 Plans’, related to comprehensive water management investments to provide flood protection for the country’s most important river basin, which is the source of half its agricultural production and economic life.

Floods are the country’s greatest natural hazard in terms of socioeconomic impact. According to the European Union INFORM risk index, Thailand is ranked ninth among countries most at risk of flooding. In 2011, a flood crisis swept the country, impacting 13 million people, killing hundreds and causing damage equivalent to 12.6 per cent of GDP. Severe floods in October 2022 resulted in government relief spending of \$663 m.

Addressing climate-induced flood and drought vulnerabilities, the project aims to modernize and transform the existing irrigation canals into dual climate-resilient flood mitigation and irrigation assets. The OPEC Fund is already supporting the project with a \$500,000 technical assistance grant to co-finance preparatory activities. The World Bank, ADB and other multilateral lenders have also expressed interest in supporting the project. The OPEC Fund is considering additional co-financing through two \$150 m loans.

Thailand has also launched a bio-circular-green economy programme and the OPEC Fund and ADB are supporting this transition to the self-proclaimed “Thailand 4.0” value-based economy, with technical assistance as a potential first step. Belamine says: “The bio-circular-green economy programme is a very ambitious plan, which will bring fundamental changes to all areas of life. Our task now is to translate intentions into impactful investments.”



The mission provided OPEC Fund Country Manager Belamine with the opportunity to meet with government officials and the Asian Development Bank, as the aftermath of the 2011 flooding remains a long-term challenge.



In 2011, flooding in Thailand affected 13 million people and caused damage equivalent to 12.6 per cent of GDP.

Forthcoming events

Vietnam Refining and Petrochemical Forum, 16–17 January 2025, Hanoi, Vietnam. Details: Otta Group, Room 1609 No. 2000, North Zhongshan Road, Putuo District, Shanghai, PR of China. Tel: +86 21 56 67 02 52; e-mail: info@ottagroup.com; website: www.vietnam-nrp.com.

The Libya Energy and Economic Summit, 18–19 January 2025, Tripoli, Libya. Details: Energy Capital & Power, 2nd floor, The Hudson, 30 Hudson St, De Waterkant, Cape Town 8001, South Africa. Tel: +27 21 200 04 23; e-mail: sales@energycapitalpower.com; website: https://libyasummit.com. Tel: +27 21 200 04 23.

International Conference on Oil, Gas and Petroleum, 20–22 January 2025, Dubai, UAE. Details: Scientific Research Conferences, 7700 E Arapahor Rd. CO, USA. Tel: +1 (970) 642 38 81; e-mail: meetingsrc@gmail.com; website: https://srcmeetings.com/international-conference-on-oil-gas-and-petroleum-home-icogp.php.

The Clean Fuels Conference, 20–23 January 2025, San Diego, USA. Details: Clean Fuels Alliance, 1331 Pennsylvania Ave., NW Suite 505, Washington DC 20004, USA. Tel: +1 (888) 246 34 37; e-mail: CleanFuelsRegistration@executiveevents.com; website: www.clean-fuelsconference.org.

North America Refining Technology Conference (NARTC), 21–22 January 2025, Houston, TX, USA. Details: World Refining Association; Bedford House, Fulham Green, 69-79 Fulham High Street, London SW6 3JW, UK. Tel: +44 207 384 77 24; fax: +44 207 384 78 43; e-mail: sandil.sanmugam@wraconferences.com; website: https://www.digitalrefining.com/events/257/nartc-2025.

Oil and Gas Iraq Expo, 21–24 January 2025, Basrah, Iraq. Details: website: https://iraqoilgas.com/.

10th Mexico Infrastructure Projects Forum, 22–23 January 2025, Monterrey, Mexico. Details: Industry Exchange LLC. Tel: +1 214 272 02 96; e-mail: info@mexicoinfrastructure.com; website: www.mexicoinfrastructure.com

International Conference on Oil, Gas and Petrochemistry, 25–26 January 2025, Paris, France. Details: Global Society for Research and Development, e-mail: info.gsr@gmail.com; website: https://gsrd.co/Conference/18875/ICOGP/.

Argus Global Crude Summit Americas, 5–7 February 2025, Houston, TX, USA. Details: Argus Media, Lacon House, 84 Theobald's Road, London WC1X 8NL, UK. Tel: +44 20 77 80 42 00; e-mail: london@argusmedia.com; website: www.argusmedia.com/en/events/conferences/americas-crude-summit.

Oil and Gas Decarbonisation Congress, 10–11 February 2025, Berlin, Germany. Details: BGS Group, Sharjah Media City, Sharjah, UAE. Tel: +31 232 05 00 09; e-mail: info@bgs.group; website: https://decarboncongress.com/.

Iraq International Energy Expo and Conference 2025, 10–12 February 2025, Baghdad, Iraq. Details: Business Glory for International Fairs and Conferences. E-mail: eng.shahal2016@gmail.com; info@bg-iq.net; marketing.bg2015@gmail.com; website: https://bg-iq.net/en/.

India Energy Week, 11–14 February 2025, New Delhi, India. Details: dmg events, 6th floor, Northcliffe House, 2 Derry Street, London W8 5TT, UK. Tel: +44 20 36 15 28 73; fax: +44 20 36 15 06 79; e-mail: conferencemarketing@dmgevents.com website: www.indianenergy-week.com.

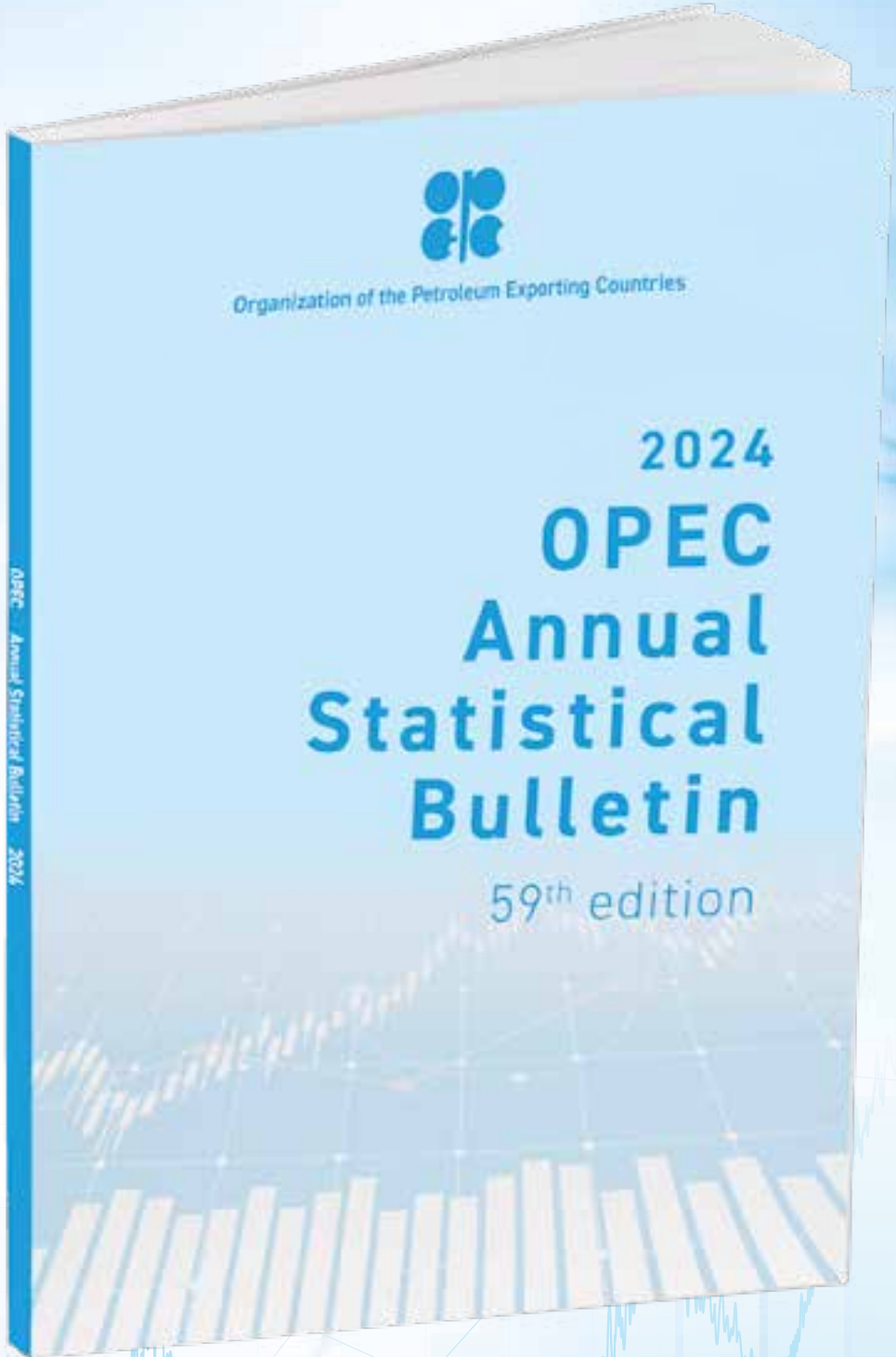
Argus Global Base Oils Conference, 17–19 February 2025, London, UK. Details: Argus Media, Lacon House, 84 Theobald's Road, London WC1X 8NL, UK. Tel +44 (0) 20 4570 12 99; e-mail: conferencesupport@argusmedia.com; website: https://www.argusmedia.com/en/events/conferences/global-base-oils-conference.

Egypt Energy Show (EGYPES), 17–19 February 2025, Cairo, Egypt. Details: dmg events, 6th floor, Northcliffe House, 2 Derry Street, London W8 5TT, UK. Tel: +44 20 36 15 28 73; fax: +44 20 36 15 06 79; e-mail: delegates@egypes.com; website: www.egypes.com/.

International Petroleum Technology Conference, 18–20 February 2025, Kuala Lumpur, Malaysia. Details: SPE Asia Pacific, Suite 12.01, Level 12, Menara IGB, Mid Valley City, Lingkaran Syed Putra, 59200 Kuala Lumpur, Malaysia. Tel: +60 3 2182 30 00; e-mail: iptc@iptcnet.org; website: www.iptcnet.org/.

Nigeria International Energy Summit, 24–27 February 2025, Abuja, Nigeria. Details: Brevity Anderson No 4, Masuku Close, Durban Street, Abuja, Nigeria. Tel: +234 815 944 82 87; e-mail: info@brevityanderson.com; website: https://nigeriaenergysummit.com/.





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Global oil inventory developments

November 2024

Global oil inventories are grouped into three major components. The first includes OECD commercial oil stocks and Strategic Petroleum Reserves (SPRs), with inventory data sourced from OECD national government reports. The second includes non-OECD commercial inventories and SPRs, which have grown in significance since non-OECD oil demand surpassed that of the OECD in 2015, now making up about 56 per cent of global oil demand. However, tracking non-OECD inventory levels remains challenging due to the availability of data. Estimates for these stocks are primarily based on monthly data from major producer and consumer countries, as published by the Joint Organisations Data Initiative, alongside official sources from major non-OECD countries. The third component is oil at sea, including 'oil afloat' and 'oil in transit,' which serves as an important operational link between exporting and importing countries.

Since the beginning of 2024, global oil inventories have declined by 14 million barrels (mb) to reach 8,057 mb by the end of September 2024, according to the latest available data.

OECD commercial stocks and OECD SPRs have increased by 30 mb and 28 mb, respectively, while non-OECD stocks and oil at sea have dropped by 12 mb and 60 mb, respectively. The increase in OECD commercial stocks in the first three quarters of 2024 is attributed to weaker demand in the region. For OECD SPRs, the increase is largely driven by steady additions to the US SPR, which has been expanding at a rate of about 3 mb per month, as the US Administration replenishes significant releases made in 2022.


Overall, the global stock decline has been primarily driven by reductions in non-OECD stocks and oil at sea, spurred by an increase in non-OECD demand. Additionally, lower output from some producing countries, coupled with a backwardated market structure, has discouraged refiners and traders from building oil-at-sea storage.

Global inventory dynamics in 2024, year-to-date, have been characterized by three distinct intervals. In 1Q24, global oil inventory levels were

almost unchanged quarter-on-quarter (q-o-q). In 2Q24, inventories increased by 69 mb, but this trend reversed in 3Q24, with a decline of 83 mb, q-o-q. In terms of the supply/demand balance, data for the first three quarters of this year indicates a negative "implied global stock change" – a trend consistent with observed global inventory movements.

Indeed, the gap between these two indicators is expected to close as more data becomes available.

Between January and September 2024, the observed build in total OECD commercial oil inventories was driven by a substantial build in OECD product stocks, which offset the decline in crude commercial stocks. OECD product inventories rose by 41 mb, while crude commercial stocks fell by 11 mb. The increase in product stocks primarily reflects weak product demand within OECD countries, whereas the reduction in OECD crude oil stocks was likely the result of higher crude processing rates.

Among OECD regions in 2024, combined crude and refined product stocks held in OECD Americas increased by 3 mb. This build was driven by a 22 mb increase in product stocks, while crude stocks fell by 19 mb over the same period. The crude draw occurred on the back of year-on-year higher refinery utilization. In OECD Asia Pacific, both crude and product inventories have risen this year, resulting in a combined oil stock build of 14 mb since the start of 2024. Higher crude imports supported crude stocks, while increased refinery output bolstered product stocks. In OECD Europe, most of the build since the beginning of this year has come from a 14 mb increase in product stocks, while crude stocks have experienced a slight decrease of 2 mb. 



MOMR ... oil market highlights

November 2024

Crude oil price movements — In October, the OPEC Reference Basket (ORB) value increased by 86¢, or 1.2 per cent, month-on-month (m-o-m), to average \$74.45 per barrel (\$/b). The ICE Brent front-month contract increased by \$2.51, or 3.4 per cent, m-o-m, to average \$75.38/b. The NYMEX WTI front-month contract increased by \$2.19, or 3.2 per cent, m-o-m, to average \$71.56/b. The GME Oman front-month contract increased by \$2.12, or 2.9 per cent, m-o-m, to average \$75.03/b. The ICE Brent-NYMEX WTI front-month spread widened by 32¢, m-o-m, to average \$3.82/b. Oil futures forward curves flattened in October, but remained in backwardation. Hedge funds and other money managers showed mixed movements in their positions, contributing to volatility.

World economy — The world economic growth forecast was revised up slightly to stand at 3.1 per cent for 2024 and three per cent for 2025. The US economic growth forecast for 2024 was revised up to 2.7 per cent, reflecting robust growth in 2Q24 and 3Q24. For 2025, the US growth forecast was also revised up to 2.1 per cent. Japan's growth forecasts remained unchanged at 0.1 per cent for 2024 and 0.9 per cent for 2025. Similarly, the Eurozone's economic growth forecasts remained unchanged at 0.8 per cent and 1.2 per cent in 2024 and 2025, respectively. China's economic growth forecast for 2024 remained unchanged at 4.9 per cent, however, the recently announced stimulus measures led to an upward revision of the economic growth forecast for 2025 to 4.7 per cent. India's economic growth forecast remained unchanged at 6.8 per cent for 2024 and 6.3 per cent for 2025. The economic growth forecast for Brazil was revised up to 2.9 per cent for 2024 and 2.1 per cent for 2025, on the back of ongoing robust dynamics which are expected to extend into 2025. Reflecting ongoing steady growth, Russia's economic growth forecast was revised up to 3.5 per cent for 2024 and 1.7 per cent for 2025.

World oil demand — The global oil demand growth forecast for 2024 was revised down slightly by 107 tb/d from the previous month's assessment to 1.8 mb/d, year-on-year (y-o-y). This minor adjustment was mainly due to updated data for 1Q24, 2Q24 and 3Q24. OECD oil demand was expected to grow by around 0.2 mb/d, while non-OECD demand was forecast to expand by close to 1.7 mb/d. In 2025, global oil demand growth was also revised down slightly by 103 thousand barrels per day (tb/d) from the previous month's assessment to 1.5 mb/d, y-o-y. OECD demand is expected to grow by 0.1 mb/d, y-o-y, while demand in the non-OECD is forecast to expand by 1.4 mb/d.

World oil supply — Non-DoC liquids supply (i.e. liquids supply from countries not participating in

the Declaration of Cooperation (DoC)) is expected to grow by 1.2 mb/d, y-o-y, in 2024, unchanged from last month's assessment. The main growth drivers are expected to be the US and Canada. For 2025, the non-DoC liquids supply growth forecast is expected to grow by 1.1 mb/d, y-o-y, also unchanged from last month. Growth is anticipated to be mainly driven by the US, Brazil, Canada, and Norway. Natural gas liquids and non-conventional liquids from countries participating in the DoC are forecast to grow by about 0.1 mb/d, y-o-y, to average 8.3 mb/d in 2024, followed by an increase of about 80 tb/d, y-o-y, to average 8.4 mb/d in 2025. Crude oil production by the countries participating in the DoC increased by 0.21 mb/d in October compared with the previous month, averaging about 40.34 mb/d, as reported by available secondary sources.

Product markets and refining operations — In October, refinery margins increased following two consecutive months of losses, amid lower refinery product output in the Atlantic Basin due to heavy maintenance. On the USGC, an increasingly tight fuel oil market and solid diesel margin gains contributed to a lift in US refining margins. The seasonal product output constraint exerted downward pressure on product stocks, helping strengthen US product markets in October. This contrasted with the firm product stock builds and margin losses seen in the previous two months. In Northwest Europe, a contraction in total product availability led to a decline in product inventories at the Amsterdam-Rotterdam-Antwerp storage hub, exerting upward pressure on product crack spreads. This was seen nearly across the barrel except for low-sulphur fuel oil. Most of the upturn in the region was attributed to high-sulfur fuel oil and gasoline. In Singapore, improvements in regional product requirements, particularly from Indonesia, China, and Japan, backed refining economics. Regarding products, gasoil and jet/kerosene were the strongest margin drivers over the month, while a decline in Middle Eastern naphtha inflows and healthy naphtha demand from the regional petrochemical sector added to the upside in Asian product markets.

Tanker market — Dirty spot freight rates rose across the board due to a strong start to the month before weakening in the second half of October, amid ample tonnage availability. An active US export market and geopolitical uncertainties were key drivers supporting rates early in the month. On the Middle East-to-East route, very large crude carrier spot freight rates rose by six per cent, m-o-m, in October, while rates on the West Africa-to-East route were up five per cent over the same period. In the Suezmax market, rates on the US Gulf Coast-to-Europe route jumped 36 per cent, m-o-m. A surge in Aframax rates encouraged charterers to switch to the large Suezmax

vessels, although ample availability limited gains, with Aframax spot rates on the Caribbean-to-US East Coast route surging 81 per cent, m-o-m. The clean market was mixed according to the route, although on average rates fell both East and West of Suez. Soft demand for gasoline flows to the US limited activity in the Atlantic Basin.

Crude and refined products trade — Preliminary data showed US crude imports fell to an almost two-year low of 6.0 mb/d in October, while exports returned above 4 mb/d for the first time in three months, supported by higher flows to Europe. US product imports fell further to 1.5 mb/d, led by lower inflows of gasoline, while product exports remained strong compared with the previous year at 6.4 mb/d, supported by high distillate fuel exports. Preliminary estimates point to OECD Europe crude and product inflows increasing m-o-m in October, supported by US exports into the region. In September, Japan's crude imports strengthened further to reach 2.4 mb/d, but remained 7 per cent lower, y-o-y. Japan's product imports edged down on declines in kerosene and diesel, while product exports rose ten per cent on higher outflows of most major products, especially fuel oil. Crude imports into China fell back four per cent in September to average 11.1 mb/d, while product inflows remained strong on continued healthy inflows of fuel oil and liquefied petroleum gas. India's crude imports averaged 4.5 mb/d in September, remaining at the upper end of the latest five-year range for the month and representing a seasonal decline. India's product exports jumped 30 per cent, m-o-m, supported by higher outflows of diesel.

Commercial stock movements — Preliminary September 2024 data showed total OECD commercial oil stocks down by 3.0 mb, m-o-m. At 2,808 mb, they were 159 mb below the 2015–19 average. Within components, crude stocks fell by 7.5 mb, m-o-m, while product stocks rose by 4.5 mb, m-o-m. OECD commercial crude stocks stood at 1,317 mb; 118 mb less than the 2015–19 average. OECD total product stocks stood at 1,491 mb. This is 41 mb below the 2015–19 average. In terms of days of forward cover, OECD commercial stocks fell in September by 0.2 days, m-o-m, to stand at 60.8 days. This is 1.8 days less than the 2015–19 average.

Balance of supply and demand — Demand for DoC crude (i.e. crude from countries participating in the DoC) was revised down by 0.1 mb/d from the previous month's assessment to stand at 42.7 mb/d in 2024, which is around 0.5 mb/d higher than the estimate for 2023. Demand for DoC crude in 2025 was revised down by 0.2 mb/d from the previous month's assessment to stand at 43.0 mb/d, around 0.4 mb/d higher than the estimate for 2024. 🌐

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Review of 2024 and outlook for 2025

December 2024

Solid economic growth trends have continued in recent months, with particularly positive trends recorded in the US, Brazil and Russia. Additionally, Chinese stimulus measures and sustained growth momentum in India have contributed to supporting global economic growth. With these developments, the global economic forecast for 2024 is projected at 3.1 per cent. The robust economic growth dynamic is expected to extend into 2025 with a forecast of three per cent.

In the OECD economies, the healthy growth observed in the US during 2024 is expected to moderate only slightly in 2025. However, current growth projections could be impacted by potential new policy measures being discussed by the incoming US Administration, such as trade tariffs, which would also impact growth in US trading partner economies. In the Eurozone, a gradual recovery continued in 3Q24, but limited improvements are anticipated in 4Q24 and into 2025. Japan is projected to rebound in 2H24 and into 2025, following a challenging period since 1H24.

In the non-OECD, China's robust fiscal and monetary stimulus efforts are anticipated to help the government achieve growth rates near its five per cent target following an observed slowdown in 2Q24 and 3Q24.

India has witnessed slower economic growth in 3Q24 compared with 1H24, but is projected to rebound in 4Q24 with increased support for the manufacturing sector. Brazil and Russia continue to see strong growth rates, although inflation remains a concern heading into 2025. Overall, while uncertainties persist, global economic growth is expected to remain well-supported in the near term. The continuation of positive economic growth trends in 2024 and into 2025 is expected to play a crucial role in shaping global oil demand.

Global oil demand is forecast to grow by 1.6 million barrels per day (mb/d), year-on-year (y-o-y), in 2024. This is primarily driven by the non-OECD region, which is forecast to increase by 1.5 mb/d, y-o-y. Steady economic growth in China, supported by sustained economic activity in India and other non-OECD consuming countries, are expected to be the major oil demand growth drivers. Within the OECD region, OECD Americas is anticipated

to drive demand growth with an increase of 0.1 mb/d, y-o-y, given steady jet fuel increases and robust gasoline requirements. OECD Europe is set to add some support, while OECD Asia-Pacific oil demand growth is expected to remain weak.

Looking ahead to 2025, global oil demand is forecast to rise by a healthy 1.4 mb/d, y-o-y. OECD oil demand is expected to increase by 0.1 mb/d, again predominantly in OECD Americas, although the other regions also exhibit some growth. In the non-OECD, a 1.3 mb/d, y-o-y, increase is projected, with China and Other Asia driving the growth, supported by India, the Middle East and Latin America. This forecast is based on assumed sustained economic and petrochemical activity across major consuming nations, which supports demand for transportation fuels and distillates in 2025.

On the supply side, non-DoC supply is forecast to expand by 1.3 mb/d, y-o-y, in 2024. Notably, the US is expected to account for around 50 per cent of this expansion, with a y-o-y liquids production increase of 0.7 mb/d. Other key contributors to this growth include Canada, Argentina and China, while the UK is anticipated to experience a decline. In 2025, non-DoC liquids supply is forecast to expand by 1.1 mb/d, y-o-y. Key growth drivers include US tight liquids, offshore start-ups in Latin America, the Gulf of Mexico and the North Sea, as well as the expansion of oil sands assets in Canada. The US is again projected to lead growth, accounting for about 45 per cent of the total, followed by Brazil, Canada and Norway.



MOMR ... oil market highlights

December 2024

Crude oil price movements – In November, the OPEC Reference Basket (ORB) value dropped by \$1.47, or two per cent, month-on-month (m-o-m), to average \$72.98/b. The ICE Brent front-month contract dropped by \$1.98, or 2.6 per cent, m-o-m, to average \$73.40 per barrel (\$/b), while NYMEX WTI dropped by \$2.02, or 2.8 per cent, m-o-m, to average \$69.54/b. GME Oman front-month contract dropped by \$2.55, or 3.4 per cent, m-o-m, to average \$72.48/b. The ICE Brent-NYMEX WTI first month spread remained little changed, widening marginally by 4¢/b, m-o-m, to average \$3.86/b. The forward curves of oil futures prices flattened further, with the nearest time spreads contracting but remaining in backwardation. Hedge funds and other money managers raised their net long positions but maintained a bearish stance on oil prices.

World economy – The world economic growth forecasts remain unchanged at 3.1 per cent for 2024 and three per cent for 2025. The US economic growth forecast for 2024 is revised up slightly to 2.8 per cent, reflecting robust growth in 2H24. For 2025, the US growth forecast is also revised up slightly to 2.2 per cent. Japan's growth forecast remains unchanged at 0.1 per cent in 2024, but for 2025, it is revised up slightly to one per cent. The Eurozone's economic growth forecasts for 2024 and 2025 remain unchanged at 0.8 per cent, and 1.2 per cent, respectively. China's economic growth forecasts remain unchanged at 4.9 per cent for 2024 and 4.7 per cent for 2025. India's economic growth forecasts for 2024 and 2025 remain unchanged at 6.8 per cent, and 6.3 per cent, respectively. The economic growth forecast for Brazil is revised up slightly to 3.1 per cent for 2024, but remains at 2.1 per cent for 2025. Russia's economic growth forecasts remain unchanged at 3.5 per cent for 2024 and 1.7 per cent for 2025.

World oil demand – The global oil demand growth forecast for 2024 is revised down by 210 tb/d from the previous month's assessment to 1.6 million barrels per day (mb/d), year-on-year (y-o-y). This minor adjustment is mainly due to updated data for 1Q24, 2Q24 and 3Q24. In the OECD, oil demand is expected to grow by around 0.1 mb/d, while non-OECD demand is forecast to expand by close to 1.5 mb/d in 2024. Global oil demand growth for 2025 is also revised down by 90 thousand barrels per day (tb/d) from the previous month's assessment to 1.4 mb/d, y-o-y. OECD demand is expected to grow by 0.1 mb/d, y-o-y, in 2025, while demand in the non-OECD is forecast to expand by 1.3 mb/d.

World oil supply – Non-DoC liquids supply (i.e. liquids supply from countries not participating in the DoC) is expected to grow by 1.3 mb/d, y-o-y, in 2024, revised up slightly from last month's assessment. The main growth drivers are expected to be the US and Canada. For 2025, the non-DoC liquids supply growth forecast is expected to grow by 1.1 mb/d, y-o-y, unchanged from last month. Growth is anticipated to be mainly driven by the US, Brazil, Canada, and Norway. Natural gas liquids and non-conventional liquids from countries participating in the DoC are forecast to grow by about 0.1 mb/d, y-o-y, in 2024 to average 8.3 mb/d, followed by an increase of about 80 tb/d, y-o-y, in 2025 to average 8.4 mb/d. Crude oil production by the countries participating in the DoC increased by 0.32 mb/d in November compared with the previous month, averaging about 40.67 mb/d, as reported by available secondary sources.

Product markets and refining operations – In November, refinery margins rose further to show gains for the second consecutive month in key trading hubs. An improvement in product buying interest and lower feedstock prices underpinned product markets across regions despite rising refinery runs at the end of the heavy refinery maintenance season. On the US Gulf Coast (USGC), unplanned outages at secondary units led to upward pressure on US product crack spreads at the middle and bottom sections of the barrel. At the same time, diesel markets in Europe strengthened due to colder weather and rising heating requirements, while a boost in transport fuel loadings in China ahead of a tax rebate cut, effective from 1 December, provided further support. Global refinery intake began to recover in November, with the end of the heavy refinery turnaround season, rising by 1.3 mb/d, m-o-m, to average 80.2 mb/d, representing a y-o-y increase of 169 tb/d.

Tanker market – Dirty spot freight rates fell across all monitored routes in November, continuing the decline seen at the end of the previous month, as higher vessel availability outpaced tonnage demand. On the Middle East-to-East route, VLCC spot freight rates decreased by nine per cent, m-o-m, in November, while rates on the West Africa-to-East route dropped by ten per cent. In the Suezmax market, rates on the USGC-to-Europe route reversed the previous month's gains, falling 25 per cent, m-o-m. Aframax spot rates on the Caribbean-to-US East Coast route fell by 34 per cent, retracting after a strong surge the month before. In the clean tanker market, East of Suez rates declined by 15 per cent on average, while West of Suez rates jumped by 19 per cent, m-o-m.

Crude and refined products trade – Available data for November shows US crude imports recovering from the previous month's decline to average 6.7 mb/d, as refiners returned from maintenance. US crude exports returned above 4 mb/d for the first time in four months, reflecting higher flows to Asia, as well as Europe. US product imports increased to 1.6 mb/d, amid higher flows of gasoline, while exports remained strong at 6.8 mb/d, also led by gasoline. Preliminary estimates for OECD Europe indicate crude imports in November were marginally higher, m-o-m, while product imports fell as lower inflows of diesel offset higher imports of fuel oil. In October, Japan's crude imports declined by almost 12 per cent, m-o-m, weighed down by softer domestic sales of refined products. Japan's product imports were around seven per cent lower, m-o-m, as declines in naphtha, gasoline and gasoil outweighed increased imports of LPG and kerosene. In China, crude imports fell a further five per cent compared to the previous month to average 10.6 mb/d in October, while net product imports increased by about three per cent, m-o-m, as the decline in exports outpaced the drop in imports. In India, crude imports averaged 4.6 mb/d in October, representing a marginal gain over the previous month as ongoing refinery maintenance limited gains. India's product exports fell back 24 per cent following the previous month's strong showing, with all major products registering declines.

Commercial stock movements – Preliminary October 2024 data shows total OECD commercial oil stocks down by 22.3 mb, m-o-m. At 2,777 mb, they were 169 mb below the 2015–19 average. Among components, crude stocks rose by 7.9 mb, m-o-m, while product stocks fell by 30.2 mb, m-o-m. OECD commercial crude stocks stood at 1,324 mb, which is 130 mb less than the 2015–19 average. OECD total product stocks stood at 1,453 mb, about 39 mb lower than the 2015–19 average. In terms of days of forward cover, OECD commercial stocks rose by 0.3 days, m-o-m, in October, to stand at 60.8 days, which is 1.6 days below the 2015–19 average.

Balance of supply and demand – Demand for DoC crude (i.e. crude from countries participating in the Declaration of Cooperation) is revised down by 0.3 mb/d from the previous assessment, to stand at 42.4 mb/d in 2024. This is around 0.3 mb/d higher than the 2023 estimate. Demand for DoC crude in 2025 is revised down by around 0.4 mb/d from the previous month's assessment to stand at 42.7 mb/d, around 0.3 mb/d higher than the estimate for 2024.



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Table 1: OPEC Reference Basket spot crude prices \$/b

Crude/Member Country	2023		2024										Weeks 44–48/2024 (week ending)					
	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	1 Nov	8 Nov	15 Nov	22 Nov	29 Nov
Arab Light – Saudi Arabia	87.30	81.27	82.14	82.30	85.61	90.64	85.60	85.31	86.19	79.71	75.16	75.89	74.47	73.19	75.70	73.34	74.45	74.21
Basrah Medium – Iraq	83.80	77.64	78.21	79.35	82.13	87.01	81.58	81.96	83.53	77.43	72.31	73.08	71.73	70.37	72.96	70.54	71.84	71.45
Bonny Light – Nigeria	86.18	79.81	80.84	85.65	87.86	93.17	84.16	83.30	85.07	81.99	77.08	77.75	75.38	74.79	76.65	73.96	75.87	75.10
Djeno – Congo	75.60	70.53	72.90	76.45	77.99	82.44	74.37	74.95	77.80	73.27	66.81	68.13	66.80	65.38	68.07	65.38	67.29	66.52
Es Sider – Libya	83.35	77.78	79.66	83.95	85.34	89.34	81.27	81.15	84.35	80.22	73.21	74.03	72.00	71.14	73.27	70.58	72.49	71.72
Iran Heavy – IR Iran	85.00	79.06	80.14	80.34	83.48	88.79	84.13	83.65	84.57	77.63	73.59	74.06	72.81	71.41	74.00	71.75	72.74	72.56
Kuwait Export – Kuwait	86.30	80.11	80.84	81.09	84.43	89.76	85.15	84.91	85.72	78.80	74.69	74.87	73.56	72.22	74.75	72.50	73.49	73.31
Merey – Venezuela	70.74	65.23	66.50	67.27	70.98	74.91	70.55	69.23	67.61	62.15	54.91	58.30	59.58	56.29	60.73	58.46	59.74	59.34
Murban – UAE	83.33	77.68	79.06	80.99	84.52	89.19	84.10	82.51	83.80	77.92	73.41	74.84	72.81	72.03	74.06	71.69	72.65	72.66
Rabi Light – Gabon	82.59	77.52	79.89	83.44	84.98	89.43	81.36	81.94	84.79	80.26	73.80	75.12	73.79	72.37	75.06	72.37	74.28	73.51
Saharan Blend – Algeria	84.80	78.83	81.36	86.00	87.54	90.79	82.07	82.55	85.40	81.72	76.21	77.53	74.90	74.52	76.17	73.48	75.39	74.62
Zafiro – Equatorial Guinea	84.45	79.38	81.66	85.30	86.84	91.29	83.22	83.62	86.35	82.69	76.31	76.98	75.98	73.88	76.75	74.78	76.69	75.92
OPEC Reference Basket	84.92	79.00	80.04	81.23	84.22	89.12	83.59	83.22	84.43	78.41	73.59	74.45	72.98	71.73	74.21	71.83	73.02	72.71

Table 2: Selected spot crude prices \$/b

Crude/country	2023		2024										Weeks 44–48/2024 (week ending)					
	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	1 Nov	8 Nov	15 Nov	22 Nov	29 Nov
Arab Heavy – Saudi Arabia	84.95	79.26	80.44	80.54	83.88	89.24	84.58	84.15	84.97	78.03	73.94	74.21	72.76	71.52	73.95	71.70	72.69	72.51
Brega – Libya	82.55	77.28	79.36	83.40	85.09	89.19	81.02	80.85	83.80	79.67	72.56	73.58	71.85	70.75	73.12	70.43	72.34	71.57
Brent Dtd – North Sea	83.05	77.98	80.26	83.90	85.44	89.89	81.82	82.40	85.25	80.72	74.26	75.58	74.25	72.83	75.52	72.83	74.74	73.97
Dubai – UAE	83.33	77.31	78.73	80.82	84.21	89.12	84.11	82.61	83.68	77.56	73.39	74.60	72.66	71.78	73.79	71.52	72.51	72.62
Ekofisk – North Sea	86.12	80.21	82.98	87.06	87.99	91.92	83.34	83.87	88.05	83.57	76.60	76.93	75.67	74.43	76.77	74.05	76.44	75.47
Iran Light – IR Iran	82.07	74.13	76.37	80.94	82.36	88.24	81.65	82.37	85.14	79.11	71.90	72.80	71.30	69.46	72.15	69.87	72.02	71.30
Isthmus – Mexico	76.76	70.67	72.34	75.77	78.72	82.92	77.38	76.85	78.59	73.75	67.62	69.32	67.00	66.03	68.72	65.48	67.50	66.34
Oman – Oman	83.17	77.21	78.75	80.86	84.14	89.35	84.06	82.49	83.85	77.51	73.49	74.81	72.46	71.98	73.70	71.48	72.47	72.00
Suez Mix – Egypt	81.94	74.00	76.24	80.81	82.23	88.11	81.52	82.24	85.01	78.98	71.77	72.67	71.17	69.33	72.02	69.74	71.89	71.17
Minas – Indonesia	81.16	76.69	78.06	83.67	90.74	96.43	89.27	87.14	90.57	85.80	80.13	78.15	76.76	75.55	77.82	75.44	76.79	76.73
Urals – Russia	69.00	59.97	62.36	66.45	68.24	73.02	65.43	67.62	72.17	68.17	61.65	62.99	61.91	60.33	63.02	60.33	62.44	61.95
WTI – North America	77.37	72.08	73.87	76.89	80.49	84.59	78.73	79.03	80.83	75.55	69.67	71.60	69.60	68.39	71.58	68.06	69.93	68.84

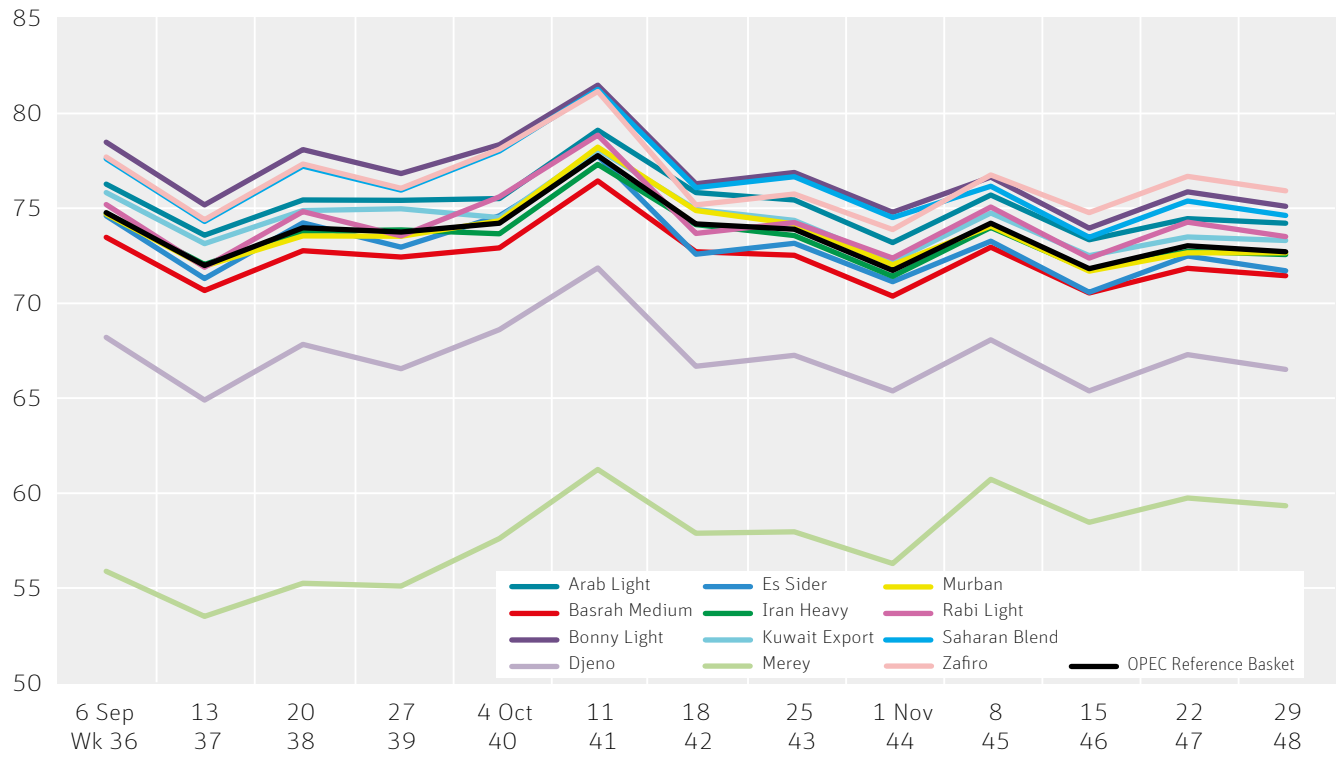
Notes:

Brent for dated cargoes; Urals cif Mediterranean. All others fob loading port.

Sources: Argus; Secretariat's assessments.

Graph 1: Evolution of the OPEC Reference Basket spot crude prices, 2024

\$/b



Graph 2: Evolution of selected spot crude prices, 2024

\$/b

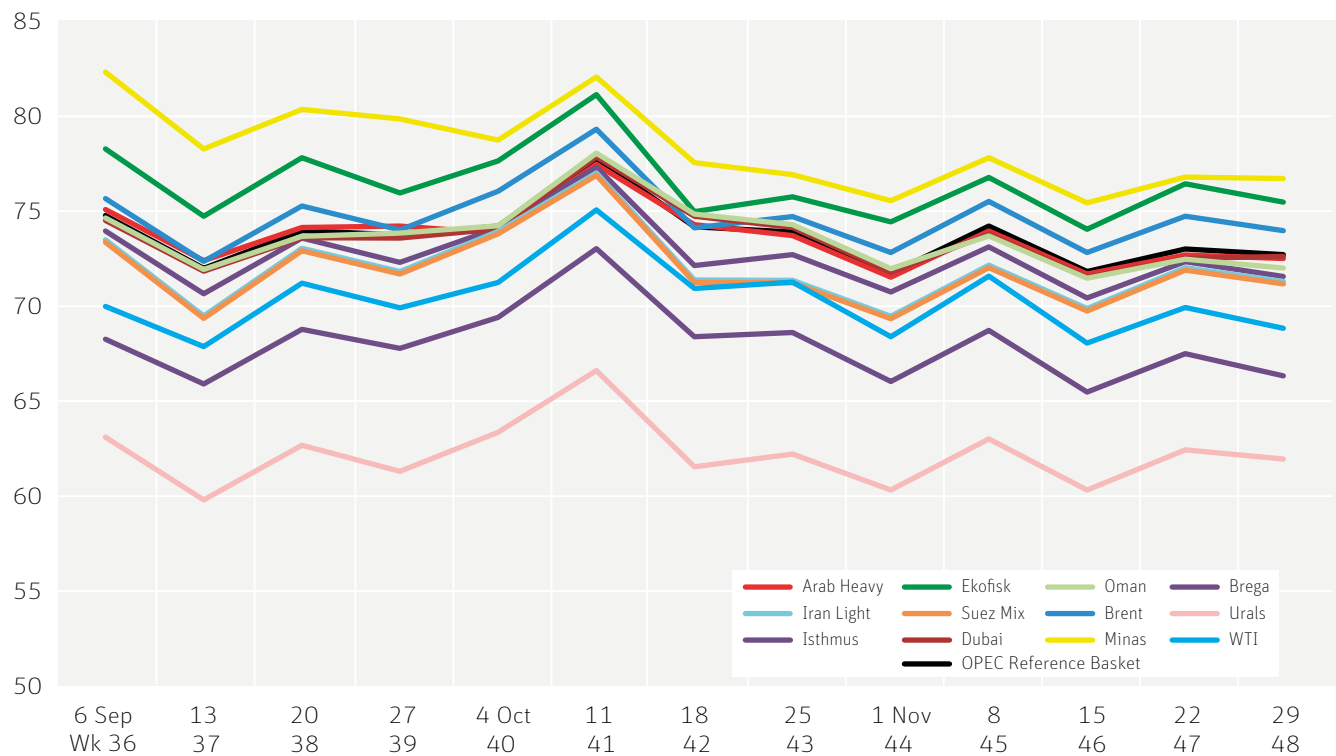


Table and Graph 3: North European market – spot barges, fob Rotterdam

\$/b

	naphtha	regular gasoline unleaded	diesel ultra light	jet kero	fuel oil 1 per cent S	fuel oil 3.5 per cent S
2023 November	69.35	119.33	116.72	114.99	75.29	68.93
December	70.27	112.50	107.26	105.62	70.95	66.05
2024 January	70.61	115.51	110.89	107.60	72.54	65.99
February	73.32	123.05	114.18	116.23	72.80	69.22
March	78.43	128.49	109.34	112.12	78.70	71.75
April	76.24	126.39	108.07	109.15	78.14	74.45
May	73.05	109.74	102.60	100.68	73.14	72.29
June	73.24	106.13	102.47	102.03	73.96	73.87
July	75.92	107.60	103.78	103.06	76.11	75.29
August	72.69	100.50	96.18	95.52	72.14	69.22
September	68.99	89.47	88.43	88.41	70.32	63.43
October	71.48	92.92	91.40	90.86	71.11	74.99
November	68.81	87.07	90.99	91.43	72.25	68.80

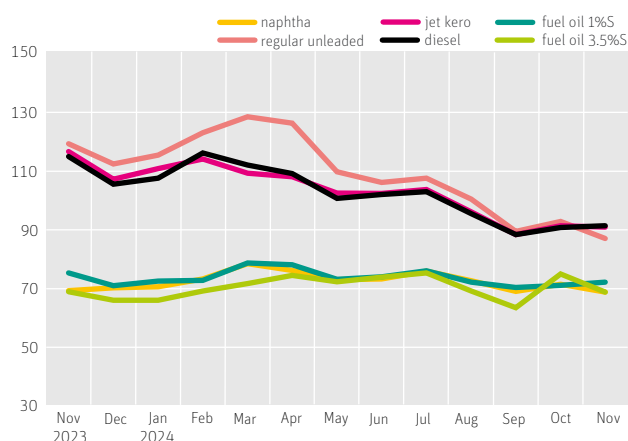


Table and Graph 4: South European market – spot cargoes, fob Italy

\$/b

	naphtha	premium gasoline 50ppm	diesel ultra light	fuel oil 1 per cent S	fuel oil 3.5 per cent S
2023 November	68.60	98.25	112.32	78.59	65.00
December	66.91	92.39	105.78	76.45	60.70
2024 January	68.02	94.91	108.66	74.57	64.79
February	70.10	102.78	116.35	78.55	69.29
March	74.58	108.77	112.33	84.16	70.33
April	73.53	113.81	109.99	83.05	74.80
May	70.21	105.11	102.04	77.64	69.94
June	71.49	99.62	103.63	78.44	70.84
July	73.92	101.85	105.00	80.33	74.62
August	71.40	94.47	96.50	75.85	68.54
September	68.22	85.36	90.03	74.23	61.52
October	70.54	89.48	91.72	74.65	73.24
November	67.45	85.05	92.85	75.96	68.08

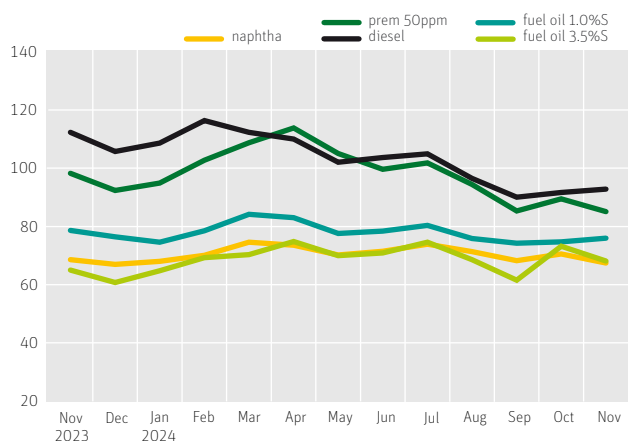
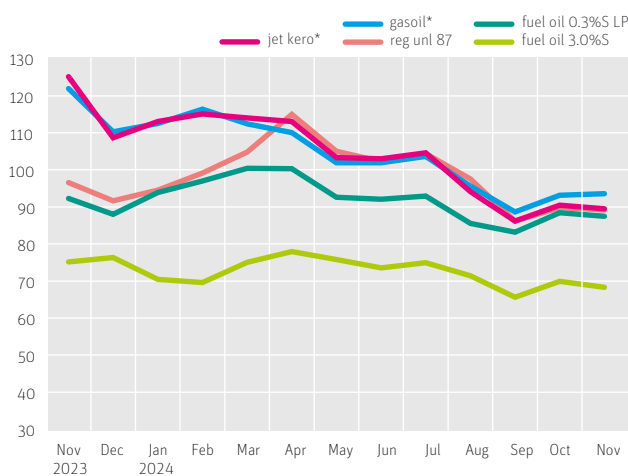


Table and Graph 5: US East Coast market – spot cargoes, New York

\$/b, duties and fees included

	regular gasoline unleaded 87	gasoil*	jet kero*	fuel oil 0.3 per cent S	fuel oil 3.0 per cent S
2023 November	96.61	121.92	125.19	92.25	75.16
December	91.58	110.27	108.70	87.98	76.36
2024 January	94.54	112.48	113.07	93.91	70.47
February	99.18	116.32	115.14	96.99	69.52
March	104.85	112.36	114.06	100.44	75.05
April	114.95	110.05	113.05	100.35	77.96
May	105.01	101.93	103.35	92.55	75.75
June	102.21	101.89	102.96	92.02	73.51
July	104.42	103.66	104.57	92.89	74.96
August	97.52	95.57	94.10	85.55	71.39
September	86.20	88.60	86.20	83.18	65.63
October	89.80	93.11	90.48	88.47	69.88
November	89.22	93.56	89.51	87.42	68.31



* FOB barge spot prices.

Source: Argus. Prices are average of available days.

Table and Graph 6: Singapore market – spot cargoes, fob

\$/b

	naphtha	premium gasoline un1 95	premium gasoline un1 92	gasoil	jet kero	fuel oil 180 Cst	fuel oil 380 Cst
2023 November	69.57	98.00	92.36	103.21	103.06	106.63	68.43
December	72.69	91.27	87.27	97.38	97.31	101.65	66.95
2024 January	73.03	95.94	91.18	101.16	100.74	101.58	66.95
February	72.48	100.07	95.58	104.87	103.97	103.26	65.92
March	76.45	101.52	97.09	102.76	101.43	102.54	71.28
April	75.58	106.33	102.07	103.50	101.36	102.76	76.70
May	72.29	95.38	91.10	95.67	94.13	95.45	78.02
June	72.56	92.98	87.92	97.57	96.74	97.39	77.62
July	74.77	96.42	92.16	98.97	98.61	98.36	77.61
August	72.78	88.95	84.61	90.65	90.26	91.54	69.83
September	70.29	82.87	78.37	83.29	83.06	84.43	64.94
October	73.09	85.87	79.59	87.39	87.20	87.92	68.42
November	69.92	84.59	78.96	89.04	88.94	89.40	68.75

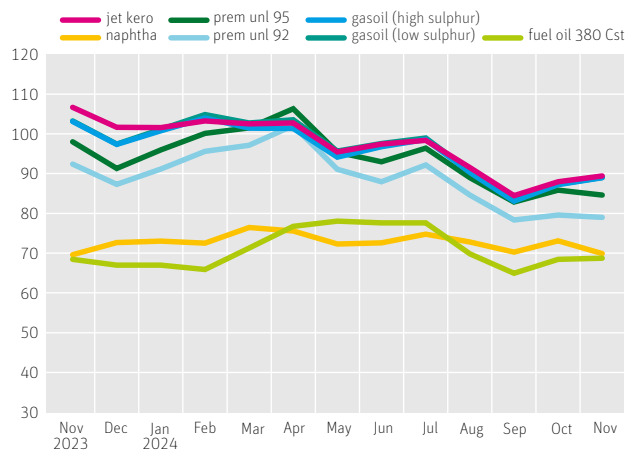
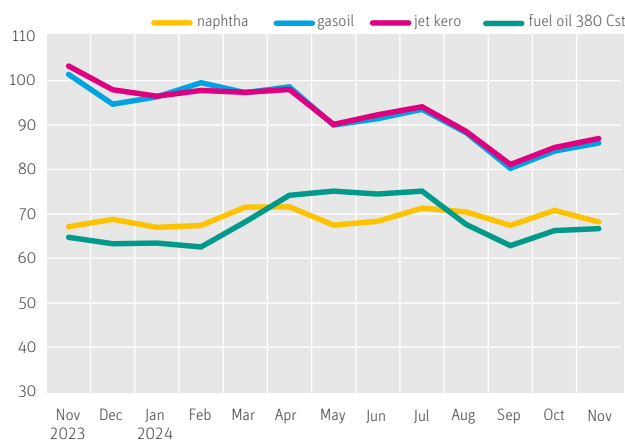


Table and Graph 7: Middle East Gulf market – spot cargoes, fob

\$/b

	naphtha	gasoil	jet kero	fuel oil 180 Cst
2023 November	67.13	101.44	103.27	64.77
December	68.78	94.69	97.95	63.28
2024 January	66.98	96.33	96.48	63.42
February	67.43	99.55	97.77	62.58
March	71.54	97.27	97.39	68.18
April	71.57	98.57	98.05	74.17
May	67.49	90.04	90.17	75.17
June	68.37	91.45	92.34	74.46
July	71.32	93.55	94.15	75.14
August	70.48	88.31	88.54	67.63
September	67.39	80.23	81.15	62.87
October	70.81	84.16	84.99	66.27
November	68.24	86.00	86.97	66.68



Source: Argus. Prices are average of available days.

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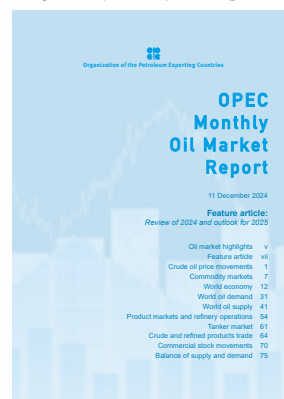
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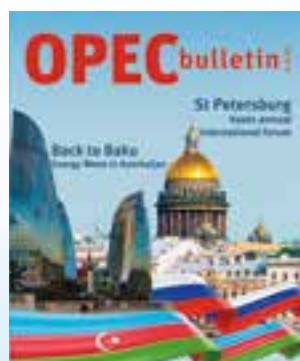
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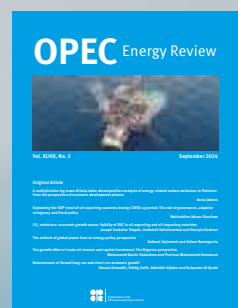


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