تحت رعاية صاحب السمو الشيخ محمد بن زايد آل نهيان، رئيس دولة الإمارات العربية المتحدة

Under The Patronage of H.H. Sheikh Mohamed Bin Zayed Al Nahyan, President Of The United Arab Emirates

ADIPEC أديبك
نادي الشرق الأوسط للطاقة
Middle East Energy Club

Host
أدنوك ADNOC

ADIPEC Leadership Roundtable

2023 Output summary

Decarbonising. Faster. Together.

Delivering lower carbon capital projects in times of uncertainty

Host Partner	Knowledge Partner
NMDC GROUP	KPMG

ADIPEC, brought to you by:
dmg::events

ADIPEC Leadership Roundtables

Defining the global energy future

The ADIPEC Leadership Roundtables play a pivotal role in the ADIPEC Strategic Conference programme. These sessions are held at the prestigious Middle East Energy Club (MEEC) and bring together ministers, top industry executives and policymakers from over 100 countries to engage in meaningful discussions and seek viable solutions to today's most pressing climate and energy challenges.

As part of an exclusive network of dynamic global executives, participants in the ADIPEC Leadership Roundtables are at the forefront of the energy sector, driving change with their insights and solution-oriented outcomes.

These roundtable sessions foster open and impactful conversations among influential decision-makers who are shaping the responsible energy industry's future and implementing innovative business strategies to create a cleaner and more secure energy landscape.

With a limited attendance of 30 delegates per session, each 90-minute roundtable is expertly facilitated by an experienced moderator and hosted by a thought leader in the industry. This format ensures highly interactive discussions and provides fresh, objective perspectives.

Foreword

The oil and gas industry accounts for 42 per cent of total global emissions. As we continue to make mutual headway on the decarbonisation journey, it is imperative we support one another to ensure successful delivery on individual commitments and protect project stakeholder interests in an uncertain market environment. At the same time, careful navigation of supply chain and economic volatility cannot be underplayed.

Industry-wide, transition milestones are being realised, however, the investment risk mitigation-reward optimisation paradigm needs to be re-examined and a clear course set for mutual stakeholder protection. Geographically, we also have a duty to support improved access to project finance for the Global South and other regions, countries and companies that will play a key role in the race to decarbonise.

It is incumbent on the industry to transform these challenges into opportunities and work collectively, collaboratively, and cohesively to accelerate action as we race towards the strategic ambition of net-zero by 2050.

Hosted by:
Eng. Yasser Zaghloul
CEO
NMDC Group

Delivering lower carbon capital projects in times of uncertainty

As the global energy industry embraces the energy transition, project financing is a critical factor. According to a new report by the World Economic Forum, $13.5 trillion in investments will be needed by 2050, particularly in the production, energy and transport sectors to transition to a more sustainable and carbon-neutral future.

Capacity and capability will be more than ever placed under the spotlight as integral to the long-term success of a diverse range of projects, including renewable energy, energy efficiency, clean transportation and enabling infrastructure.

In parallel, projects will require significant investment to achieve climate goals and ensure energy security. The road to transition continues to present a diverse set of challenges to financing global-scale energy projects, including policy and regulatory hurdles, supply chain disruptions, technology limitations and emissions reduction actualisation. Another issue, as we move into new areas and embrace new technologies, is the difficulty in measuring risk amid uncertain investment pathways.

What is crystal clear is that long-term decarbonisation is contingent upon collaboration and partnership. As we move into this new phase of rapid transformation, by working with companies, innovators and investors from outside the legacy stakeholder space, we have an opportunity to successfully translate strategies into executable plans through delivery of capital projects that ultimately will support the energy transition and get us to net-zero.

Moderated by:
Matt Khaw
Director, Oil and Gas Transition & Infrastructure Lead
KPMG UK

ROUNDTABLE THEMES

- What are the key challenges, opportunities and potential solutions for financing and delivering global scale, low carbon energy projects?
- How can we make capital more accessible, and which financial instruments are the best fit?
- How should collaboration play into driving investment interest and delivery of projects moving forward?
- What does the oil and gas industry, and the stakeholder community, need to do to balance the risk-reward dynamic and to focus on performance in this era of accelerated transition?

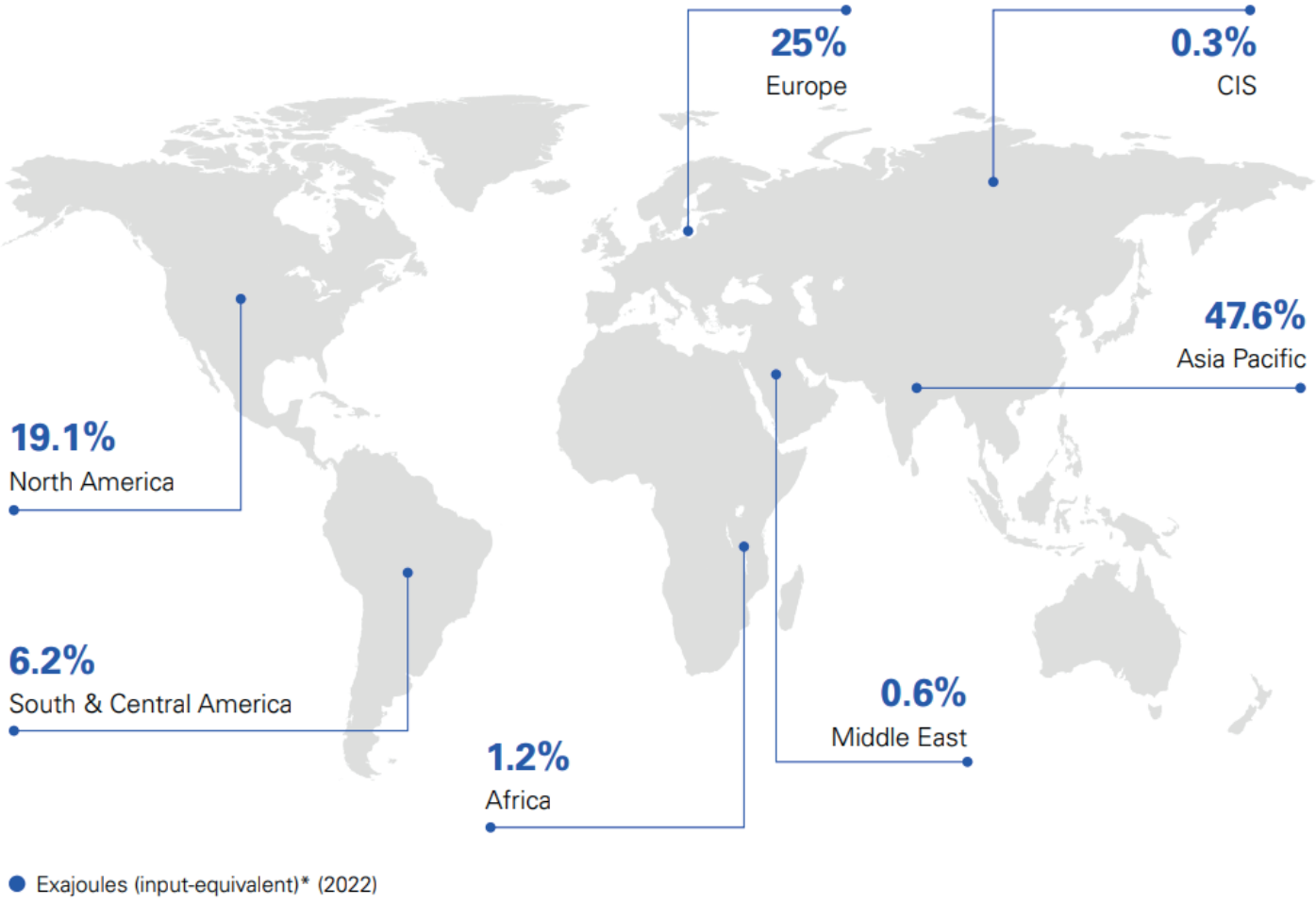
Redirecting future investment flows

As portfolios continue to broaden, integrate and become more complex, the emergence – and necessity – of nascent technologies is influencing financing decisions. An 'active' landscape is reportedly attracting investment into energy transition projects in developing markets but with a distinct bifurcation between the haves and the have nots. Capital is available for early-stage innovation with venture capital being poured into new technologies.

Developed market infrastructure is also a hot ticket for inbound capital with prudent investment into certain markets. This is largely due to global development finance institutions (DFIs) and multilateral finance institutions changing financial structures or first loss positions to incentivise investors to take strategic risk decisions they would typically decline.

Where financing falls between the cracks is at the either relatively late-stage venture capital mark or for large-scale growth equity (as opposed to late-stage infrastructure investment). For industry sectors that aren't anchored by legacy operations, investors also want to see that there is a clear plan in place that covers evaluation, relevant policy frameworks, evidence of an execution track record and overall bankability potential.

Renewables: Renewable power generation*



Localised capability and cross-border opportunity

Localisation of manufacturing capabilities is gaining ground and impacting funding opportunities. From Australia, India, and the US to the southeast Asian nations of Indonesia, Thailand and Vietnam, there is a global shift towards reduced dependence on single source procurement, for example, for solar panels and inverters.

With capabilities emerging at a local level, this is attracting growing investor interest. Coupled with increasing focus on products such as green ammonia, green methanol, etc., we are also seeing hybridisation of projects with alliances within the solar, wind, batteries, and other sectors. At the same time, a growing number of countries are stepping up to the plate with homegrown projects capable of supplying low-cost green power on demand.

This is also opening up doors to wider geographic opportunity. The International Energy Agency (IEA) has highlighted wind energy potential of 157 gigawatts. With neighbouring European countries clamouring for energy, funding is required for cross-border connectivity projects. This comes, however, with certain technological challenges related to network grid connection capacity, thus adding a layer of unwelcome investment risk.

Local level roundtable discussions between stakeholders and local activism are crucial to get projects of this nature moving, and the technology challenges addressed. But, this also requires a serious effort in terms of stakeholder engagement to progress.

Decarbonisation costs losing investment shine

The construction sector, which is responsible for 38 per cent of global emissions, is primed to partner with energy sector gamechangers in order to accelerate net-zero commitment, but it is not a case of a straightforward product and process switch. If we consider, for example, raw materials required for cement manufacture – which account for one-third of emissions – the cost for a decarbonised alternative could jump from US$40-50 per tonne to US$170-200 per tonne.

Cement companies are asking for help with the decarbonisation process and financing for approved products but if the product is not economically viable then we reach a funding and decarbonisation impasse. While this is a hard pill to swallow in developed markets, it is 'out of reach' of the Global South where shareholders are unable to fund without having policy in place.

It's a similar situation with gas pricing where renewable natural gas with the lowest sustainability criteria costs around US$26 mmbtu whereas the 'gold standard' would be around US$50 mmbtu. With 35-40 mmbtu needed to produce one tonne of methanol, this puts the cost of production at 70 per cent of the selling price, which is simply not sustainable.

Even in developed markets like Europe and North America, where investment-encouraging policy is in place, a cement company with a strong business case and capability to expand will struggle to finance a long-term outlook because the decarbonisation agenda is rife with uncertainty. Add to that the reality of increased raw materials costs and the proposition loses lustre.

From the debt instrument perspective, the advantages of green bonds may be slight, but could still help move the needle. Offering a 25-75 basis point discount compared to a regular bond, this may not appear hugely significant but does add weight for funds with green financing targets.

It is widely acknowledged that capital is there, but it is not necessarily flowing down to where it is needed most, compared to a decade ago, and green bonds are a good example. And if this is linked to internal rate of return and return on investment (ROI) for this new phase of renewables projects, the business cases are starkly different requiring a rethink on how evaluation and value assurance throughout the lifecycle is undertaken.

The geographic concentration of global renewable supply chains carries significant risks

Solar Energy

- China produces most of the silicon used to make solar panels.[75] Polysilicon manufacturing is spearheaded by just ten companies, seven based in China.[75]
- In 2020, floods forced the closure of the Chinese factory of TOngwei, the world's largest polysilicon producer, resulting in a sharp rise inglobal polysilicon and solar module prices.[75]

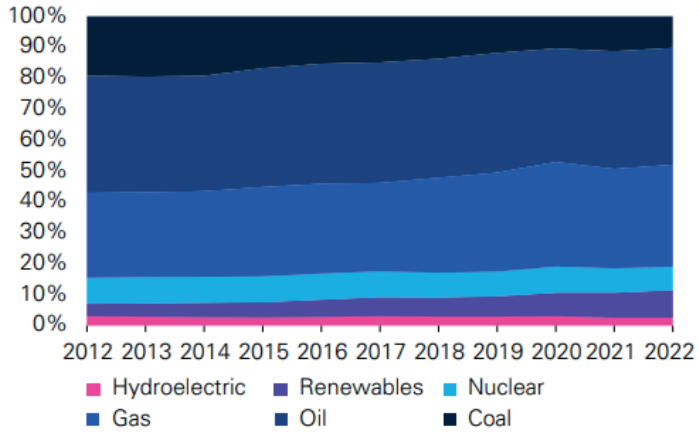
Wind Energy

- China produces about 60 percent of the world's wind blades.[78]
- The wind industry relies on commodities like steel, copper, and aluminum, all of which have experienced high price volatility due to COVID-19 and Russia's invasion of Ukraine.[79]

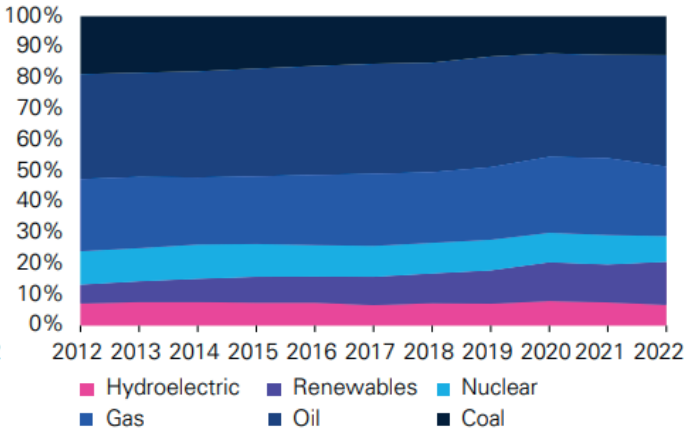
Batteries

- Battery storage production depends on reliable access to minerals like nickel, lithium, cobalt, manganese, and graphite, the supplies of which are in a handful of countries, such as Australia, China, Chile, and the Democratic Republic of Congo.[80]

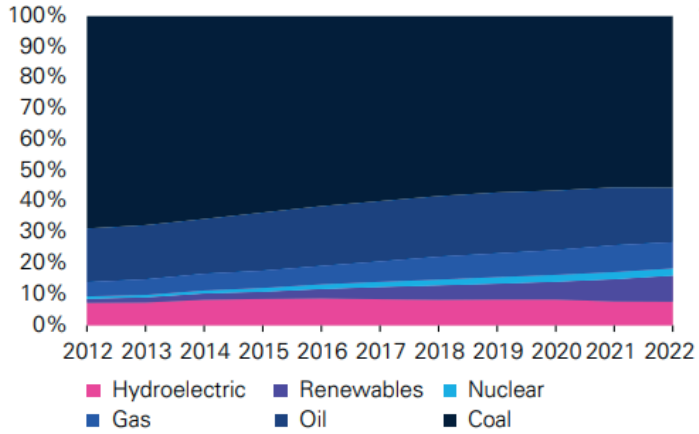
US primary energy shares by fuel



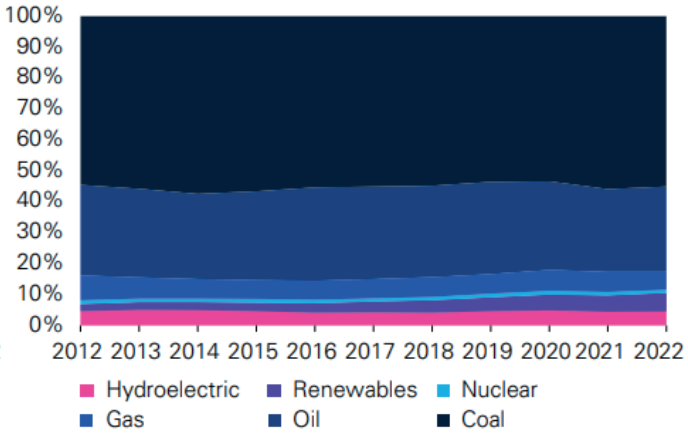
EU primary energy shares by fuel



China primary energy shares by fuel



India primary energy shares by fuel



Collaboration key to risk-reward understanding

This increasingly complex stakeholder landscape demands a more structured and robust approach to collaboration with operators, investors and other partners on the same page from day one. Trust begins with openness about thresholds and conditions precedents, and without this investment decisions cannot move forward, and projects will not be de-risked.

In the past, international oil companies (IOCs) and partners have placed money on the table 36-48 months ahead of anticipated handover in order to get the project moving. The open book process relies on collective buy-in and shared risk combined with mobilisation of different elements to push through on an agreed timeline.

Today, it's a very different scenario, with so many project unknowns coming into play. The historic supplier-buyer relationship model is fast becoming redundant. For example, take a carbon capture and utilisation project in Morocco, which is wholly reliant on access to a pipeline or rail partner to evacuate CO^2 to the nearest port. That port needs to have liquification and monitoring infrastructure in place supported by maritime infrastructure to build carrier vessels. If this does not exist, how can a bottom-up market be created that will ensure investor interests, stakeholder requirements and the overarching business plan are fully aligned?

This is where collaboration and the ability to pivot are critical; particularly in sectors where traditional operators are introducing new capabilities. That said, when considering the holistic economic picture, rather than asking a century-old legacy company to change their business model overnight, a degree of empathy and operational understanding is imperative in figuring out how to help them adapt in order to thrive in the future.

The reality is that we will not be able to de-risk for every single active and planned site. This again puts collaboration front and centre and demands a mindset shift where risk is re-evaluated, and different commercial constructs are utilised. Accepted risk outside of the normal parameters and incentivising all parties to a win-win outcome must be considered to achieve net-zero.

Over the last two years, there has been a progressive realignment of venture capital with the ecosystem increasingly focused on 'drastic, revolutionary change'. For a debt bank, this makes project finance impossible. There is a glimmer of hope, however, this relies on decarbonisation being consumer driven: consuming less and emitting less.

This makes it easier to capture subsidies. An example of this is H2 Green Steel, one of Europe's leading projects. Founded in 2020 to produce green steel using renewable hydrogen, it is currently completing a €5 billion+ fundraise for its first plant with a large, diverse equity investor pool and investor flexibility built into the deal. The company also worked with banks with climate expertise and has attracted offtakers by providing an equity upside. It might not be classed as a revolutionary project, but it is a great example of creative collaboration.

To support collaboration, sustainability and performance reporting that incorporates additional credible, quality third-party data sources is a useful channel to reinforce investment opportunity, stakeholder engagement and delivery progress. The availability and useability of data continues to be a challenge in a capital projects context. This is driven by having multiple data sources and systems which are owned by different stakeholders, as well as the need for significant manual intervention to standardise, analyse and interpret the data. Improvements to ensuring that the right data is in place, and that it flows to the right places remains crucial.

A changing performance dynamic

An entirely new lexicon has evolved around renewables, and concerns have been mooted about how clearly this is filtering down through the strategic and operational strata of businesses. At the same time, while the advent of entrepreneurial niche players is providing new direction and opportunity, it has been noted that there is a disconnect between their corporate approach and that of a legacy operator.

Despite this, technology companies report keen interest from sustainability-driven oil and gas industry customers who are looking to optimise traditional assets and transform operations across a raft of measures from hydrogen scaling and CCUS to biofuels. Internally, the industry is leveraging decades of learnings and expertise in refinery and chemical plant operations to establish a foundation from which they can springboard sustainability processes supported by next-generation technologies. Investment into various technologies can reportedly cut CapEx requirements by anywhere from 20-40 per cent in ammonia plants, for example, and eventually reduce the cost of hydrogen from US$6 to US$2 per tonne.

Legacy oil and gas companies can also be deemed higher risk investments because they carry with them the stigma of past actions that have impacted global communities. Accusations of greenwashing persist. In some geographies, particularly where permitting or community buy-in is a challenge, companies have often designed 'for what is best' rather than what is required. The resulting underperformance perpetuates a negative impression of a company, that is flagged during due diligence rounds.

The changing risk profile is also influencing the way IOCs assure capital projects. The time-honoured and traditional hydrocarbon approach may have served its purpose, but the renewables insert is fraught with challenges. This flows into the engineering, procurement and construction (EPC) domain and across the supply chain. More needs to be done in terms of developing a robust contracting strategy, and how value is examined across the lifecycle, particularly as we transition from expectation to reality. This also requires systems to be established that improve visibility and effective communication across stakeholders and all throughout the project lifecycle.

Companies active in European and (US) Atlantic continental shelf wind projects, for example, have taken write downs with some companies even choosing to exit because the economics do not make sense; thereby derailing transition momentum. The GCC is not immune either, with planned projects stymied for months and even years by contract awarding and budget delays. Yet again, this brings the topic of better collaboration to the fore with increased attention and time investment given to developing strong client-contractor, contractor-contractor and contractor-other stakeholder(s) relationships; in order to share and even eliminate risk and realise ROI.

The finer details of risk elimination, or management, filter down to issues of tighter cost control and in-depth asset analysis to avoid equipment duplication, while the proper sizing needs to be built into the asset as a capital saving measure, subsequently supported by full supply chain analysis and performance analysis.

Locational risk could be mitigated through the build-own-transfer model whereby partners are brought in as investors, with small capital stakes to get a seat at the table, and the creation of a standardised project model. High capital stake projects can be broken down into smaller pieces in order to assess the risk profile of each dynamic element. By segmenting projects, this reduces the cost of capital to present a more attractive investment opportunity for capital markets with lower risk tolerance and to de-risk what would otherwise be large complex capital projects.

Joint ownership to navigate industry challenges

While collaboration is clearly an imperative, there is a requirement to break away from systems and behaviours of the past. The management of non-traditional partnering at the funding stages and during execution is therefore key to accelerating decision making and, ultimately, project delivery. A diversified partnership base can inform better collaboration but requires tighter integration throughout the value chain with the right incentives established for all parties.

This also requires greater ownership between parties, particularly, owner / operators and EPCs to come together to address risks that are materialising in an uncertain environment. It is recognised that there are margin and cost pressures flowing through from the Operator across all stakeholders which puts pressure across the entirety of the supply chain. Traditional projects continue to overrun on budget and schedule, and the addition of low carbon and renewables projects adds additional complexity into the system. In an increasingly volatile market, more joint ownership and sharing of risk is required.

A skilled, engaged workforce is required to deliver on the energy transition

Talent is an investment driver. Existing talent populating the oil and gas industry is well suited to run with the decarbonisation challenge with expertise translatable to the carbon capture space. Where the industry falls down is in attracting new, young talent and this runs the risk of creating a generational gap with the 'old guard' entering retirement and a dearth of inbound talent, which may be a red flag for prospective investors.

According to US labour statistics released by Bloomberg, since 2015 there has been an 83 per cent drop in the critical skillsets required for the oil and gas industry while, at the same time, an eight per cent increase in skillsets is vital to meet global energy demand growth. One in two people see zero growth opportunity in the industry with two in three stating a (perceived) lack of future jobs as the reason to not pursue a career in oil and gas; and two in three also concerned about a lack of long-term financial stability.

The industry needs to 'think smarter and reclaim the narrative' about how the value proposition is framed for the next generation of talent. For the existing workforce, companies are actively addressing the skillset challenge with many developing competency development programmes that not only deliver product technology knowledge, but also operational knowledge as well as sustainability education.

An interesting point raised is that of trust. As they progress within the industry and navigate the decarbonisation path, the managers or leaders of today have to acquire new competencies along the way. Whether it's pivoting towards technical know-how or the ability to identify a potential intellectual property issue, this newly complex operational landscape requires agile talent.

ROUNDTABLE TAKEAWAYS

- When considering the delivery of low carbon capital projects during an increasingly volatile and uncertain environment, key insights converged on three key themes: Capital, Collaboration & Commercials, and Performance.
- Capital is available but the challenge lies in making it accessible for qualified players/stakeholders and projects, with credible and achievable net-zero ambitions.
- Collaboration is key, from frontloading stakeholder engagement to inclusivity, while legacy operators also need to build trust within the investor and partner ecosystem.
- There is 'fragility' of the situation and a recognised need for Owner/Operators-EPC dialogue and strategic planning on how the portfolio will change, how to jointly manage and share risks, and to build supply chain resilience.
- The underlying metrics are also changing, and historic contracting methods and commercial constructs are no longer fit for purpose; requiring collective stakeholder involvement to move the needle while protecting the supply chain.
- Data is driving performance evaluation and information has to be transparent and trustworthy if we are to stimulate future investment.
- Commitment to on-time, on budget delivery of capital projects needs to be a clear focus with all stakeholders aligned from day one, with the appropriate commercial constructs in place to incentivise win-win outcomes.
- Our people are future performance drivers and legacy knowledge, and expertise cannot be underestimated while acknowledging the need to reskill and upskill for long-term success.
- We need to bridge the generational gap and encourage new talent to join us on our journey, bringing new perspective as we build the skilled workforce of the future.
- Risk and reward go hand in hand as we embrace the global energy transition and work towards decarbonisation, and it is imperative that investors look to the long-term.

ADIPEC أديبك
نادي الشرق الأوسط للطاقة
Middle East Energy Club

Host
أدنوك
ADNOC

ADIPEC Leadership Roundtables

4-7 November 2024

Abu Dhabi, UAE

Decarbonising.
Faster.
Together.

For more information or to apply to participate in the Leadership Roundtables at ADIPEC 2024, please contact **roundtables@adipec.com**

dmg events
Office C40-L06-10, Level 6, Tower 4
Yas Island, Yas Creative Hub

PO Box 769256, Abu Dhabi, UAE
T: +971 2 4444 909
F: +971 2 4444 383
E: roundtables@adipec.com
W: www.adipec.com

ADIPEC, brought to you by:
dmg events