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WHITEPAPER

ENERGY TRANSITION: RESHAPING INVESTMENTS AND STRATEGIES

How to ensure energy investments continue to flow in a low-carbon world?

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FOREWORD

On behalf of the Arab Petroleum Investments Corporation, I am pleased to present the Whitepaper of the strategic roundtable titled, "Energy Transition: Reshaping Investments and Strategies."

Held on September 11, 2019, on the sidelines of the World Energy Congress in Abu Dhabi, the workshop brought together more than 40 of the MENA region's top decision makers from the energy and financial sectors, including representatives of government, multilateral organisations and the private sector to answer: 'How to ensure energy investments continue to flow in a low-carbon world?'

The participants debated the issues surrounding this important question thoughtfully, considering the rapid evolution of the energy industry globally and the competition to attract the necessary capital; factors which demand greater stakeholder collaboration and engagement between leaders of the energy and finance markets.

Encompassing a diverse yet interlinked range of topics, the recommendations present an actionable and achievable roadmap for the energy industry, the cornerstone of the region's economies, to enter the next decade as a relevant and positive disruptor.

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EXECUTIVE SUMMARY

Energy investments must align with the transition towards a low-carbon world – the biggest shift in energy markets for nearly a century. This means many things. For our roundtable participants, it particularly means: enhancing finance, improving regulations, pricing carbon, bolstering efficiency and re-educating the public on misconceptions surrounding the hydrocarbon industry. Implementing the recommendations detailed in this Whitepaper should ensure the energy market enters the 2020s as a relevant and positive disruptor. This is vital to meet a critical goal: sustaining energy investments in a low-carbon world.

Crucially, the energy sector needs more innovation if it hopes to attract more investment, and at scale. According to the S&P 500, total sector returns in energy ranked the lowest at just 3% between September 2009 and September 2019. If, for example, the hydrocarbon sector hopes to increase the value of each molecule produced – today just 20% is being utilised – then the business model must be significantly altered to reward operators more on consumption than volumes extracted.

The industry cannot remain content with just improving its capital efficiency, but will have to proactively adapt and innovate. Flexibility and creativity are important during this period of low yields and interest rates, which create even more competition for capital. Concerns over a global recession have risen, leading to a 'wait and see' approach as energy investors worldwide closely monitor for improvements in fundamentals.

This strained backdrop collides with energy entities' needs for increased and smarter spending to meet both current and future growing energy demand and environmental policy requirements. The latter encompasses lower carbon technologies and fuels, different forms of renewables, storage solutions, carbon capture utilisation and storage (CCUS) and spurring innovative research and development (R&D). The energy market would need to make it appealing for investors to participate, while investors must be willing to diversify their offerings and take on some of the risks.

95% **of the budget for a 2°C stabilisation trajectory will be consumed by existing industrial facilities and power plants if not prematurely retired or retrofitted with CCS.**

14% **is the share of global greenhouse gas (GHG) emissions from the transportation sector.**

The energy transition will reshape the entirety of how energy is produced, transported, consumed and stored. Therein lies the value of collaboration between energy and finance markets. Greater dialogue and tangible progress on the Top 5 Recommendations is urgently needed to ensure capital availability and energy needs are aligned.

"Ripples will be sent across financial markets by the energy transition, triggering hard-to-answer questions and complexities."

MENA IS NOT IMMUNE TO CLIMATE CHANGE

Floods, droughts and soaring temperatures are realities for the MENA region – one of the world's most vulnerable areas to climate change. A NASA study showed that the drought that began in 1998 in the eastern Mediterranean Levant region is likely the worst of the past 900 years. And considering the searing temperatures in Kuwait and Iraq in recent years – some of the highest recorded worldwide – the Max Planck Institute for Chemistry expects parts of the region to become uninhabitable in the next few decades.

Source: World Economic Forum (WEF), World Bank, NASA, Max Planck Institute for Chemistry, UNICEF

"Up to USD 1 trillion is needed in MENA for total energy investment over the next five years, all whilst governments face constrained budgets and competing demands. New models must be developed to create the right incentives across the value chain and sectors."

19% **of the aforementioned USD 961 billion investment is concentrated on gas.**

34% **of the investments in power are for renewables, with more than half of the investments in North Africa.**

2018 **saw the cost of upstream capital rise by 3%. If this should persist, more will need to be spent for the same level of capital.**

22% **of the total investments are non-government and led by the private sector.**

Source: APICORP's MENA Annual Energy Investment Outlook 2019, The New Climate Economy: 2018 report of the Global Commission on the Economy and Climate

IN BRIEF

TOP 5 Recommendations

ENHANCE FINANCE

As the energy market diversifies, so must energy finance. Accessibility and diversity of investments are key. Financial models, commercial mechanisms, leverage and funding trends (state-owned entities issuing corporate bonds), risk mitigation and risk sharing need to improve. This must encompass the private sector, state-owned entities, governments and others. Crucially, progress must be quick.

REGULATORY CONSISTENCY

Simplified and, more importantly, stable and transparent regulation will buoy investors' confidence.

INTRODUCE CARBON PRICING

Some form of carbon pricing will give energy technologies a level playing field, and it will give finance stakeholders greater visibility.

BOLSTER EFFICIENCY

Improving energy efficiency across the value chain for both supply and demand and streamlining operations to extract maximum value will maximise the value of assets. This is key to improving risk appetite.

MYTH BUSTING

Misconceptions around the hydrocarbon industry need to be remedied. Greater emphasis is needed on re-educating, rather than only advocating, to make complex issues around the industry more accessible and digestible. This will help the public take a more informed position on the industry.

Recommendation 1

ENHANCE FINANCE

According to APICORP's estimate, USD 1 trillion could be invested in the energy sector across MENA over the next five years. To meet this, the accessibility and diversity of investments must improve. Otherwise, investments could fall well short of expectations and threaten countries' abilities to meet their energy production and environmental targets.

First, there is a need to create a supportive environment that enables greater penetration by the private sector to fill the gaps that energy majors, national oil companies (NOCs) and governments cannot meet alone. The number of private sector players is pertinent (More on this in Recommendations 2 and 5). Take renewable energy as an example. Many countries, including in MENA, have announced ambitious renewable/clean energy targets (Morocco has already met its 42% renewable energy target by 2020). But very few are expected to meet those targets, certainly in the short to medium term. Banks are mostly inclined to finance consortias that involve large-scale and well-rated companies (there are only a handful in MENA), leaving smaller players unable to access finance. In these circumstances, the ability of countries to meet their renewables targets is constrained by the capacity of those providers to carry out more projects.

Second, new financial and commercial models need to be adopted that allow for better risk mitigation and risk sharing. Operators seem pressured to take on risks that banks are otherwise more suited to undertake, forcing them to explore new sources of finance. These include tailored funding mechanisms, such as mini-perms, green bonds and the standardisation and aggregation of projects, as well as soft loans and crowdfunding. The renewable energy industry has certainly benefited from these mechanisms, but the rest of the energy value chain is lagging.

This is where Development Financial Institutions (DFIs) are instrumental in bearing part of the risk through the provision of A/B loans and syndication. In these instances, financial institutions participating as B Lenders can benefit from the same status as DFIs, such as preferred creditor status. This should help investments in renewable energy and, in smaller instances, midstream and downstream.

Source: APICORP, The New Climate Economy: 2018 report of the Global Commission on the Economy and Climate, Bloomberg, International Finance Corporation (IFC)

On the other hand, a large share of upstream and midstream investments are still being shouldered by the equity of active NOCs and international oil companies (IOCs). Interestingly, over the past two years, there have been signs of financial maturity in the region and willingness to optimise balance sheets. In 2017, Abu Dhabi National Oil Company (ADNOC) issued its first international bond and Saudi Aramco followed suit with a record-breaking bond sale. The region's evolving position on the global financial stage presents the opportunity to optimise capital structure, get access to international capital markets and diversify long-term strategic financing options.

In addition, fiscal incentives, including tax exemptions/deductions, credit guarantees and non-fiscal incentives like procurement and logistical support, can also be used by governments to induce sustainable investment. Enhancing finance is not simply a correlation between the size of investment and the pace of progress. Smaller investments may have more impact (More on this in Recommendation 4).

In a nutshell, energy investment decisions must be taken on an integrated basis and fall within the framework of a well-articulated energy mix.

Recommendation 2

REGULATORY CONSISTENCY

Regulations that give policy consistency and stability are vital. For example, whilst energy subsidy reform may lead to higher prices, investors in different technologies or parts of the value chain always prefer a transparent and consistent regulatory regime that will provide assurance on the absence of future potential distortive policies and ad-hoc changes.

Some countries in the MENA region have taken steps to undergo wider economic reforms. Soon after oil prices fell in 2014, countries in the GCC started to reduce their energy subsidies. Meanwhile, others, including Jordan, Morocco and Egypt, who had already initiated their reform plans, continued with the hope of phasing subsidies out entirely. At the same time, the implementation of a 5% value added tax (VAT) in some of the GCC countries also indicates a wider effort to balance country budgets and reduce dependence on hydrocarbon exports to meet spending needs.

More must be done to create a clearer and stable pricing regime to enable sustainable penetration of

renewables, which also benefited from hydrocarbon price reforms. In the last two years, the levelised cost of electricity (LCOE) per megawatt-hour for onshore wind, solar photovoltaic (PV) and offshore wind has fallen by 49%, 84% and 56% respectively worldwide since 2010, according to Bloomberg New Energy Finance (BNEF). The next phase will be to facilitate funding for grid reinforcement and storage technologies that are required for the massive penetration of renewables.

The low-carbon and renewables regulatory environment in some countries has dramatically evolved. For example, Jordan's almost 10-year-old renewable regulations have resulted in a mature renewables market today. The introduction of competitive practices delivered an 85% price reduction to less than 2.5 USD cents per kWh – cheaper than generating electricity from imported gas. This improved regulatory environment led to more active private sector players, which in turn drove costs down and made the market even more attractive to investors.

Source: APICORP, Global CCS Institute, Bloomberg New Energy Finance (BNEF), The New Climate Economy: 2018 report of the Global Commission on the Economy and Climate

Recommendation 3

INTRODUCE CARBON PRICING

There is a near unanimous agreement on the need to put a price on carbon. Carbon pricing is needed to steer industry towards lowering carbon emissions and encourage the adoption of low-carbon fuels (including fossil) and technologies. In the context of investments in a low-carbon world, a price on carbon is essentially born from the need to level the playing field for energy technologies and provide visibility for finance stakeholders.

As long as carbon pricing is absent and certainly in areas where carbon is effectively being subsidised (via energy subsidies), producers will put a lower priority on reducing fuel consumption, and/or better utilise energy via, for example, heat recovery (More on this in Recommendations 2 and 4).

But carbon pricing is not an easy conversation, globally (More on this in Recommendation 2).

Source: APICORP, Grantham Research Institute on Climate Change and Environment, World Bank, Global CCS Institute, Europa

Two routes have been explored: cap-and-trade, such as the Emissions Trading Scheme (ETS), and carbon taxes. An ETS caps the total level of GHG and allows those industries with low emissions to sell their extra allowances to larger emitters, therefore establishing a daily price. The European Union (EU) ETS is the largest and oldest scheme, established in 2005. The scheme, and others worldwide, has encountered intense criticism for ineffective pricing and double counting. But it provides an example for other regions to examine and learn from. The other route is a carbon tax, which differs from a cap-trade framework in that the emission reduction outcome of a carbon tax is not pre-defined, but the carbon price is. Approximately 40 countries and more than 20 cities, states and provinces already use carbon pricing mechanisms, with more planning to implement them. Today, most energy demand outlooks assume different levels of carbon prices.

Recommendation 4

BOLSTER EFFICIENCY

How the energy industry uses, shares and stores energy is impacting the flow of energy investments. With higher awareness of the inefficiencies in the value chain, there are increasing calls that the business model must be reshaped so that energy stakeholders and investors are rewarded based on the final end-use, rather than on the volume of production (More on this in Recommendation 1).

Integration is also key. Attempts to integrate the hydrocarbon supply chain, including refining and petrochemicals, should maximise the value of the barrel of hydrocarbons produced. It will also diversify the sector, offering a suite of more sophisticated products and thus enhance the final value of each molecule produced. Among other benefits, this will attract and develop a more specialised and skilled labour force.

Furthermore, energy intensity in MENA remains higher than the world average (0.151 ktoe/$1000 of GDP in GCC, compared with 0.139 ktoe/$1000 for the world).

Accordingly, Energy Service Companies (ESCO) that provide energy saving solutions and manage impactful energy efficiency projects, and more recently, innovative financing methods for consumers, are gaining prominence. Savings generated from these initiatives can be used to pay back the capital investment for periods of between five and 20 years. Where returns are not realised, ESCOs are expected to provide the difference.

Efficiency gains alone could allow the world to extract twice as much economic value from the energy it uses up to 2040 compared to today, according to the International Energy Agency (IEA). This would also reduce energy bills for consumers by more than USD 500 billion dollars per year, curb energy demand growth, lower energy imports and cut air pollution in cities (pollution incurs high healthcare costs, killing 7 million people a year, according to the World Health Organisation).

The role of governments and targeted regulations can have a direct impact. These could come in the form of various efficiency standards. Since 2016, via the Saudi Energy Efficiency Programme (SEEP), the kingdom implemented stricter efficiency standards for building shells, space cooling and heating in electrical appliances, in addition to introducing energy intensity standards for industry. In Egypt, energy efficiency programmes range from educating and training staff, to industry specific measures that are designed to reduce energy consumption, such as the industrial Electrical Motor Driven Systems (EMDS) and the Egyptian National Cleaner Production Centre (ENCPC).

Plus, leveraging cross border projects, such as the GCC electricity grid and gas connectivity, would utilise the region's existing assets much more efficiently. In turn, this would reduce cost and improve energy security.

Source: APICORP, International Energy Agency (IEA), World Economic Forum (WEF), World Health Organisation (WHO)

Recommendation 5

MYTH BUSTING

Negative sentiment around hydrocarbons, notably oil, is significantly damaging the sector, especially at a time when all fuels and technologies will be needed to manage an effective energy transition. It is preventing the oil industry from attracting the necessary financing and talent, both of which lie at the core of a sustainable, innovative and growing energy mix. It is not simply a question of changing the narrative, but more about re-educating the public about the energy industry, including hydrocarbons, and their role in development. This should facilitate a better understanding of the complexities around the industry and an appreciation of its value in the energy transition.

Positive communication about the industry also plays a key role in attracting talent who can spark new ideas; critical in an industry that is in dire need of greater innovation. Industry growth and success in addressing climate change are only as robust as the ideas that drive it.

Highlighting existing success stories in both hydrocarbons and low-carbon energy, while pursuing more, will help investors commit to more R&D and implementation of projects, particularly at scale. For example, the first crude-oil-to-chemicals (COTC) petrochemical plant in MENA might be the USD 20 billion Saudi Aramco/SABIC complex and the world's first fully commercial carbon, capture and storage (CCS) facility in the iron and steel industry is now operational in Abu Dhabi. These positive market moves offset part of the reputational risk associated with exploring new territory.

The same proactive message applies to energy projects that successfully merge both fossil fuels and renewables. For example, the Miraah project in Oman is one of the world's largest solar projects that generates 6,000 tonnes of steam a day for enhanced oil recovery (EOR) operations at the sultanate's Amal oilfield. Careful and informed advocacy that hydrocarbons are partners in environmental success is essential to accelerating funding. This must be emphasised by NOCs, IOCs, governments, wider industry and academia.

Source: APICORP, BBC, BP, Petroleum Development Oman (PDO), GlassPoint Solar

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