

SHEARMAN & STERLING

ENERGY & INFRASTRUCTURE INSIGHT

Summer 2019

Shearman

**DEAL OF THE YEAR IN TURKEY: ÇANAKKALE
(INCLUDING THE 1915 ÇANAKKALE BRIDGE)
MOTORWAY PROJECT**

CEE DEAL OF THE YEAR AWARDS 2018

**MIDDLE EAST AND AFRICA CLEAN DEAL OF THE
YEAR: SHARJAH WASTE TO ENERGY**

PFI AWARDS 2018

**MIDDLE EAST AND AFRICA REFINANCING DEAL
OF THE YEAR: AL DUR/AL EZZEL**

PFI AWARDS 2018

**MIDDLE EAST AND AFRICA OIL & GAS DEAL OF
THE YEAR: ENERGEAN**

PFI AWARDS 2018

**MIDDLE EAST AND AFRICA TURKISH DEAL OF THE
YEAR: ÇANAKKALE**

PFI AWARDS 2018



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FROM THE EDITORS

We are pleased to introduce the first edition of our Energy & Infrastructure Insight, providing information and analysis of current issues and projects across the globe.

In this edition, we offer insights into how Gulf Cooperation Council (GCC) countries are starting to diversify their energy mixes away from hydrocarbon-dependent technologies and looking to waste to energy (WtE) projects to provide a solution. We also consider the high-level market drivers, opportunities and challenges of developing unconventional oil and gas projects.

In Europe, we look at whether Cibuk 1, a 158 MW onshore windfarm, could be a template deal for future wind farm development in Serbia and the possible effect of the UK energy white paper on the current nuclear new build programme.

Finally in Africa we discuss developments in the mining sector in Sub-Saharan Africa.

We hope you find this report interesting and informative.



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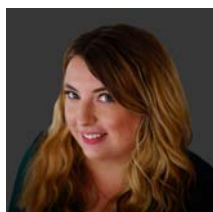
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DEVELOPING WASTE TO ENERGY PLANTS IN THE GULF REGION – LESSONS LEARNED FROM SHARJAH

IN RECENT YEARS THERE HAS BEEN INCREASED ENVIRONMENTAL AWARENESS AND A GREATER FOCUS ON SUSTAINABLE AND "GREEN" ENERGY PRODUCTION IN GCC COUNTRIES. BUDGETARY PRESSURES CAUSED BY THE RECENT LOW OIL PRICES HAVE LED GCC COUNTRIES TO START DIVERSIFYING THEIR ENERGY MIXES AWAY FROM HYDROCARBON-DEPENDENT TECHNOLOGIES AND TOWARDS WASTE TO ENERGY (WTE) PROJECTS TO PROVIDE A SOLUTION.

THE SHARJAH PROJECT

Masdar and Bee'ah are developing the Sharjah Project on a 50/50 basis, with Bee'ah supplying municipal solid waste (MSW) and Sharjah Electricity and Water Authority (SEWA) purchasing the power produced.

The Sharjah Project will be located adjacent to Bee'ah's existing landfill site in Sharjah and, once completed in 2020, will incinerate approximately 300,000 tonnes of MSW and displace almost 450,000 tonnes of CO₂ emissions per year. It will contribute to Sharjah's effort to reach its "zero waste-to-landfill" target by 2020 and the UAE's goal of diverting 75% of MSW from landfills by 2021.



Although WtE is not new technology, with established WtE markets in Europe and the US, it is still very much in its infancy in the Gulf Cooperation Council countries (GCC). The lack of project financed WtE projects in the GCC, meaning there are no established "precedent" projects, undoubtedly impacts developers when considering these projects. Furthermore, WtE projects, although beneficial, are not a simple solution to waste and energy challenges. A number of key factors contribute towards a successful WtE project, including an appropriate site, a well-functioning waste management system with a stable supply of MSW (and a sufficient minimum energy content); and a suitable environmental, regulatory and legislative framework in the host country (or the desire to develop one).

On that basis, what are the key considerations that might impact the successful development of such a project?

PROJECT DEVELOPMENT CONSIDERATIONS

In practical terms, potential lenders to GCC WtE projects will, unsurprisingly, be looking for developers and contractors with a proven track record of developing, constructing and operating WtE facilities in the region (if not in the specific jurisdiction).

However, given the infancy of WtE in the GCC, it is likely that it will be difficult to find developers or contractors with specific, relevant experience. As a result, experienced Middle Eastern developers may instead partner with experienced European WtE contractors that bring their specific industry expertise to WtE projects in the GCC.

A key consideration in any WtE project will be the location of the WtE facility itself. WtE facilities need to be reasonably proximate to infrastructure (e.g., gas, water and roads) which, in rural areas in certain GCC countries, may be challenging.

The location of the WtE facility also has to facilitate connection to the power transmission system, allow for the construction of any required interconnection facilities and synchronise with the logistics of the existing waste management system to ensure a consistent supply of MSW feedstock.

The Sharjah Project addressed this issue by locating the WtE facility on an existing landfill site. This meant that the WtE facility did not cause any additional disruption to the local community and, being built on a working site at the centre of the Emirate's waste management system, was able to utilise existing utility and grid connectivity.

From a technological perspective, WtE remains both complex and expensive compared to landfill and conventional I(W)PP technology. To fulfil WtE strategies and encourage private sector participation, governments will need to "create" this incentive by ensuring that the price paid for power produced by WtE projects reflects the increased development costs of WtE projects, generates sufficient revenues to support a limited recourse financing and provides the developer with a worthwhile equity return.

A number of the financing concerns which arise in GCC WtE projects are similar to those in conventional I(W)PPs, and prospective lenders will be looking for a bankable project structure with a risk allocation that de-risks the generator to the greatest extent possible. As a result, potential lenders to GCC WtE projects are likely to attempt to replicate, as much as possible, the 'typical' risk allocation found in conventional GCC I(W)PPs.

As well as replicating the I(W)PP tariff structure, prospective lenders to GCC WtE projects are also likely to expect project risks to be addressed in the same way as in a conventional GCC I(W)PP. For example, in a GCC I(W)PP, fuel supply risk is typically allocated to the government offtaker, and the generator is kept whole with respect to losses arising from a fuel supply failure.

Likewise, in a project-financed WtE project, lenders would expect supply risk with respect to MSW (the "fuel" or feedstock) to be addressed the same way.



PROJECT AWARDS

- MENA Waste Deal of the Year: Sharjah Waste-to-Energy *IJGlobal 2018*
- Middle East and Africa Clean Deal of the Year: Sharjah Waste to Energy *PFI Awards 2018*

CONCLUSION

Whilst the appeal of WtE projects in the GCC, from a policy perspective, is clear, it is also clear that with decreased oil revenues and more strained government balance sheets, GCC governments cannot rely on self-funding WtE projects to make their ambitious WtE strategies a reality.

As a result, private sector participation in the GCC WtE sector will be necessary, and the Sharjah Project is an excellent example of how this can be accomplished.

However, increasing private sector participation in a sector where projects are complex, expensive and heavily regulated will require significant investment, and risk sharing, by GCC governments.

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CIBUK 1 WIND FARM – A TEMPLATE DEAL FOR FUTURE WIND FARM DEVELOPMENT IN THE BALKANS?

OVERVIEW

Čibuk 1, a 158 MW onshore windfarm (the Project), is being developed by Vetroelektrane Balkana, or Wind Energy Balkan Group (WEBG), in Dolovo, the Republic of Serbia. It is expected to become the biggest windfarm in the country and the Western Balkans.

The Project marks a milestone for Serbia as it is one of the first large-scale renewables projects in the country and one of the first projects of any kind to be structured on a limited recourse project finance basis.

The Project has been a trailblazer for subsequent renewables projects that have taken advantage of the new renewables incentivisation legislation in Serbia (see below) and a spate of recent project financings across the energy and infrastructure sectors which have achieved financial close. WEBG is entirely owned by Tesla Wind, a joint venture between Abu Dhabi Future Energy Company – Masdar (60%), Finnish energy infrastructure developer Taaleri Energia (30%) and DEG, a subsidiary of Germany's KfW Group (10%).

NEW RENEWABLES FRAMEWORK

In Serbia, the main support scheme for the production of electricity from renewable energy sources is a feed-in-tariff, regulated by the Energy Law and special decrees.

To support the development of its nascent wind energy market, Serbia designed a euro-denominated feed-in-tariff support scheme that came into force in November 2009 and used the Energy Law, which came into force in 2014, to provide a framework for renewable energy and to regulate feed-in-tariffs. The first tranche of projects to receive the benefit of the support scheme from the Renewables Incentives was limited to 500 MW.

The power purchase agreement (PPA) between WEBG and the distribution system operator, Elektroprivreda Srbije (EPS), was signed on 16 October 2016, which provides WEBG with a feed-in-tariff of €0.092 per kWh for 15 years from commercial operations.

From a bankability perspective, the most critical issue in the PPA is that every five years the Ministry of Energy has the right to re-tender the concession, for the position of offtaker, for the PPAs awarded pursuant to the Energy Law. As a result, the offtaker can be replaced by any other entity regardless of technical competence or creditworthiness.

GRID CONNECTION AND EPC ARRANGEMENTS

An important aspect of the Project's procurement was the grid interconnection construction agreement between WEBG and the transmission system operator, Elektromreža Srbije Beograd (EMS), under which WEBG was permitted to construct a new 400 kV switchyard and a 10.8km long overhead high-voltage power line to connect the transformer station to the existing 400 kV transmission line operated by EMS. This was the first time this type of contestable grid connection works (where the power plant developer itself constructs the connection to the grid) was performed in Serbia. This was essential to ensure that grid connection works would be within the control of WEBG and that there would be no delay in connecting to the transmission system and energising the Project once the works were mechanically complete.

The engineering, procurement and construction of the entire Project was undertaken by GE (also the turbine supplier) through a single EPC contract. Since this was the first large-scale renewables project in the Serbian market, and the international stakeholders were unfamiliar with the local supply chain, it was important to secure a single EPC "wrap" over the entire Project (including civil and electrical works) from a leading international contractor.

One issue which impacted the broader suite of commercial documents for the Project was the local law restriction on Serbian companies (such as WEBG) receiving guarantees from offshore companies in respect of contracts for the performance of services. This required modifications to the typical contracting structure to enhance counterparties' credit strength in the absence of parent company guarantees.

FINANCE

Attracting finance from traditional commercial banks was extremely challenging due to Serbia's non-investment grade sovereign rating and the absence of a mature project finance market in the country. Ultimately WEBG was able to secure financing from International Finance Corporation (IFC) (a member of the World Bank Group) and European Bank of Reconstruction and Development (EBRD).

EBRD is providing a €107.7 million loan, of which €55 million is syndicated to Erste Bank, Green for Growth Fund, UniCredit and Banca Intesa under an A/B loan structure. In parallel, IFC is providing €107.7 million, partially through its Managed Co-Lending Portfolio Programme and partially through B loans with commercial banks. The tenor of the debt was for 12 years, leaving the Project with a three-year tail on the PPA term.

Since the Project was one of the first large-scale projects in Serbia procured using limited recourse project finance, there were a number of structural, jurisdiction-specific obstacles that needed to be overcome. These included:

- Restrictive **regulations governing cross-border loans** (from international lenders to a Serbian borrower), including restrictions on when loans could be repaid (which impacted the senior debt as well as shareholder loans) and the use of the loan proceeds (for example, a cross-border loan could not be used, among other things, to fund the debt service reserve account or pay interest on the loan).
- **Security over bank accounts:** Under Serbian law it is only permissible to pledge an account up to the limit of monies in the account on the date the pledge is created. If larger amounts are deposited in the account, a fresh pledge would need to be created in order to have a valid pledge over the account up to the higher amount.
- **Currency convertibility:** It is prohibited for Serbian companies to hold offshore accounts (although they may hold foreign currency-denominated accounts in Serbia), and there are tight restrictions on when a Serbian company can convert dinars (the Serbian currency) into a foreign currency-denominated account. This created a foreign-exchange risk for WEBG since its revenues (payments under the PPA) were made in dinars but most of WEBG's payment obligations were denominated in euros (such as its debt repayments).
- **Insurance:** Direct insurance and reinsurance are required to be placed with local insurers and reinsurers, none of which have investment grade credit rating. In addition, local insurers and reinsurers do not allow the proceeds of their reinsurance policies to be assigned to lenders.

These issues required extensive engagement with local stakeholders and creative solutions to make a bankable structure for the senior lenders.

PROJECT IMPACT

The successful implementation of the first large-scale private renewable energy project in Serbia has been responsible for:

1. Stimulating the expansion of renewable resources in a country highly dependent on coal as a fuel source for power generation.
2. Increasing private participation in the currently state-dominated power sector in Serbia.
3. Confirming the credibility of Serbia's regulatory framework for renewables, which is an important landmark in the process of its application to join the European Union.
4. Supporting a project that results in substantial emissions reduction of over 390,000 tonnes of Co2 per year.
5. Establishing a market for limited recourse project finance in Serbia, which will provide a platform for future projects for development finance institutions and commercial lenders.



PROJECT AWARDS

- European Onshore Wind Deal of the Year: Cibuk 1 (Tesla) Wind Farm
IJGlobal 2018
- Deal of the Year in Serbia: Čibuk 1 Wind Farm
CEE Deal of the Year Awards 2017

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UNCONVENTIONAL OIL AND GAS POTENTIAL IN THE MIDDLE EAST

GROWING GAS DEFICITS AND DECREASING CONVENTIONAL RESOURCES ARE DRIVING AN INCREASE IN THE EXPLORATION AND MONETISATION OF UNCONVENTIONAL OIL AND GAS RESOURCES IN THE GULF COOPERATION COUNTRIES (GCC). HERE WE ASSESS THE HIGH-LEVEL MARKET DRIVERS, OPPORTUNITIES AND CHALLENGES OF DEVELOPING THESE RESOURCES.

THE RISE OF UNCONVENTIONALS

In addition to the conventional oil and gas reserves that have so far been the backbone of GCC economies, it is believed that significant unconventional resources also exist (billions of barrels of oil and trillions of cubic feet of gas; see on page 10).

These deposits – shale and tight oil and gas – have been on the radar of the oil and gas industry for some time but in recent months there has been a noticeable uptick in activity regarding the exploration and future commercialisation of unconventional.

The scale of these resources, and the fact that the transformative potential of shale oil and gas has been proved by events in the US in recent years, is now providing renewed momentum to their development.

One other driver that is more unique to the GCC region is the need to address growing gas supply deficits as power demand expands rapidly. There is a clear economic and environmental rationale for bringing on more gas production and more power generation because, in some instances, crude oil is being burned to meet peaks in power demand.

In addition to the power sector, the GCC economies also have gas needs from the upstream, petrochemical and LNG industries.

In upstream, gas is increasingly required to maintain oil output at mature fields using enhanced oil recovery techniques.

In petrochemicals, gas demand is also forecast to rise due to a general downstream enhancement strategy amongst regional NOCs, and in the UAE and Oman, unconventional gas production can be used to meet LNG export commitments.

REGIONAL ADVANTAGES

Unconventional resources led to a revolution in the US energy industry, bringing with it growing energy independence, an enormous economic windfall and a stronger geopolitical position through burgeoning exports in both oil and gas (LNG).

These benefits have not gone unnoticed by other countries, and nascent shale industries are taking root in Argentina and China, as well as the GCC. The unique factors at play in the US will not be repeatable in other jurisdictions, although that is not to say that unconventional cannot thrive outside of the US in jurisdictions such as the GCC.

In the GCC, we see certain advantages that should be attractive to foreign investors. The first of these is the potential to leverage the privileged position of local NOCs in the market to expedite development and provide an overarching vision and direction, as well as plentiful capital, both on the balance sheet and in the ability to borrow at favourable rates due to strong credit ratings to support the industry when in its infancy.

An interesting parallel to this is Qatari LNG. Here, Qatar Petroleum was able to attract key IOCs, Shell and ExxonMobil, and then provided the opportunity, capital and all approvals to construct a world-leading LNG business along with uniquely large "mega" liquefaction trains and tankers. In unconventional development, it is clear that major IOCs are the partner of choice, rather than the smaller independent players that powered the US shale industry.

This fits in with the wider industry trend of oil majors (such as ExxonMobil and Chevron) aggressively expanding their shale operations. The recent high-profile competition between Chevron and Occidental Petroleum to take over Anadarko – with its enviable position in the Permian shale play – is demonstrative of this shift.

**TOP TIER FOR PROJECTS, INFRASTRUCTURE AND
ENERGY – MIDDLE EAST**

CHAMBERS & PARTNERS 2019

MENA LEGAL ADVISER OF THE YEAR

IJGLOBAL 2016 & 2017 (SHORTLISTED FOR 2018)



COUNTRY	RESOURCE ESTIMATE (SOURCE: US ENERGY INFORMATION ADMINISTRATION, EIA)	ACTIVITY TO DATE
Saudi Arabia	600 Tcf of gas (according to Saudi Aramco)	<ul style="list-style-type: none"> Shale development really began in 2013, with Schlumberger, Halliburton and Baker Hughes The Northwest region is the most advanced, with shale wells currently producing around 55 mmcf/d of gas that is supplying a local industrial user for onsite power
United Arab Emirates	376 bn bbls (22.6 technically recoverable) and 828 Tcf (205 Tcf technically recoverable)	<ul style="list-style-type: none"> In May 2018, Baker Hughes agreed to purchase a 5% stake in ADNOC drilling (the entity that provides drilling services for oil and gas exploration in the Emirate) In step with its technology-led strategy, ADNOC has also begun to award concessions for the exploration of unconventional resources In 2019, Total was awarded the Ruwais Diyab unconventional gas concession with a production target of 1 Bcf/d by 2030
Bahrain	Not assessed	<ul style="list-style-type: none"> 2018 saw the discovery of the Khalij al Bahrain field, estimated to hold 81 bn bbls of oil and 13.7 Tcf of gas There are doubts over the true materiality of the discovery due to expected low recovery rates (around 3%) and the costs of development due to the offshore shallow water location Bahrain is currently in discussions with IOCs on possible partnerships to develop it
Oman	116 bn bbls (6.2 bn bbls technically recoverable) and 315 Tcf (48 Tcf technically recoverable)	<ul style="list-style-type: none"> Oman's unconventional oil and gas industry is currently centred on one field – Khazzan. Brought online by BP, Oman Company for Exploration & Production and Petronas in 2017, it is currently producing 1 Bcf/d of tight gas The joint venture partners are aiming to boost output to 1.5 Bcf/d through the drilling of over 200 wells across the project's lifetime

REGIONAL ADVANTAGES CONTINUED

NOC/government control over concession areas can provide explorers with the space required to build up significant scale.

With fracking technology now allowing for well (or lateral) lengths of up to 10,000 feet, the GCC can offer the kind of conditions needed to repeat this on a massive scale that is not always available in the US.

Another advantage is lower market-side pressure than you see in the US, as market prices are generally set by the respective governments, there is more of a buffer around break-even production costs, and in many cases there is a single government buyer on the demand side. This provides a more benign market environment as the industry is in the early stages of development, where the focus is on experimenting and seeking out the most prospective areas or plays, and costs are still coming down.

Additionally, with significant oil and gas infrastructure in place, there are opportunities for realising operational synergies to reduce cost and complexity.

CHALLENGES OF A NASCENT INDUSTRY

Building up a new industry will not be without difficulty and we see particular areas of challenge that GCC NOCs and their partners will need to overcome.

The unique technical requirements of exploiting unconventional resources could create a significant test for GCC countries. The first is water; the average US shale well needs 4.3 million gallons for fracking a single well. To put this into context, Saudi Aramco currently uses approximately 15 million gallons of water per day to maintain its production of 10 mbpd.

The other key requirement for drilling are proppants, grain-like compounds that work to force open the fracks and release the oil and gas. Although there is no shortage of sand in the GCC, it is not the most effective proppant and either ceramic beads or sandstone is preferable.

To overcome these issues, technological innovation will be needed on areas such as how to use recycled water, rather than fresh, and to find the chemical compounds that can be added to sand to improve its properties as a proppant.

This leads us to the other challenge: making sure the knowledge transfer from the oil field service companies to the domestic NOCs is efficient and effective. This will require careful management as well as the right kind of secondment agreements, technology licensing, joint research and development schemes and all of the associated IP protections to facilitate such knowledge transfer.

Another obstacle that the GCC will need to navigate is how to replace the scale and diversity of the US shale industry. Currently it is estimated that there are over 200 operators across the 30 counties that make up the Eagle Ford in Texas. The progress sparked by this diversity will need to be found instead by more concentrated development by fewer, larger organisations.

Finally, there needs to be a mindset shift around fiscal terms. Individual ownership of mineral rights in the US was another key catalyst to the success of shale, as it reduced complexity around fiscal regime and opened up shale to a wide range of E&P companies. For other jurisdictions like the GCC, national resource ownership will require the creation of new frameworks that will need to sit alongside those in place for conventional resources, as well as the institutional capability to design, implement and then manage what will probably become evolving fiscal frameworks.

To effectively encourage investment into unconventionals, host governments will need to recognise the different capital model involved. This is based on the operational requirement for drilling large amounts (with sharper decline rates) of wells in a manufacturing-like model to build production, rather than the conventional oil and gas development approach that entails a smaller number of higher volume wells and then a more gradual decline curve in output.

Due to the necessary experimentation in the early stages of building an unconventional industry, host governments will need to strike the right balance of tax, royalties and profit to attract early investment, as well as ensure financial benefit to the state.



THE DIVERGING PATH AHEAD

There have been some encouraging signs that NOCs in the GCC are adopting robust strategies for exploiting unconventional resource endowments.

It is too early to assign any kind of probability to significant growth or to predict exactly the path the industry will take in these jurisdictions - something we have learnt from the often unpredictable evolution of shale in the US.

What is becoming more apparent are the different approaches and strategies being implemented. On one side, Saudi Aramco and ADNOC have adopted a partnership-led approach with major IOCs and oil field services companies to build a significant unconventional industry.

Saudi Aramco was recently reported to be considering making an investment into Equinor's US shale operations, either as a joint venture or by buying a stake. This would provide important knowledge transfer for Aramco as it sets its sights on developing its unconventional resources in the Kingdom and building on the research centres opened by oil field services companies such as Schlumberger.

ADNOC has begun awarding acreage to IOCs such as Total, with more expected as the results of a first round of exploration becomes clear, alongside closer integration with oil field services companies such as Baker Hughes.

Oman and Bahrain appear to be taking a slightly different approach, bringing in IOC expertise to develop specific reserves that have been discovered, rather than taking a more blank piece of paper approach for the development of a wider industry. This may change if it becomes clear the resource base is large enough to require a different approach.

We are optimistic that under a stable oil price environment and the growing need for domestic gas production, unconventional oil and gas industries can take root and flourish in the GCC, creating inclusive value for their respective populations.

In the meantime, as unconventional exploration and development gathers pace, we see opportunities for IOCs, oil field services companies and financial investors to get in on the ground floor of an exciting new phase of the oil and gas industry in the Middle East.

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RECENT DEVELOPMENTS IN UK NUCLEAR NEW BUILD

In 2019, across the European Union, 126 nuclear power reactors are in operation in 14 Member States, with a total estimated capacity of 118 GW and an average age of close to 30 years. In France, Finland, Slovakia and Great Britain, six reactors are currently under construction. Meanwhile, some other EU countries are also planning to build new plants.

Nuclear energy is considered one of the key instruments for a sustainable, competitive and secure EU energy system in 2050, as set out in the EU's Energy Roadmap 2050.

Supporting this is a recent study by Deloitte for FORATOM, which emphasised the current and potential economic benefits that the nuclear power industry has on employment and the creation of highly skilled jobs, state revenue and economic growth within the European Union.

So far, so positive. However, in the UK, all but one of the 15 existing nuclear power stations will be retired by 2025, leaving only the 1.2 GW Pressurised Water Reactor at Sizewell B in operation.

Without any new nuclear power stations opening, around 60 TWh a year of low carbon energy will be lost, affecting both the UK's energy security and its ability to achieve its ambitious emission reduction targets.

A NEW GENERATION OF NEW BUILD

A succession of UK Governments have, since the UK reversed its previously adverse policy to nuclear new build, supported and encouraged nuclear new build as nationally significant infrastructure projects. Eight sites have been confirmed as being suitable for new nuclear power stations (all of which are adjacent to sites of existing nuclear plants). New build proposals have been developed for six of the sites.

REACTOR SITE	DEVELOPER	REACTOR TYPE	CAPACITY (MW)	PROJECT STATUS
Hinkley Point C	EDF Energy	EPR	1,720 MW	Under construction; start up expected 2027
Sizewell C1	EDF Energy	EPR	1,670	Public consultations progressing; Development Consent Order to be applied for (date tbc)
Sizewell C2	EDF Energy	EPR	1,670	Public consultations progressing; Development Consent Order to be applied for (date tbc)
Bradwell B1	General Nuclear System Ltd	UK HPR1000	1,150	Initial high level scrutiny of the UK HPR1000 reactor design complete; site investigations ongoing
Bradwell B2	General Nuclear System Ltd	UK HPR1000	1,150	Initial high level scrutiny of the UK HPR1000 reactor design complete; site investigations ongoing
Wylfa Newydd 1 & 2	Horizon Nuclear Power	UK ABWR	2,760	<i>Suspended</i> (site licence applied for; UK ABWR issued with Design Acceptance Confirmation and Statement of Design Acceptability)
Oldbury B1 & B2	Horizon Nuclear Power	UK ABWR	2,760	<i>Suspended</i> (Project to model itself on Wylfa Newydd)
Moorside 1-3	NuGeneration Ltd	AP1000	1,135 (x 3)	<i>Cancelled</i> (project granted Design Acceptance Confirmation)
Sellafield	GE Hitachi	PRISM	311 (x 2)	<i>Cancelled</i>
Sellafield	Candu Energy	CANDU	740 (x 2)	<i>Cancelled</i>

TOP TIER FOR PROJECTS – UK-WIDE

CHAMBERS & PARTNERS 2019

EUROPE ROADS DEAL OF THE YEAR: CANAKKALE BRIDE

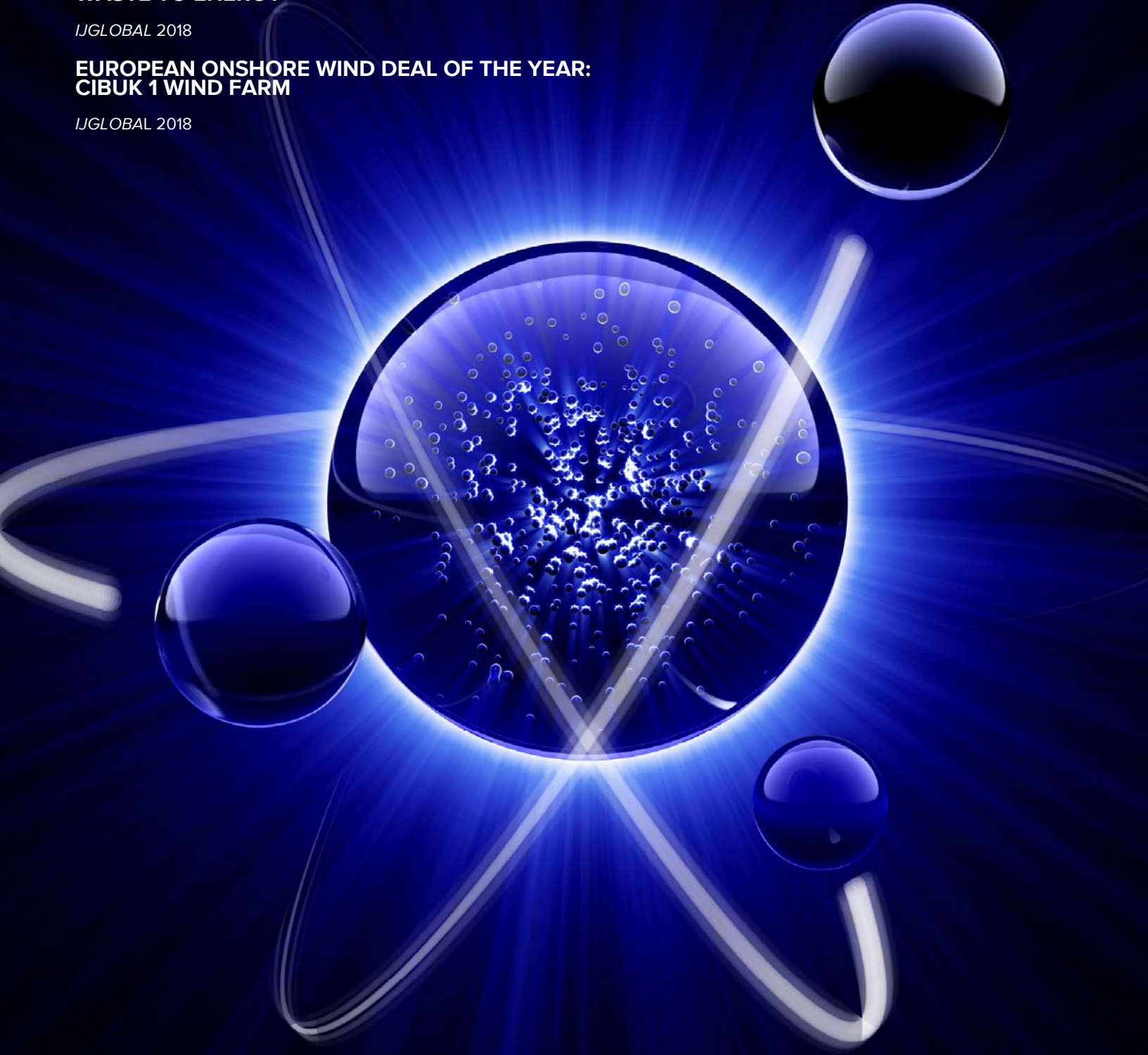
IJGLOBAL 2018

MENA WASTE DEAL OF THE YEAR: SHARJAH WASTE TO ENERGY

IJGLOBAL 2018

EUROPEAN ONSHORE WIND DEAL OF THE YEAR: CIBUK 1 WIND FARM

IJGLOBAL 2018



Hinkley Point C is currently under construction and will provide some 3.2 GW of capacity, from two Areva European Pressurised Reactor (EPR) units. The first unit is due to be completed by the end of 2025. The 3.2 GW Sizewell C, Hinkley Point C's duplicate project, is awaiting site approval and an investment decision.

Bradwell B is still progressing its Generic Design Assessment (the process for accreditation of China General Nuclear's UK HPR 1000 reactor) and also awaiting site approval and a final investment decision. Other projects at Wylfa, Oldbury, and Moorside have been suspended or cancelled.

The much anticipated renaissance of a new generation of new nuclear build has stalled. The questions are why, and what can be done?

DIFFERENT TECHNOLOGIES, DIFFERENT SUPPORT MODELS

The assessment process of the nuclear regulators, the Office for Nuclear Regulation and the Environment Agency and Natural Resources Wales, enables them to scrutinise new nuclear power station designs before they are built, identify any potential design or technical issues early and ask the reactor designer to address them. In doing so, they provide assurances to the developers that their designs have been approved in a country with a high reputation for safety and risk assessment, with potential benefits for marketing that technology in other countries.

The UK regulators are dealing with a number of different reactor technologies – Hitachi's ABWR, China General Nuclear's UK HPR1000, EDF's UK EPR™ and Westinghouse's AP1000®, none of which have yet been deployed in the UK.

This contrasts with a "fleet approach" adopted in other countries such as South Korea, where a single, tried and tested (and therefore generally more economical) reactor design is adopted for all new nuclear power plants.

In addition to the three technologies being assessed, different financial support models have also been proposed. For Hinkley Point C, a Contract for Difference (CfD) (a contract under which the developer is paid an agreed amount per megawatt hour, which enables the generator to stabilise its revenues at a pre-agreed level) with a strike price of £92.50 MWh has been agreed.

While the strike price of £92.50 was considered high (even at the UK Government's own admission), the expectation was that through lessons learned and economies of scale, it would be possible to deliver subsequent nuclear power plants at a reduced strike price.

The UK Government had reportedly been prepared to take a one-third equity stake in the Wylfa Newydd project, alongside investment from Hitachi, Government of Japan, export credit agencies and other strategic partners. It had also considered guaranteeing all of the required debt financing to complete construction, and a Contract for Difference with a strike price expected to be no more £75 per megawatt hour.

For Moorside, a more private equity-based solution was proposed. Nonetheless, NuGeneration Ltd, the developer, said the Government would be an essential stakeholder in any nuclear project and also suggested export credit agencies as an important source of capital.

THE "RIGHT SUPPORT"

As part of the Government's 2018 Industrial Strategy, the Nuclear Sector Deal talked about "the right support from the government" and a "new approach to building power plants" to help meet the Clean Growth Grand Challenge.

Recently however, Horizon Nuclear Power said that it was suspending the Wylfa Newydd and Oldbury projects as "satisfactory" commercial arrangements could not be agreed. The Moorside project has been cancelled altogether, primarily owing to financial difficulties of NuGen's parent company, Toshiba, but also due to a reluctance of the company to assume the significant construction risk associated with such a complex and large-scale project.

In response to the suspension of Wylfa Newydd and the cancellation of Moorside, the Secretary of State, Greg Clark, said the Government continued to "believe that a diversity of energy sources is a good way and the best way of delivering secure supply at the lowest cost, and nuclear has an important role to play in our future energy mix".

However, so far, the UK government's level of support, has been insufficient to enable Horizon and NuGen to reach agreement. The question is therefore, if this was not the right support, then from both parties' perspectives what is?

AN "ALTERNATIVE APPROACH"

Developers and other stakeholders have recently called for an alternative approach towards financing nuclear power projects, namely that of the Regulated Asset Base (RAB) model. The Government has listened and is currently reviewing the viability of the RAB model and assessing whether it could offer value for money for consumers and taxpayers.

The RAB model was originally developed in the UK as a regulatory construct to provide comfort to investors in privatised infrastructure in regulated sectors, i.e. the electricity, natural gas, railways, telecoms and water sectors. Under this model, a private company acts as the infrastructure manager, owning, investing in and operating the assets. The infrastructure manager receives revenue from users and/or subsidies to fund its operations and recoup investment costs.

The RAB assesses the value of the assets used in the performance of a regulated function, and allows a regulated return based on the value of the investment and the combined rate of return on equity and debt. The operating costs are recouped on a pay-as-you-go basis. The RAB model generally allows all capital expenditure to be recovered sooner than it otherwise would have been.

In practice, this can provide pricing certainty, and with price certainty comes increased investor and financier confidence. Use of RABs have enabled a lower cost of capital for privately financed infrastructure investment, often much lower than under project finance contracts, e.g. 5-7% rather than 15% or more. In the context of nuclear power projects, which have extremely high upfront capital costs and long build periods, the RAB model should allow investors to recoup at least a portion of their investment far earlier than the typical 10 years it takes a nuclear plant to start generating revenues. Further, as investors will need to borrow less for a shorter period of time, interest payable on bank loans during construction (and therefore the overall financing costs for the projects) are expected to fall, ultimately reducing shareholder funding commitments and funding risk.

The RAB model lacks any specific legislative basis and instead relies on primary duties being imposed on the relevant regulators. Nonetheless, the RAB model benefits from reputational support, such that it has been applied most recently on the Thames Tideway Tunnel Project. The current value of investment under the RAB financing model in water, gas and electric networks and regulated airports in use today is approximately £160 billion.

The Government has indicated that it will publish its assessment of the RAB model by the summer at the latest, as part of a planned Energy White Paper. The question will be whether a RAB financing model would be suitable for nuclear power, taking into consideration the technological, economic, political and regulatory characteristics of the UK energy market, and address key investor issues for new nuclear, including significant construction risk exposure.

The Energy White Paper and assessment of the RAB model will be awaited with interest. Whether it can give certainty to a sector which has been handling three different nuclear technologies, at different stages of implementation and under different financial models, remains to be seen.

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DEVELOPMENTS IN THE MINING SECTOR IN SUB-SAHARAN AFRICA

AFRICA PLAYS HOST TO MORE THAN 1,850 MINING PROJECTS IN VARIOUS STAGES OF DEVELOPMENT BY MANY OF THE WORLD'S LARGEST MINING COMPANIES (1). A LARGE NUMBER OF DEALS HAVE REACHED FINANCIAL CLOSE IN RECENT YEARS, BUT RECENT LEGAL AND REGULATORY CHANGES HAVE POSED FRESH CHALLENGES IN A NUMBER OF AFRICAN MARKETS. IN THIS ARTICLE, WE WILL SEEK TO OUTLINE SOME OF THOSE CHANGES AND DISCUSS THE MINING LANDSCAPE MORE GENERALLY.

DEAL UPDATE

51 mining projects reached financial close in the years 2014-2018 (according to IJGlobal), which were structured as follows (2):

- 26 were 100% debt-financed – nine with term loans only, five with term loans and other debt and two with bridge facilities;
- 14 were 100% equity-financed; and
- seven were mixed, with six being majority debt-financed and one being majority equity-financed.

According to IJGlobal, there are at present 35 mining projects at the financing or pre-financing stage in Sub-Saharan Africa. It is worth noting that traditional project financing remains rare for mining projects in Sub-Saharan Africa, with one notable, recent exception being the bauxite mine and associated rail and port infrastructure project in the Republic of Guinea.

A CHANGING LEGAL LANDSCAPE

Various jurisdictions in Africa have, however, been making a number of legal changes, which seek to increase their income from their mining sector and improve community engagement and participation in mining projects. A few recent examples are set out below:

- **Democratic Republic of Congo:** The new mining code was published in the Official Gazette on 28 March 2018 and has since proved controversial. While it increased royalty payments, it also increased taxes by 2-10% and introduced a new “super profits” tax of 50% on profits exceeding 25% of those forecast in the mine feasibility study. It also includes an obligation for 0.3% of turnover to be contributed to development projects. The ownership rules require 10% of the capital of mining companies to be held by Congolese citizens, something which has raised concern among investors. These legal changes have been supported by the new President (3).
- **Ethiopia:** To help ease a dollar shortage in the country, the Ethiopian Government is seeking to reform and expand its nascent mining sector. In a recent interview with Reuters, the Mining and Petroleum Minister, Samuel Urkato, expressed the intention to introduce tax incentives and ensure a competitive royalty regime in order to compete for global mining investments. The current law guarantees the Government a 5% minimum equity stake in projects, which it is noted is a lower share than many other African jurisdictions (4). It is hoped that these measures will help encourage investment into the country's mining sector, in particular given other jurisdictions in Africa appear to be taking a more aggressive approach.
- **Mozambique:** The Economy and Environment Committee of the Mozambique Parliament undertook a visit to a ruby mining area to ensure that a law it has requiring 2.75% of tax revenues to be used for the development of the communities located in the mining districts is being enforced. In a similar vein to the law in the Democratic Republic of Congo (discussed above), a number of other jurisdictions in Africa are seeking to ensure that local communities are able to reap the benefits of the mining industry and governments are focused on ensuring local content requirements are met (5).
- **Zambia:** Zambia has taken a number of steps over the past six months to deal with dwindling foreign currency reserves and increasing public debt. These have included: (i) increases in the country's sliding scale for royalties in September 2019 (including a new 10% tax when the price of copper exceeds \$7,500 per tonne); (ii) an announcement in October 2018 that mines will have to pay royalties in dollars to help stabilise the Kwacha; (iii) the introduction of new mining duties and a new sales tax in December 2018; and (iv) the introduction (reported in January 2018) of a new 5% copper import duty (6).

INTERVIEW – ANTHONY LEPERE, SHEARMAN & STERLING

In order to see what practical implications these regulatory changes are having, we speak to Anthony Lepere:

Q: Who do you mainly advise?

A: *Our clients consist of a full range of sponsors, including large multinational corporates to mid-sized and more junior companies. We tend to advise sponsors whose capital strategy combines equity and various types of debt, either because of the size and nature of the sponsor or the size and nature of the project proposed to be undertaken.*

Q: What is some of your recent experience in African mining?

A: *We have recently worked on projects in Guinea (bauxite), Sierra Leone (iron ore), Tanzania (gold), South Africa (gold), Zambia (copper) and the Democratic Republic of Congo (tin). We have been advising clients on the project development side in relation to new projects and in relation to disputes concerning existing projects.*

Q: How do you see investors viewing some of the regulatory changes we see happening including as set out above? What other key challenges exist?

A: *The prospect of increased taxes and royalty payments has been and always will be present, both in Africa and elsewhere. Our experience spans the full life-cycle of mining projects, from making sure that appropriate investment protections will be available when structuring investments all the way through to advising mature mining businesses engaged in disputes with the host State. Given the number of high quality resources situated in African jurisdictions, strong global market demand and the associated recovery in commodity prices, the recent regulatory changes we have seen are not particularly surprising. They are also unlikely to significantly impact investor appetite: investors that are highly sensitive to regulatory change are unlikely to allocate capital to mining in Africa in the first place. Changes in regulation also create opportunities for sponsors to leverage their natural strengths. For example, some of our larger sponsor clients benefit indirectly from state-to-state relationships and are therefore able to invest with greater confidence of receiving fair treatment; this in turn creates a virtuous cycle, as confident sponsors are better able to raise debt finance. By contrast, we have seen junior clients exploiting late life resources with associated infrastructure in more developed jurisdictions; such projects are well understood but no longer financially viable for larger sponsors when increased taxes and royalty payments are factored in.*

It is worth mentioning that the lack of infrastructure remains the biggest barrier to further mining investment (in Africa and elsewhere). It is one thing to locate and then delineate high quality resources and quite another to establish a feasible pathway to either domestically process or export production.

CONCLUSION

While there remains a number of challenges in the mining sector in African markets, in particular in relation to a lack of infrastructure and recent changes to the regulatory environment, market data and our own experience suggests that there remains a healthy appetite for both investment in, and financing for, mining projects in Africa.

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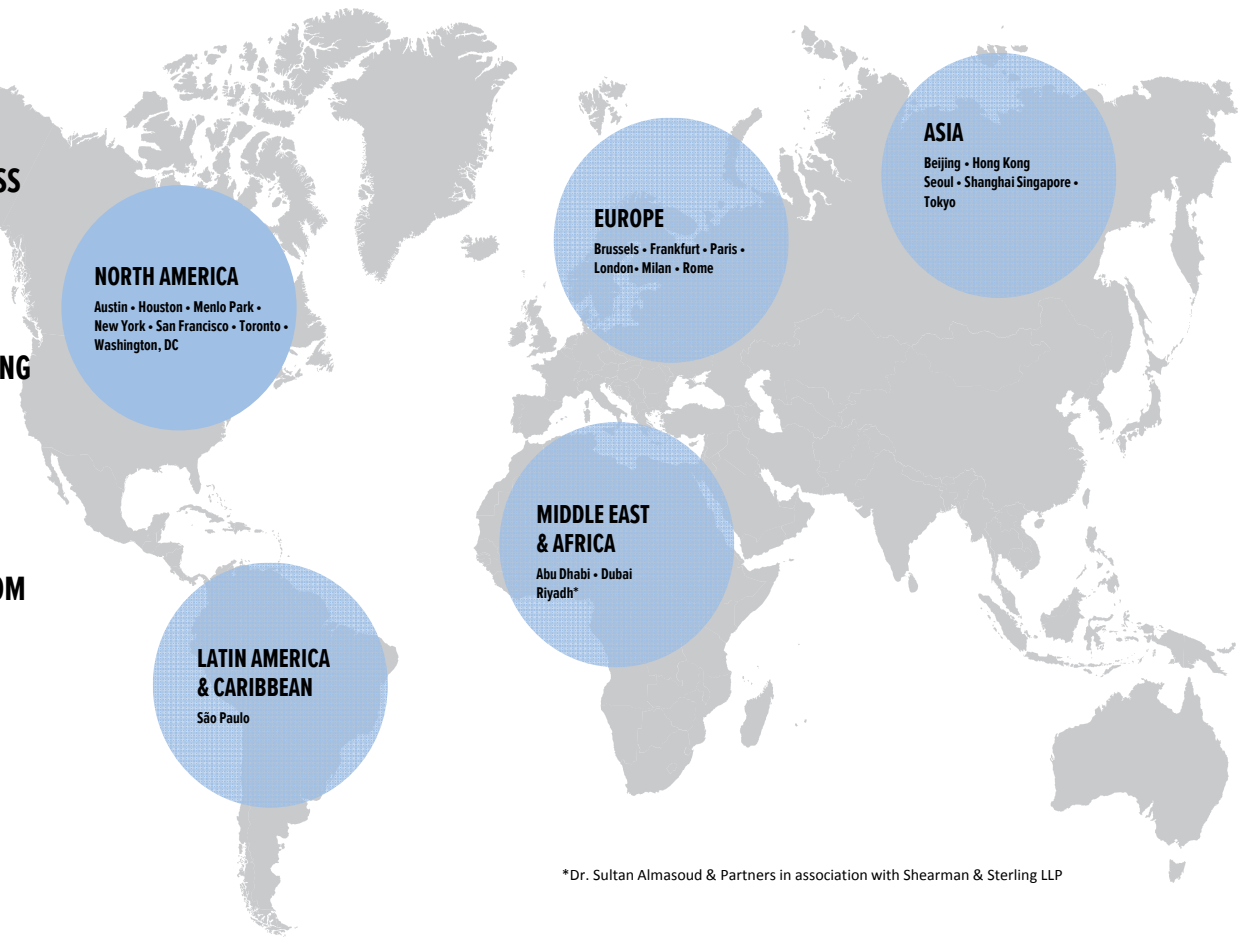
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