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CHINA & SE ASIA: ENVIRONMENTAL MARKET OPPORTUNITIES AND CHALLENGES

In this special report, *Environment Analyst* looks at the environmental consultancy sector maturity across Southeast Asia and China, and the opportunities and challenges the region holds for service providers, local or global, already active or aspiring alike.

BY ANYA HEMBROUGH
Deputy Editor/Senior Analyst

Eastern attraction

Asia has been a source of fascination for centuries. More recently, it has begun to exert itself on the global stage with the expanding political and economic clout of countries such as China, India and Indonesia. Wherever you are in the world, there's a good chance that the mobile phone you use, the clothes you wear and the car you drive will have originated from this region.

However, this is also a region of contradictions: the most populous countries to the most remote; great wealth to dire poverty; and pristine nature to crippling pollution.

For contradictory, consider some of the following facts:

- Of the ten rivers worldwide which account for 90% of the plastic washed into the oceans, eight are found in Asia
- Three of the six heaviest coal users globally are in Asia, namely: India, China and Indonesia
- Southeast Asia is the only region worldwide where the share of coal in the power mix rose in 2018
- China has the world's highest levels of air pollution (accounting for 1.6m premature deaths annually) and is also the top carbon emitter
- China has the highest solar energy capacity worldwide (from virtually none 25 years ago and is set to have double that of the US by 2025) but it represents just 5% of the country's energy against coal with 60%
- China, India, Myanmar have all banned plastic bags; while supermarkets across SE Asia have started using banana leaves in place of plastic packaging for fruit and vegetables and are planning to use the leaves for meat products in future
- China is the world's largest investor in clean energy
- China, the world's largest auto market, claims over 50% of the global passenger plug-in car market; it also has 99% of the world's electric buses
- Singaporean sustainable energy producer **Sunseap Gp** is building one of the world's largest offshore floating solar projects

But despite the region's paradoxes one fact is indisputable: in a fast-changing world Asia is, and increasingly so, a region to reckon with given its burgeoning population, rapidly developing economies and hunger for a better standard of living. By 2050 the majority of the world's megacities of over 10m people will be found within Asia's borders, requiring urban infrastructure on an immense scale. And in the meantime, the unfettered economic growth in key markets over the past two decades has left a trail of environmental impacts that require urgent action.

These are factors that will require the assistance of the environmental consulting profession for decades to come. The question is: who stands most to benefit? Is it the regional players, the local smaller specialist or perhaps the environmental consulting leaders of the Western world hoping to gain a share of SE Asia's upcoming wealth? Meanwhile, there can be no doubting the aspirations of the Big Four to secure their own slices of this particular pie. **Deloitte** for one aims to be the "undisputed leader in professional services" across the region within the coming few years.

To help answer this question, *Environment Analyst* spoke to five EC players active in the region, each with a significantly different perspective and market standing:

- UK-headquartered **BMT Group**, which operates globally with 1,500 staff worldwide including a 200-strong EC contingent, with over 30 full time EC staff in Indonesia
- Also UK-headquartered and global EC heavy hitter, with over 1,000 EC professionals worldwide, **Mott MacDonald** is an established name in the SE Asian region (and for this Insight Report, provides an in-depth look at the Chinese market where it has around 60 EC staff based)
- Australian-headquartered **SMEC** is an established EC player in the wider Asia-Pacific region with around 200 EC staff in total (with around 15 of those in SE Asia – and growing). Its exposure to the regional market was significantly enhanced following its 2016 merger with Singapore's **Surbana Jurong**...
- ...which has its own Asian-focused environmental consulting function (including 40 Green Mark accredited professionals) in support of SJ's wider master planning, infrastructure, urban design, architecture and engineering offering
- More recently-established **Tembusu Asia Consulting** is a Singaporean specialist SME offering sustainability solutions and integrated services. It already numbers 28 staff and has formed strategic partnerships with organisations based in China and Indonesia (and beyond including in Australia, Denmark and the UK, with more to follow in the Netherlands and US).

Maturing market

This is a rapidly emerging region and, with the world's two most populous countries, it's not surprising that urbanisation and development, and all the environmental and societal implications that these bring, dominate the agenda; the impact of Asia's conurbations and industries on its natural patrimony have been extensively discussed worldwide.

And added to a growing awareness of its own self-made environmental impact, it is increasingly pushing back against the wave of waste that Western economies have been conveniently brushing under Asian carpets for many years. Following China's decision at the start of 2018 to ban the import of plastic waste, volumes of which had reached in excess of seven million tonnes annually, SE Asia found itself an unwilling recipient.

Many of the region's countries found themselves inundated as western countries scrabbled to redirect their

WITH THANKS TO OUR MAIN CONTRIBUTORS:

- **Greg Fisk**, Global Business Development Director for Environment, **BMT Group**
- **Dr Anne Kerr**, Managing Director – Greater China and Global Head Cities, **Mott MacDonald**
- **Zaglul Khandkar**, Manager Environment and Sustainability, South East Asia, **SMEC**
- **Michael Ng**, CEO, North Asia, **Surbana Jurong**
- **Seng-Chuan Tan**, Managing Director, **Tembusu Asia Consulting**

waste to jurisdictions typically with weaker environmental regulations than their own domestic markets. The result has been a rise in illegal plastic waste imports and often hazardous disposal at great environmental cost across the region. Now countries such as Thailand, Malaysia and Vietnam are looking to legislate against foreign waste. And in a show of rising regional resolve, Malaysia, which has seen plastic waste imports triple in just two years, recently returned five container loads of contaminated waste back to Spain (and is threatening to do the same with thousands of tonnes more to other foreign nations), whilst the Philippines recently returned 1,500 tonnes of waste to Canada which had been falsely labelled as plastics recycling.

Tembusu managing director Seng-Chuan Tan provides a summary of the current situation in the region:

"Unlike in the EU where there is a certain level of standardised regulatory requirement, across SE Asia environmental maturity varies enormously from country to country, each nation with its own culture, language and regulatory frameworks."

For example, authorities in the Thai capital of Bangkok launched an initiative over a decade ago to encourage consumers to switch from plastic single-use grocery bags to cloth bags, whilst Indonesia (cited the world's second largest marine plastic polluter) has only begun to address the issue of single-use plastics in the past few years, amidst continued opposition from plastics manufacturers.

But there are moves afoot to bring greater harmonisation on the regulatory framework. "In late 2017 the leaders of the Association of Southeast Asian Nations (ASEAN) established the ASEAN Cooperation on Environment which is guided by the ASEAN Socio-Cultural Community (ASCC) Blueprint 2025. The objectives of the blueprint are far-reaching and, at an environmental level, include strategic measures on conservation and sustainable management of biodiversity and natural resources; environmentally sustainable cities; sustainable climate; sustainable consumption and production," Tan explains.

"Some ASEAN countries have also embarked on energy deregulation to increase sustainability; with market-based prices, the energy sector is being forced to adopt much more efficient practices and to find alternative solutions to generate in a socially, environmentally, sustainably and economically manner."

In Tan's own domestic Singaporean market things are moving fast: "Climate change and environmental awareness is increasing within the community which has led to more regulation. Since 2016 the Singapore stock exchange has required all listed companies to carry out sustainability reporting; in 2019 Singapore was the first Asian country to implement a carbon tax, and the government also declared 2019 to be the year of zero waste."

Ministry of the Environment and Water Resources
SINGAPORE

SMEC manager environment and sustainability, South East Asia, Zaglul Khandkar agrees on changing – sometimes erratic – environmental perspectives in SE Asia. SMEC has been operating in the region for several decades from offices in Vietnam, Indonesia, Malaysia, Myanmar, Papua New Guinea and the Philippines.

Khandkar comments: "The EC business sector in Southeast Asia is very stable but also reactive given that major infrastructure projects can be heavily susceptible to political and regulatory shifts. Demand for environmental consulting is also significantly driven by the requirements of international funding bodies and investors. And, closely linked, climate change and renewable energy are driving new markets and opportunities; with thermal energy being discouraged globally, we're seeing growth in the renewable energy market, including hydropower, wind and solar energy."

Growing regional demand is being met, he says, by a variety of operating models: from the larger players who have established country offices to smaller or more specialist players that work on a project-by-project basis, possibly bringing in international experts where needed.

In SE Asia, SMEC's own EC activities are centred around Indonesia, Vietnam and Myanmar, as Khandkar outlines, where core services include environmental and social impact assessments (ESIAs), environmental compliance documentation support and specialist environment and social services (such as biodiversity assessment and infrastructure sustainability assessment) for major infrastructure projects. It also provides environmental and social due diligence and compliance auditing for projects funded by international financiers and donors such as the **Asian Development Bank (ADB)**.

The rising number of hydropower projects, which are subject to increasingly rigorous sustainability assessments, is a particular focus for SMEC, he indicates, further backed by the need to address legacy issues with existing dams across the region. (In fact, Khandkar's own expertise in this area is as an accredited hydropower sustainability assessor, one of just a handful globally.)

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Historic roots

But in addition to the inroads that **SMEC** had already made across the region, its standing was significantly strengthened following its acquisition back in 2016 by Singapore's **Surbana Jurong**. With roots dating back to the 1960s, SMEC's new parent has played a pivotal role in the development of the island state's urban, industrial and infrastructure landscape through which it has established its own in-house environmental capabilities from master planning to township, and coastal reclamation to industrial development.

That in-house team now delivers EC and sustainability services, in support of the wider group's urban design, architecture and engineering offering far beyond Singapore, with offices across the wider region in Malaysia, Brunei, China, Indonesia, Vietnam, Myanmar, Bangladesh and India (and more globally). It boasts 40 Green Mark-accredited managers and professionals (Singapore's Building and Construction Authority (BCA)'s accreditation for environmental sustainability consultants working in design, construction and operations practices in buildings).

Indeed, playing to Surbana Jurong's sustainability strengths, the BCA recently introduced a new rating, Green Mark for Super Low Energy, to accelerate the move towards a greener built environment. Surbana Jurong's new global headquarters under construction, Surbana Jurong Campus, was one of the first developments to receive this new rating.

On the back of rapid growth, there can be no doubting this firm's ambitions to establish itself as a leading regional (indeed global) professional services provider. Since its 2016 acquisition of SMEC, Surbana Jurong has strengthened its offering with a handful of major acquisitions (including another Australian firm, structural and civil engineering company **Robert Bird Group**), growing its ranks to c16,000 staff; it is certainly well on the way to achieving its stated aim of becoming an "Asian consulting powerhouse".

But do you need to be a 'powerhouse' with staff numbering in the thousands or offices in every country-corner to succeed in this region? The founder of one of Singapore's newest names, **Tembusu**, doesn't think so.

Tembusu: local player with local knowledge and global ambition

Launched less than a year ago, **Tembusu Asia Consulting** is the brainchild of managing director Seng-Chuan Tan who – having spent decades working in this region for some of the global EC sector's biggest names including **Ramboll**, **CH2M** and Singapore's **Jurong Engineering Ltd** (unconnected to Surbana Jurong) – decided to adopt a different approach. All too familiar with the difficulties faced by the global players of accessing and operating optimally in this region, he set up Tembusu to fill the gaps.

"Working for some of the major multinationals, all too often I found that our ability to develop the environmental offering and to secure cross-business synergies was constrained by the fact that they did not have the necessary specialist skills locally in Asia; instead these would need to be brought in from North America or Europe which was both inefficient and negatively impacted project costs and schedules.

"At the same time, I could see the array of SMEs in Singapore and beyond but their lack of size and focus often in just one key specialism was precluding them from being able to bid for some of the megaprojects across the region. It was clear that the opportunities were there but not the business model to capture them; my ambition is to bridge the gap between the two extremes. Being an SME in the local EC market means we are more cost efficient and effective in price; we are more responsive to clients and can fill the gaps in subject matter experts that most large players lack in this region."

In Tan's eyes the opportunities are significant. "In the last two years the market in Asia has really begun to pick up in countries including China, India and Indonesia thanks to stable governments and fast-growing economies. And, combined with a range of drivers such as the Belt and Road Initiative (BRI), growth in emerging markets e.g. Myanmar and Cambodia, the need to tackle landfill issues in Indonesia, or the boom in waste-to-energy plants (over 100 region-wide) – the prospects across the region have never been better."

He goes on to cite ADB statistics, which indicate that the infrastructure needs in developing Asia and the Pacific region will exceed $22.6tln through to 2030, and for the region to maintain its growth momentum the estimate rises to over $26tln, or $1.7tln annually, when climate change mitigation and adaptation costs are also incorporated.

From Tan's perspective the hot spots for EC services will be: China [discussed later]; India, with a focus on water, energy and remediation; Indonesia, in particular waste and remediation; and the developing infrastructure needs of Myanmar.

And, with an on-the-ground presence, understanding and experience, Tan is determined to maximise the opportunities, with an ambitious programme of organic growth for his business, complemented by alliances and agreements with like-minded SME partners, whilst also partnering the global leaders with Tembusu's intimate local expertise. And by all accounts Tembusu is off to a flying start, having already secured multiple contracts in Singapore including **Neste, Novartis, TechnipFMC, ExxonMobil, Chevron** and **National Parks**, but also in Indonesia and Thailand.

Having looked at two native players (or at least one with a native parent in the case of SMEC), let's now turn to the Southeast Asian experience of our UK-headquartered contributor, **BMT Group**.

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> **Seng-Chuan Tan, Tembusu**

BMT: growing presence

Globally operating **BMT** has a "long standing and valued customer presence" in SE Asia, aided by its homeland's historic Commonwealth links in the region no doubt.

With branch offices in Indonesia, Malaysia, Singapore and Hong Kong, it claims an established and growing environmental consultancy footprint and capability in the region. Environmental consultancy services are offered across the region with the largest

EC contingents located in Indonesia (Jakarta) and Hong Kong.

EC expertise is also pulled into the region from around **BMT's** global network as necessary, notably Australia, the UK and the US. Driven from its Indonesian operation, Southeast Asia represents around 10% of BMT's global EC revenues.

According to BMT global business development director for environment, Greg Fisk, EC work in the region varies from country to country, although environmental and met-ocean services for its multinational oil & gas clients are pan-regional.

Projects are diverse and include flooding and water quality work in Malaysia; in Singapore and Hong Kong, work is focused around the urban environment and sustainability; in India (and Singapore to a lesser extent) the LNG industry has provided many EC opportunities; and in China the firm is focused on selling its flood numerical hydrology software TUFLOW on the back of which it has secured some limited flooding and water quality consultancy work.

Major opportunities; major challenges

BMT's Fisk is confident that the region does offer opportunities, but it's not an easy market to penetrate. "We've been marketing our environment business in SE Asia for as long as I've been with BMT [over 13 years] but I'd have to say we have had very mixed results."

He sets out some of the key hurdles as follows:

- ***Economics:*** "The obvious challenge of working in Asia is that from a financial perspective unless we have local EC businesses that are operating in-country, it is challenging to try to import skills from other parts of our global business e.g. Australia or the UK. This is as a result in part of the charge-out rates being much higher than local businesses but also related to the need to have local context and knowledge that can be applied on the job including overcoming language barriers and understanding stakeholders," says Fisk.

As such, he indicates that the firm has focused its efforts on servicing the multinationals operating in the region, notably in the oil & gas sector, including the likes of **Chevron, Shell** and **Repsol**.

- ***Regulatory regime:*** "Whilst environmental regulatory frameworks are in place, it can be hard to know exactly how those regulations are implemented from country to country, unless you have an intimate knowledge of the local laws and procedures," he says, "and that lack of certainty can undermine the whole point of carrying out environmental studies, which fundamentally are to provide certainty to the client about the information and studies that are required to obtain the necessary approvals."

It's another reason why BMT favours MNC clients which often abide by not only the local standards where they are operating but also relevant international HSE standards which can provide a more familiar framework for securing approvals.

- ***Data sets:*** Another difficulty working in this region is the lack of data available. "There just aren't the same free to access datasets available that you get in North America, Europe or Australia, for example. And for a technology company like BMT, it's difficult to develop accurate numerical models if you don't have the underlying data. It's a major challenge when you're trying to build the high-end services that BMT is looking to provide."
- ***Competition:*** And of course, Fisk concludes, there's the competition! "We're a medium-sized specialist company – and proud of it – but we lack the overhead and resources to be able to move in and out of geographies like some of our bigger competitors who are able to more rapidly deploy staff resources into a market."

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> It's very hard for multinationals to win work here if you don't know the lay of the land
>
> **Greg Fisk, BMT Group**

In summary Fisk notes: "While in theory we can undertake environmental work anywhere across the entire region, in reality, it's more about us taking a 'value-added' approach and finding the right project rather than reaching to achieve a new geographic footprint or conquering an entire geography."

And BMT has found that working in Southeast Asia, it's crucial to have a local presence or at least local partners, "because without them you won't have the context or the credibility when large projects come up to be able to efficiently and effectively tender for them. It's very hard for multinationals to win work here if you don't know the lay of the land."

Big names...with big eyes

But despite the inherent challenges, there's no doubt that the competition in the wider consultancy sector is ramping up in this region. There are big names with big eyes looking towards Asia.

A report by **Frost & Sullivan** recently described the wider Asia-Pacific water and wastewater services (WWWS) market, for example, as a "hotbed of opportunities". And it's not hard to see why with a projected five-year CAGR of 5.8% expected to drive that particular sector alone from US$148bn in 2017 to US$196bn by 2022.

In 2018 **Deloitte** consolidated its operations across Australia, New Zealand, China, Japan and Southeast Asia into Deloitte Asia Pacific, a consultancy operation with 44,000 people across the region with the potential to create a US$10bn business by 2022, as it claims. The firm's newly appointed Asia Pacific CEO Cindy Hook is unequivocal in the management consulting and audit firm's goals: "Our aspiration over the next few years is for Deloitte Asia Pacific to become the undisputed leader in professional services in the region."

Deloitte China CEO Patrick Tsang is in no doubt as to the importance of China in the coming years, he adds: "This strategic move towards global integration will enable us to provide the seamless delivery of best-in-class services to our clients across the globe and the region, especially with the rise of China-headquartered multinationals in the global arena and under China's Belt and Road Initiative. [...]

"Through our extensive client and talent experience, and additional capacity to invest and grow, Deloitte Asia Pacific is the best platform we could have to leverage, to help accelerate our journey towards undisputed leadership of professional services in China."

In March 2018, Australian integrated

Credit: Adobe_woothisak

engineering, project management and delivery group **Aurecon** (already an established player in wider SE Asia), opened a Regional Centre of Excellence for Digital Engineering in Singapore for which it has earmarked an investment of S$3m over three years to accelerate digital engineering and its adoption in the construction industry in Asia. Aurecon's technical director – built environment (Singapore), Philip Motteram, indicates the decision to establish the firm's Digital Futures team was driven by increasing regional demand for digital transformation in the building and construction sector, adding that Singapore also represents a gateway to SE Asia.

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Atkins (now part of **SNC-Lavalin**) launched its 'end-to-end' advisory business **Atkins Acuity** in 2016 to help clients "manage uncertainty and complexity" in infrastructure delivery, and whilst global in remit it's perhaps indicative that the latter's CEO Dominic Harvey and other senior management are based in... Singapore!

Meanwhile, international consultancy and construction company **Mace Group** appointed Nick Brand as regional director for Asia Pacific late last year, to run a new regional hub office in Singapore to oversee and strengthen operations across the region. Mace's COO for consultancy, Jason Millett, says: "In the long term we see the Asia Pacific region as a hugely significant growth opportunity for our global business, and from his base in Singapore Nick will be tasked with making that a reality."

But smaller players too are looking to get in on the action.

Smaller players positioning too

Tokyo-based **Japan NUS CO Ltd (Janus)** established a joint venture in Vietnam with environmental engineering compatriot **Kanso Co Ltd** in early 2019. The two partners hope that the Hanoi-based JV, named **JNK Environmental Research & Consulting Co Ltd**, will tap into the country's strong projected growth, and develop business in environmental consulting, environmental research/analysis and merchandise trading sectors there. Janus hopes to maximise opportunities by combining its own expertise in environmental and energy consultancy with Kanso's expertise and skills in the field of environmental investigation and analysis.

And in 2019, Norwegian multidisciplinary consultancy **Multiconsult** opened a branch in Bangkok, Thailand, to position itself to exploit the growing consultancy needs around renewable energy in the region. Multiconsult SVP for sales renewable energy Tom Ødegaard commented: "The long-term market in Southeast Asia is very favourable for renewable energy solutions to meet growing energy needs. By establishing a Thai branch, Multiconsult will be better able to execute its strategy to expand the market for renewable energy and water management services in the region."

In short, expectations around SE Asia are high. But unsurprisingly accessing this market and the opportunities, isn't quite as straight-forward for outsiders as perhaps other regional markets such as North America or Europe.

And by all accounts, the clock is ticking! At least **Tembusu's** Tan thinks so. "With booming economies in key neighbouring Asian markets, and initiatives such as the Belt and Road Initiative [discussed further on], there is a window of opportunity over the next ten to twenty years," he suggests, adding, "if we rely solely on organic growth, we will not achieve the necessary scale fast enough to exploit these opportunities, so we're already looking at M&A targets across the region, including Indonesia, Myanmar, Vietnam and Cambodia".

Watch this space!

The rise – and challenge – of China

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China is the world's second largest economy, a significant fact in itself, but even more so when you consider that at the turn of the millennium it was ranked a lowly 25th. However, this achievement has not been without cost.

It would be fair to say that China has not historically excelled in its approach towards the environment. In fact, an all-consuming focus on economic growth has meant that any concern towards environmental protection has often been at best neglected, and at worst blatantly violated.

This country's rapid industrial development means that it burns more coal than the rest of the globe put together. (And, incredulously, the Chinese government is said to be considering a proposal from the China Electric Council for the construction of 100s more coal power plants by 2030.) It is the biggest carbon dioxide emitter globally. In fact, the activities of China and India combined have helped ensure that Asia as a whole is responsible for approaching half of global CO_2 emissions.

The impacts of coal combustion on air quality in China's megacities, further exacerbated by intense industrial activity and rising car usage, have had a devastating effect on the health of the population; soil and water pollution are also a huge concern. So, it's not surprising that the authorities have come under extreme pressure to tackle the resulting pollution.

There can be no questioning that developing a robust environmental policy is a priority. A report presented by President Xi Jinping at the 19th Community Congress in 2017 included an entire chapter (ponderously) entitled *Speeding up reform of the system for developing an ecological civilization and building a beautiful China,* underlining the weight now being given to this area.

In early 2018 China unveiled its newly created **Ministry of Ecology and Environment (MEE)**, consolidating staff and functions from a number of ministries into a single location, and replacing the former Environmental Protection of the People's Republic of China body. The new department has been given a broader remit with functions including climate change and emissions reduction policies; environmental monitoring; air/water/soil pollution; ecological/marine conservation, nuclear safety and radiation safety, amongst others.

Credit: Adobe_fazon

It would be disingenuous to suggest that China is emerging from the industrial smog as an ecowarrior (not least given recent reports suggesting that despite a decades-old ban, rising CFCs levels have been traced to East China), but it is at least in some areas setting the global pace.

Solar energy is one such field that has grown exponentially on the back of the country's efforts to reduce pollution in its cities. At the end of 2018 China had 172GW of cumulative installed solar capacity – 35% of the global total according to **EY's** latest RECAI report – albeit representing a slowdown in installations in that particular year linked to squeezed subsidies. (And never one to miss a business opportunity, whilst addressing its own environmental legacies, it has also become the largest supplier of solar PV to the rest of the world.)

China also boasted 32% of global wind capacity at 181GW and is the global leader in electric vehicles with over two million plug-ins at the end of 2018 (although the introduction in the past month of new rules leading to the removal or reduction of government subsidies

Credit: Adobe_lovelyday12

– depending on EV type – could impact future sales).

In other areas too, China can claim some notable green credentials. According to NASA, with a 10% change in vegetation over the past decade (against a global average of 2.3%), China leads the world in terms of 'greening due to human activity' of its territory, i.e. in tree-planting. This is a push which dates back to the 1990s following the large-scale deforestation in the 70s and 80s. (Interestingly, India is a close second.) In late 2017, China launched the world's largest emissions trading scheme (ETS), regulating and incentivising some 1,700 Chinese power companies to operate more cleanly in an effort to curb CO_2 emissions. And it is planning to invest over $360bn in renewable power capacity by 2020.

It's odd to think that this is a country that, on the face of it at least, is stepping up to the climate plate as fast as its arch rival, the US, is stepping away under the current Trump-led administration.

And with the UN's global biodiversity conference, COP15 of the Convention on Biological Diversity (CBD), to be held next October in Kunming – capital of the Yunnan province – China will undoubtedly be in the environmental spotlight once again. The focus of this meeting will be on negotiating a global biodiversity framework for the post 2020-era.

> "The development of business relationships in China cannot be overstated and form an essential part of winning business
>
> **Dr Anne Kerr, Mott MacDonald**

China perspectives

So, what do our panel of experts think about China's apparent new-found environmental zeal, as seen through the lens of environmental consultancy?

Mott MacDonald's managing director, Greater China and global head cities, Dr Anne Kerr, gives an overview of the situation: "Environmental consultancy in China has grown enormously in the last ten years, with huge growth in the size of local institutes and academies, and an increase in the number of small local consultancies."

During that time there have been two key developments, she explains. In 2014 the government launched its National New-Type Urbanisation Plan (NUP) to provide a roadmap for urban planning, integrating urban and rural development and improved living conditions for millions of citizens. Key initiatives include sustainable urban development, low carbon, smart cities, and sponge cities with many pilot projects established in cities across the country.

This was followed in 2015 with the update to the Environmental Protection Law bringing significant changes to the way that industries operate. Dr Kerr elaborates: "It appeared that previously it was cheaper for companies to pay the fine and carry on with business as usual with regards to emissions to air, water and land. China has now developed pollution control action plans and the introduction of exponentially increasing fines; use of prison sentences for particularly bad polluters and a change in the way that local government officials are promoted have resulted in environmental protection being taken seriously and a reduction in the economic growth at any cost mentality."

She also highlights the "active measures to close down old inefficient and polluting industries with a strong drive promoting higher standards of efficiency and lower emissions," which has also led to the mass movement of industrial facilities back away from the major urban populations.

Mott MacDonald itself is an established player in China and has been providing environmental consultancy service since the early 1980s. The teams based in Shanghai and Beijing as well as Hong Kong have fluctuated in size depending on markets and project development phases and currently stands at around 60 professional staff. Project experience covers many aspects of development for cities and includes environmental and sustainable development inputs. The team has extensive experience in environmental appraisal, advisory services and project approval, with services including water and environmental resources assessment, planning, management, policy and legislation.

"We have also worked in solid waste management; sludge treatment and energy recovery; wastewater treatment; water supply; climate resilience; environmental due diligence; water resources management; planning (demand management; drought management; flood management; river basin catchment management plans; stakeholder consultation; sustainable development planning; transboundary water management; irrigation etc)," says Kerr.

Amongst these there are some core areas of activity in China, she confirms, predominantly around water and environment projects for IFIs, either in project preparation advisory positions or loan implementation, and a large portion of Mott's EC work is focused on project procurement and management for urban-rural development projects. In addition, "we're also seeing growing demand for technical and environmental due diligence from foreign firms considering investing in China. And at an advisory level, we're working in climate change adaptation, and have contributed to many workshops and forums linking both international government agencies and Chinese and European cities to share experiences," Kerr adds.

Tembusu's Tan concurs on the growth in environmental consultancy in recent years, thanks to past government initiatives such as the Green Public Procurement program and environmental assessment for projects. Major infrastructure projects supported by financial institutions or public private partnership (PPP) models are also driving demand for environmental assessment and supporting management plans. And following the reorganisation of its internal departments, with the new Ministry of Ecology and Environment now heading the key departments for urban development, together with legislative changes around pollution control and regulatory compliance, demand is only set to rise in future, he believes.

China challenges: red tape, who you know and protracted negotiations

On the face of it, the potential openings on the back of these changes might appear significant for the wider EC sector, certainly those with deep enough pockets to be able to throw resources at it. But in reality the opportunities for international firms are, Kerr concedes, "quite limited" with the bulk of EC work going still to Chinese local state-owned design institutes and academies. Despite China's apparent desire to prove itself to be a progressive player on the global stage, if anything, it's getting harder for outsiders to get a toehold, she adds.

One of the fundamental difficulties for professional services firms like **Mott MacDonald** is quite simply the absence of a physical product to sell. But aside from that there are numerous other challenges to contend with which make it difficult for foreign firms to break into this market.

"Local firms have several advantages over foreign firms, including: lower costs; government preference for hiring local institutes and well established government relationships, because the development of business relationships in China cannot be overstated and form an essential part of winning business," Kerr explains.

Other headaches for uninformed non-natives, according to Kerr, include: payment terms ("Obtaining payment for services can also be difficult, with local institutes worrying less about debt collection and being able to focus on maintaining a relationship with the government client."); scope creep; local competition from design institutes; competition from 'international firms' which are registered overseas but operate as local consultants; and perceived restrictions on the type of work that firms (such as Mott MacDonald) are legally able to undertake.

And on top of that there's the red tape: "It is extremely difficult for foreign firms to obtain the necessary licences to carry out environmental consulting work, including environmental impact assessments," she adds.

This issue of licences is echoed by **Tembusu's** Tan: "Most projects require local licences in order for services providers to qualify to bid for a contract. Foreign companies are required to work with local qualified companies which must be familiar with local regulatory practice, but also have the necessary qualifications to be involved in the project. In my experience, providing EC services in China depends on who you know and what you know in the local market." It means, according to Tan, that in reality, the opportunities for most foreign companies often stop at the conceptual level.

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>
> **Seng-Chuan Tan, Tembusu**

And **BMT's** Fisk too refers to the preference for domestic providers (with very few exceptions); his earlier point about the need for local partners on the ground in SE Asia is doubly so in China. And, reflecting Kerr's point about the difficulty when you don't have something tangible to sell, BMT has opted in the short-term to lead (with the help of a couple of local agents) its charge in China with its proprietary TUFLOW flood software product in the hope that this provides credibility and brand recognition which ultimately will pave the way to subsequent consultancy work. (Happily, the physics of water don't change whether you're in China, Australia or Antarctica, Fisk points out.)

China: opportunities and rewards

Credit: Surbana Jurong

But if you can jump through all the bureaucratic hoops and have the right personal contacts, there are undoubtedly rewards for those brave enough to try. And whilst often this will need to be in collaboration with local State Owned Enterprises (SOEs), it's not exclusively the case if you can prove your speciality.

One firm that is clearly thriving in China is Singapore's **Surbana Jurong**. Its activities in this market date back to the mid-1990s and its involvement in the Government-to-Government (G-to-G) Suzhou Industrial Park (SIP), a project borne of Chinese ambitions to replicate Singapore's own economic success. The vision implemented by Surbana Jurong's planners was an integrated township with industrial parks development supported by housing, community, recreational and educational facilities – in line with the firm's signature work-live-learn-play concept.

The firm has taken the idea further in its master planning for another Sino-Singaporean cooperation project, the Tianjin Eco-City, which - when fully developed by the mid-2020s - will represent "a socially-harmonious, environmentally friendly and resource-efficient city" for around 350,000 residents. Surbana Jurong's master plan for Tianjin includes a mix of land uses, with extensive green (vegetation) and blue (water) networks. It will include a 12km eco-valley through the core of the city, acting as a recreational corridor and drainage system for harvesting rainwater at ground level, whilst also serving as a utilities corridor and housing the train system below ground.

A blend of sustainable industrial development and urban living is very definitely Surbana Jurong's USP.

Surbana Jurong CEO, North Asia, Michael Ng provides a snapshot of some of the firm's other recent activities in China: "We have partnered developers to embed the concept of sustainability in the design of new towns. For example, we are partnering **CapitaLand China** to jointly develop the Ningbo Innov Park in China's east region. This is the first cooperation project between a Singapore enterprise and the local government to develop a new generation of township development. This 890,000 sqm business park focuses on intelligent manufacturing, and will comprise industrial, R&D, residential, commercial, retail, civic & community and possibly hotel facilities."

"Surbana Jurong is also promoting the concepts of transit-oriented developments (TOD) i.e. compact, mixed use developments centred around transportation nodes which encourage a car-lite community. We're currently providing a feasibility study and conceptual urban design for the Xi'An Metro TOD (lines 5 & 8), and also won the design competition for the Chongqing Aerotropolis Township Urban Design."

Other Surbana Jurong projects have included the design of Tencent Seafront Tower in Shenzhen by its member company **B+H Architects,** incorporating energy-efficient features, such as the re-use of grey water for irrigation and the use of natural and biodegradable materials.

With his firm's long experience of working in the country, Ng is confident of the opportunities ahead: "China's urbanisation has continued unabated, and about one billion people, or 70% of its population, are expected to live in cities by 2030. Rapid urbanisation has put tremendous stress on cities in terms of housing, pollution and general standard of living and the Chinese government has recognised that it is crucial to balance economic growth with sustainable development. In this regard, it has identified the critical role that construction and urban planning plays."

As part of China's *13th Five-year plan for building energy efficiency and green building development*, the government has set targets for getting 50% of new buildings certified as 'green buildings' by 2020, points out Ng. To further its sustainability goals, the plan specifies that new build projects should aim to be at least 20% more energy efficient compared to 2015. Projects are also required to use sustainable building materials for at least 40% of their total construction materials. "There is also a push for more sustainable development models, such as eco-cities, TOD and industrial new towns," he adds.

All this certainly plays to Surbana Jurong's strengths.

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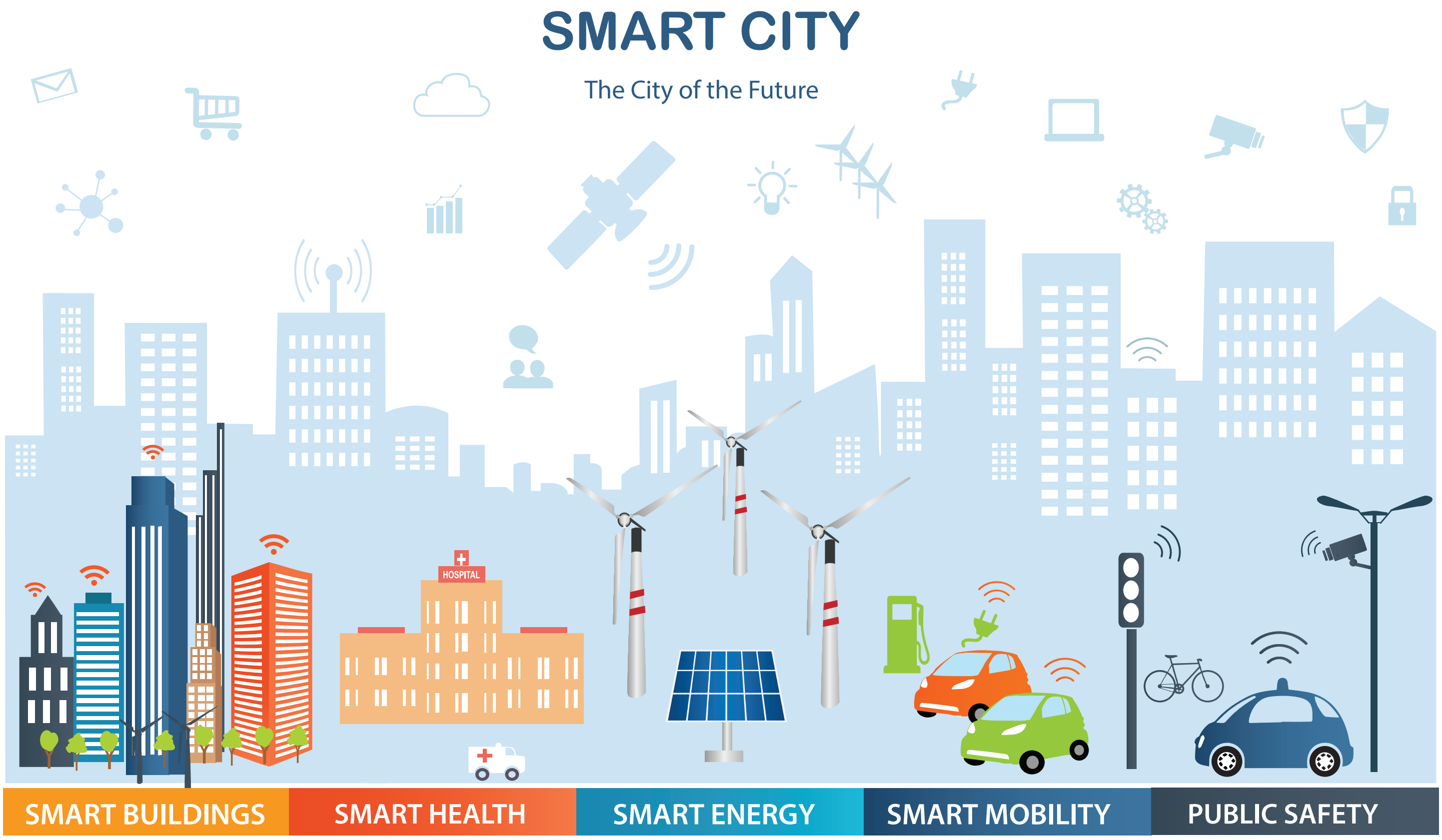

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China: outlook for EC providers

Putting cookies aside, can you make your fortune in China?

If you can, global EC market leader **AECOM** certainly intends to be there.

In 2017 it signed an agreement with **China Communications Construction Company Limited Highway Consultants,** a subsidiary of state-owned **China Communications Construction Group**, to establish a Beijing-based JV to service the growing need for stronger environmental protection across the country.

AECOM stated at the time: "As economic and social development has accelerated across the PRC, concerns over environmental impacts have risen. PRC national government studies and recently, landmark legislation at national, provincial and municipal levels point to a dramatic shift forward in official and public support for environmental remediation."

Underlining this point, AECOM points to the fact that the development of an 'environmental technology industry', 'ecological living' and 'ecological culture' have all been highlighted under the current five-year plan.

AECOM cites estimates that investment in China's environmental protection industry could exceed RMB17tln (cUS$2.5tln) over the next few years.

Meanwhile **Tembusu's** Tan cites a recent report (not from *Environment Analyst*) which suggests China's environmental consulting services market could exceed $2bn in 2020. EA's own market statistics on the wider Asia Pacific region and its growth potential as predicted by our forecast model over the next few years is indicated in the charts overleaf.

In Tan's view the bulk of this will be around site remediation, pollution control, environmental impact assessment and due diligence to tackle the existing environmental issues. But, as cities grow and redevelop, he predicts increasing demand for urban infrastructure projects in energy, waste and water treatment or management.

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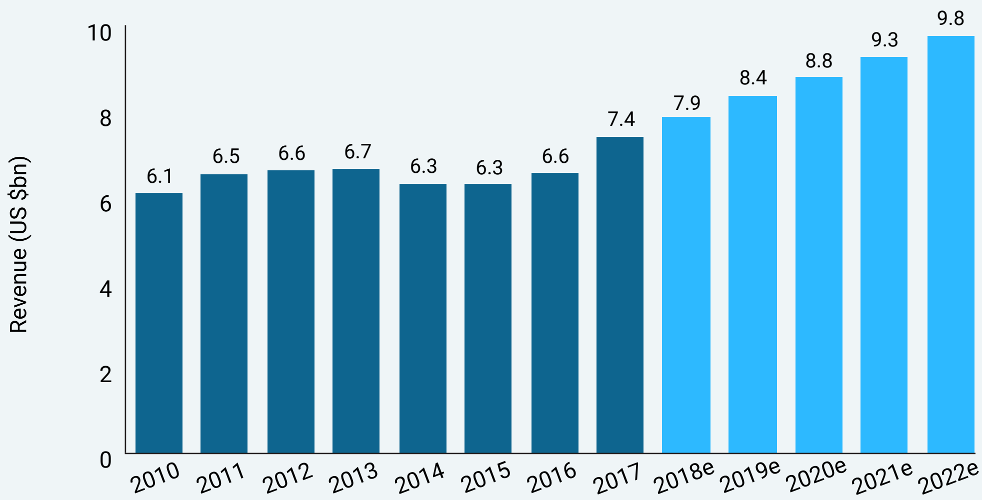
> **Greg Fisk, BMT Group**

And Tan sees real openings for foreign consultants in the higher value field of Eco-, Smart- and Sponge-cities which are gaining in popularity, and which will require a broader range of international ideas and perspectives. Foreign MNCs investing in China will also likely be a source work – major investment plans, merger and acquisitions, all require some form of due diligence advice or sustainable strategies to address the environmental and financial risks etc, he concludes.

Mott MacDonald's Kerr certainly agrees on an anticipated rise in demand for due diligence work from foreign investors and, additionally points to opportunities in urban development in areas such as climate resilience and adaptation.

Meanwhile, for start-up Tembusu itself Tan is frank when he says that he is busy building his new business in Singapore and Indonesia, and the Chinese market presently is not a priority. That said, it hasn't prevented him from forming a couple of partnership agreements with local companies in readiness..."China is a huge market; we want to focus on a few niche markets such as eco-industrial park masterplanning, renewable energy projects, waste to energy facilities. If the opportunity arose, we'd happily provide higher-end value consulting services to potential clients there."



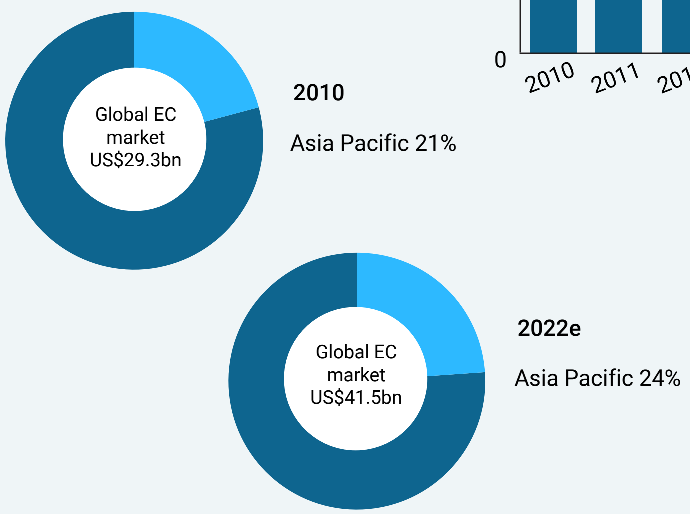


Figure 1: Asia Pacific environmental consulting market revenues, 2010-2022e

BMT's Fisk feels China's environmental aspirations definitely warrant keeping an eye on: "One of the great things about China is that when they decide to do something, they do it on a fantastic scale; it is well planned and well thought out; we'll certainly be watching out for the EC opportunities - albeit with a degree of realism around our expectations."

But he is candid about the difficulties: "Every consultancy in the world has had a China strategy for business development over the last ten years," he points out, self-admittedly tongue-in-cheek, "but very few of them have been successful."

More seriously though, "It is a big world and there's no shortage of projects to keep BMT busy. China will always hold great fascination in terms of the pure numbers and the scale of the projects but as far as we're concerned there are other places to win and carry out work in Asia, particularly where BMT has local presence in places like Malaysia and Singapore."

By all accounts, for western or even other Asian/Pacific firms looking towards the world's most populous country, unless you have a decades-long history here like **Surbana Jurong** or **Mott MacDonald**, perhaps China can be likened to a brazil nut - worth the effort if you can get in but a difficult nut to crack.

Belt and Road Initiative

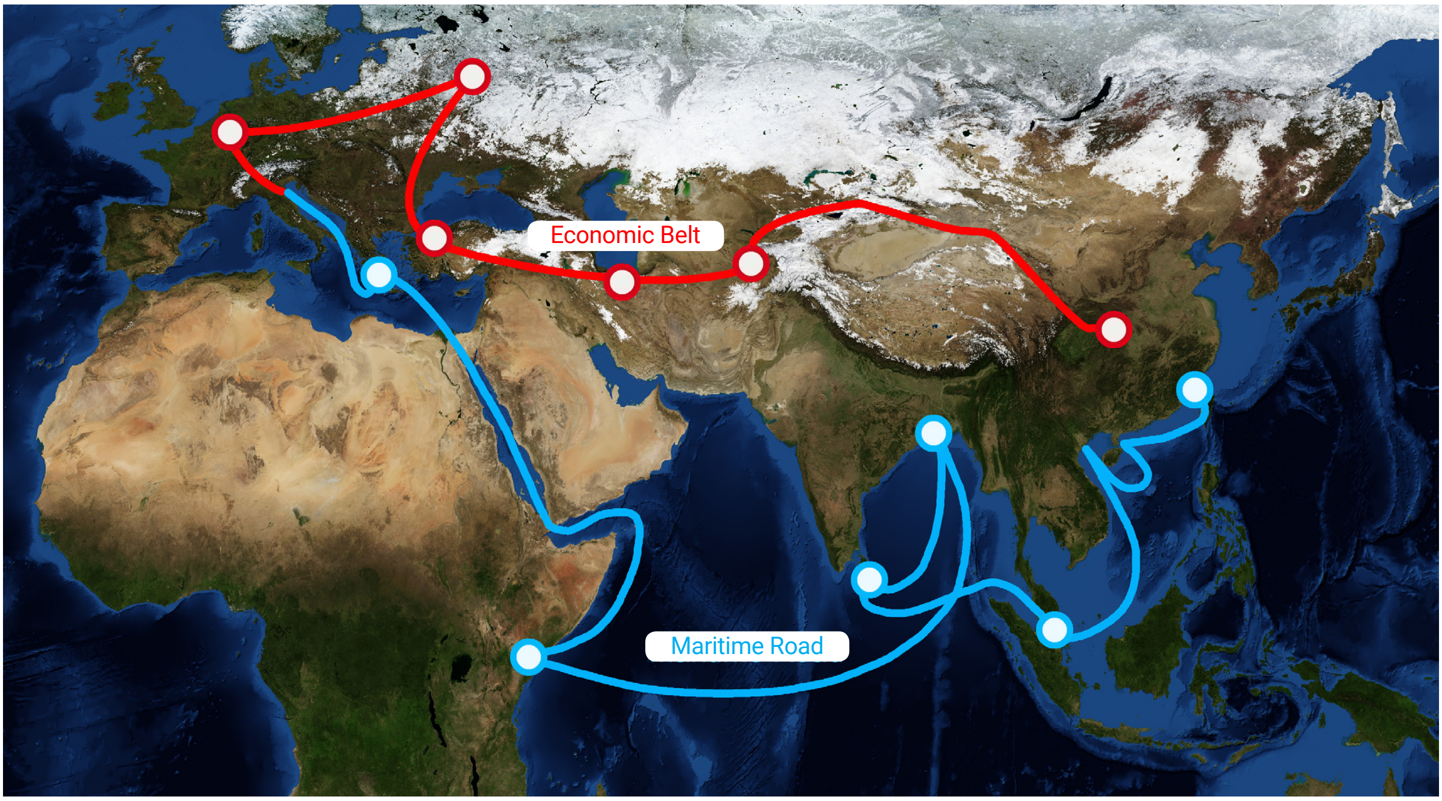
Talking of fantastic Sino projects, we cannot end without taking a look at one of the most ambitious and staggeringly large initiatives the world has ever seen: of course, we're talking of the Belt and Road Initiative (BRI).

Mark-Anthony Johnson, CEO of investment management firm, **JIC Holdings**, recently said: "There are two things everyone needs to know about the Belt and Road. First, as officials in Beijing will tell you, this grand project is measured in decades, with its conclusion planned for 2049, the centenary of the founding of the People's Republic of China. Second, the initiative is both global and revolutionary. Its aim is to create a new order in world politics and the world economy."

First unveiled by the Chinese government in 2013, BRI is a development vision involving infrastructure development and investments in 68 countries across Europe, Asia, Oceania and Africa, representing 65% of the world's population and 40% of the global gross domestic product as of 2017. The 'belt' refers to the overland routes for road and rail transportation across Central Asia, called the Silk Road Economic Belt; whilst the 'road' refers to the sea routes, or the 21st Century Maritime Silk Road, across Southeast Asia, Oceania, the Indian Ocean and East Africa.

The objective is to address an infrastructure gap and accelerate economic growth across the Asia Pacific area and Central and Eastern Europe. The initial focus is on infrastructure investment, education, construction materials, railway and highway, automobile, real estate, power grid, and iron and steel.

Not surprisingly, the environmental implications of such a vast undertaking are significant to say the least! In recognition of this, China and the **UN Environment Programme** formed the International Coalition for Green Development on the Belt and Road in 2016, focusing on enhanced collaboration to ensure its environmental credentials. The coalition is led by the UN Environment and the Chinese Ministry of Ecology and Environment, and aims to be "an open, inclusive and voluntary international network which will bring together the environmental expertise



Credit: Shutterstock_YIUCHEUNG

of all partners to ensure that BRI brings long-term green and sustainable development to all concerned countries in support of the 2030 Agenda for Sustainable Development."

Whilst mindful of the risks (financial burden, perceived Chinese expansionism without benefiting SEA countries), **Surbana Jurong's** CEO International (Singapore, Southeast Asia, North Asia) Teo Eng Cheong is in no doubt of the enormous potential it holds: "The BRI creates the opportunity to build much-needed sustainable infrastructure in Southeast Asia and for strong economic development and shared prosperity in these countries." But, he warns, success will depend on making BRI a multilateral initiative based on market forces principles with pragmatic infrastructure roadmaps, high standards of governance and strong project leadership.

One BRI project example, highlighted by Teo, is the development of a US$9bn deep sea port and industrial park in Kyaukpyu, Myanmar. "Situated in the western Rakhine State of Myanmar, Kyaukpyu will provide Western China with access to the Bay of Bengal, and is therefore highly strategic to China. To Myanmar, the project will lead to economic development and potentially reduce some of the ethnic tension in the Rakhine state. The project is therefore strategic to both countries." The project is currently still under negotiation between the Chinese consortium leader **CITIC Group** and the Myanmar Government.

Tembusu's Tan is also attuned to the long-term opportunities that BRI presents and fully intends his firm to be part of this initiative: "It has always been part of our plan to go along with the BRI. We see opportunities in several sectors and have been making preparations to ensure that we can respond rapidly if they arise. There will be a lot of opportunities in infrastructure projects, i.e. ports, railways, roadways, etc."

In contrast, and certainly less gung-ho about the whole project, **BMT**'s Fisk feels that despite all the news coverage, in reality there is "not a lot of tangibility yet" in terms of investment in projects that require consultancy services.

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Regardless, he confirms that if and when the opportunities arise, given its marine heritage BMT's focus will be squarely on the Maritime Silk Road element of the BRI. "I think we will see considerable investment in port infrastructure and shipping as part of the initiative," Fisk says, adding "but it will be interesting to see where the funding for all these projects comes from and what leadership role China plays in getting the various countries along the route to sign multinational treaties focused on not only growth but also marine environmental protection."

"It's still a bit too early to tell", he adds.

Echoing the expectation of longer term opportunities, Australia's newly-enlarged **Worley** has made the BRI one of three focal points in the last of its three outlook 'horizons' (alongside 'new energy' and 'digital').

So, don't hold your breath is perhaps the key message here.

But Australian-based Fisk does make one final point in relation to our Chinese partners and their wider aspirations: "China is investing large amounts of money in infrastructure projects much closer to home here in the Pacific, and not wanting to be outdone as a result, the US, Australia and UK have also started ramping up their own aid to the region.

"With all these national states pouring dollars into the region for geopolitical reasons, it should be a very good consulting landscape over the next ten years."

Now that's an encouraging thought to end on!