

NORWAY | ASIA BUSINESS REVIEW

The **M**agazine of the **N**orwegian **B**usiness **A**ssociations in **S**outh and **S**outheast **A**sia

Thailand Welcomes new Team at
the Norwegian Embassy

Yara Looks to Empowering
Thai Farmer

TIQRI Corporation Celebrates
Ten Years of Success from
its Base in Sri Lanka

S P E C I A L R E V I E W

New Energy Solutions for Asia



Paint for iconic buildings and beautiful homes

Since its beginnings in 1926 in Sandefjord, Norway, Jotun has grown into a leading worldwide brand today, attaining numerous global recognitions along the way. With the amount of research and dedication poured into every drop of Jotun paint, no wonder many of the world's most iconic buildings, including the Eiffel Tower in Paris, as well as millions of beautiful homes, are painted by Jotun.





Cover Story

A new team has taken over the leadership of the Royal Norwegian Embassy in Thailand. Ambassador-Designate Kjersti Rødsmoen and Minister Counsellor Tor Haug shares ideas and outlook for the future. Photo: Thomas Engström. Page 6

Editor: Axel Blom

Journalists: Anton Bentzon, Cheyenne Hollis, Larry Jagan, Sofie Lisby, Henri Virralt and contributions from guest correspondents

Cover Photo: Thomas Engström
Operational Management: Helena Sälsten

Art Director: Pansak Chintanapakdee
Production: Graphics-Related Co., Ltd.
Concept Design: Spaulding & Associates

Published by: Thai-Norwegian Chamber of Commerce in co-operation with Norwegian Business Association (Singapore) and other Norwegian Business Associations in Asia

Editorial & Advertising:
Norway-Asia Business Review,
Thai-Norwegian Chamber of Commerce
Mahatun Plaza, 14th FL.,
888/142 Ploenchit Road, Lumpini,
Pathumwan, Bangkok 10330, Thailand

Norway-Asia Business Review reaches Norwegian-related business executives and decision makers throughout the region including the diplomatic missions as well as government ministries in Norway and Norwegian sector-based organisations.

Business Review is a quarterly business magazine and the contents reflects this. Each magazine has a main theme and the articles are centred around this theme. The magazine focuses on Norwegian-related stories from the region and issues that have impact or interest for Norwegian related businesses. Business Review is available in print as well as digital form through [Issuu](#) and [Pressreader](#).

Copyright © Thai-Norwegian Chamber of Commerce

**NORWAY-ASIA
BUSINESS REVIEW**

ISSUE 3 2018

5 FOREWORD

Aina Eidsvik, President of the Thai-Norwegian Chamber reflects on the region's energy options.

12 SPECIAL REVIEW

12 Multiconsult, Norway's 100 year old leading engineering consultancy. firm is spreading its wings to Asia.

14 Viking Heat Engines capitalises on the opportunity in producing electricity from low temperature heat.

16 Spirit Electricity may have found a way to power islands in Southeast Asia with renewable electricity instead of diesel.

18 Golar Power recognises the benefits LNG could have on the energy sector.

6 ARTICLES

Ambassador-Designate Kjersti Rødsmoen and Minister Counsellor Tor Haug heads up the new team at Norway's Embassy in Thailand.

8 Trump's tariff policies are the immediate trigger for a paradigm shift in world trade, but the larger forces have been building up for some time.

10 Yara sets out on a mission to transform the image of farmers in Thailand by empowering farmers with information and facilitating knowledge sharing.

20 The Norwegian Australian Chamber of Commerce

wants to find new ways to bring more Norwegian companies down under.

22 Oslo-based Wavetrain Systems aims to improve safety at railway level crossings across the globe and looks to more business down under.

30 Finn Worm Petersen, founder of Norwegian global technology company TIQRI, reflects on achievements of his 200 employee strong company in Sri Lanka.

32 An ambitious and unconventional Norwegian business consultancy sets its sights on China.

34 Founded in 2017, nHack is a Norwegian VC firm that has scaled its operations in mainland China in rapid succession and has recently expanded to Singapore.

36 Augmented reality is finally starting to unveil its potential. It could one day radically alter how we interface with computers.

38 Myanmar is stepping up its efforts to attract foreign investment and boost economic development.

40 A tale of Two Outcomes. Frequent temperature swings are affecting the U.S.-North Korean relations.

25 SNAPSHOTS

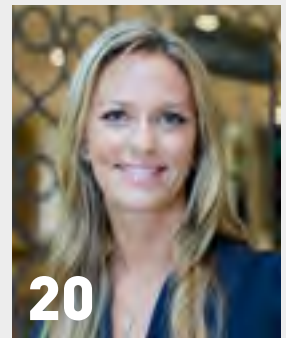
Norwegian Seafood Dinner in Malaysia 2018.

43 STATISTICS

Norway and Asia

44 DIRECTORY

Norway in Asia



SPECIAL REVIEW

Energy is higher on the agenda in Asia than ever before. Environmentally friendly technology is pushing out polluting sources of the past like coal and diesel. Norway has the know-how and technology for the future. In the last issue of Business Review, we covered some of the businesses that have capitalised on Norway's expertise. In this issue we continue to share ideas and technology that can help Asia develop its power sector. Pages 12-19.





DNB SINGAPORE

1 Wallich Street
Guoco Tower
#30-01
Singapore 078881
Singapore

DNB SHANGHAI

901 Shanghai Central Plaza
381 Huai Hai Zhong Lu
Shanghai 200020
China

DNB MUMBAI

Office no 33A 3rd Floor
3 North Avenue
Maker Maxity
Bandra-Kurla Complex
Bandra (East)
Mumbai – 400 051
India

Energy for the Future



PHOTO: THAI-NORWEGIAN CHAMBER OF COMMERCE

Opportunities Are like Sunrises, if you wait too long you miss them. (William Arthur Ward). The demand for energy in the ASEAN countries has grown 60% over the last 15 years and is expected to grow another 60% from now until 2040.

The growth in energy consumption is driven both by an increasing population and by an improved standard of living. While access to electricity has long been taken for granted in the West, 10% of the population in ASEAN - 65 million people - still remain without it. It represents a challenge for the region and huge investments will be needed to satisfy the demand.

Modern energy should be affordable, reliable and sustainable. Thailand has a progressive energy plan and in the Thailand Integrated Energy Blueprint (TIEB) the Thai government has set a target to cover 30% of the country's energy consumption from renewable sources by 2036, up from around 12% now and a quantum leap if achieved.

Renewable energy has so far been more expensive than fossil fuels but this is set to change and some sources claim that renewable energy will be a more economical option already by 2020.

Despite this, Thailand is considering building a new coal-fired power plant. It is believed to be a more cost-effective option to cover the increasing energy demand than LNG or renewable energy. It is difficult to understand the reasoning

behind it since LNG would be a more environmentally friendly interim solution until production of affordable renewable energy is sufficiently increased. Natural gas is not renewable but it is far cleaner than even the cleanest coal technology. Natural gas power has also been more affordable than coal power over the last number of years.

As you can read in several of the articles in this issue, sustainable energy technology is advancing at a rapid pace. Norway has over 100 years' experience with renewable energy and the knowhow is being utilised and further developed by a wide range of companies. These companies provide modern solutions to the energy challenge and are warmly welcomed by the ASEAN governments. If some of the companies could work together and develop combined energy solutions to countries in ASEAN, they are even more likely to become success stories.

Sincerely,

Aina Eidsvik

President

Thai-Norwegian Chamber of Commerce



PHOTO: TNCC/THOMAS ENGSTRÖM

Norway's Ambassador-Designate to Thailand, Ms Kjersti Rødsmoen, and Minister Counsellor and Deputy Head of Mission, Mr Tor Haug, arrived to the Kingdom at an interesting time.

Welcome to Thailand

CHEYENNE HOLLIS

Free trade, the ASEAN presidency and a growing embassy are just a few items on their agenda.

Ms Kjersti Rødsmoen is celebrating 30 years in the foreign service this autumn with a new role. She has taken over from Mr. Kjetil Paulsen as Norway's Ambassador to Thailand and Cambodia. Mr Tor Haug, who was recently appointed as Minister Counsellor, joins her and together they will look at ways to further cultivate and expand the relationship between the two countries.

Ms Rødsmoen has held many different jobs throughout her career including work at both the multilateral and bilateral levels. She recently headed the Latin America section in the Ministry of Foreign Affairs in Oslo, working on bilateral and commercial relations in the region.

"Bangkok was an intriguing option and it has been a nice change. There are many Norwegian businesses present here, so working on further commercial relationships is going to be important," Ms Rødsmoen states. "Additionally, so many Norwegians from all different backgrounds come to Thailand each year. We have a huge visa and consular section. Making sure that these important parts of the embassy function well, is also

a task I look forwards to taking on."

With China and the US continuing to exchange rounds of tariffs, global trade has come under fire. Ms Rødsmoen points out that Norway remains a strong supporter of free trade, the global trade system and the World Trade Organisation. In Southeast Asia, the European Free Trade Association (EFTA), which consists of Norway, Switzerland, Iceland and Liechtenstein, already has free trade agreements with Singapore and the Philippines.

Meanwhile, talks are ongoing with Malaysia, Indonesia and Vietnam. However, discussions on a possible free trade agreement with Thailand haven't taken place in more than a decade.

"Our goal is to have a free trade agreement with Thailand and we would like to get those discussions back on track," Ms Rødsmoen says. "I get the impression that this is something Norwegian companies, EFTA and Thailand all believe is important. Hopefully, we can get it done during our stay here."

Those initial discussions were placed on hold due in part to an unstable

political situation in Thailand at the time. When the elections planned for 2019 take place, not only would there be a platform for future talks on a free trade agreement, but Thai-Norwegian relations in general would benefit.

"The elections would be a positive boost to our relationship. I believe it is important for the people of Thailand that there is an election plan in place and we are expecting everything to be carried out in a fair, transparent and orderly fashion," Ms Rødsmoen notes. "This would confirm the positive development that is already in motion."

And that is not the only significant development happening in 2019. Thailand will act as the chair of ASEAN next year and Ms Rødsmoen believes the positive relationship between the two countries will carry over to this.

"We have cooperated with Thailand very well over many years through multilateral organisations, i.e. on health issues and mine clearance," Ms Rødsmoen explains. Another area on the top of Norway's agenda is ocean affairs. Norway's ocean area is seven times her land area and our blue economy such as shipping, fisheries and energy resources from oil and gas constitute the basis for our wealth. My impression is that Norway and Thailand can cooperate closer multilaterally on ocean related matters such as marine litter and fisheries crime. We are very eager to work with Thailand but also the other ASEAN-countries on these issues. This is something we will pursue when Thailand assumes the presidency of the ASEAN next year. We really want to discuss how we can make the most of this time."

Imports & Exports

Norway imported USD 752 million worth of goods from Thailand last year while exporting USD 333 million to the Kingdom. Mr Tor Haug notes that while various factors make it difficult to predict these numbers moving forward, there is room for increases on both sides.

"There is always room for growth when it comes to imports and exports. Especially seafood, which is important in a culinary destination such as Thailand," Mr Haug reports. "Salmon remains in demand, but cod and other seafood products are also becoming more popular. Bangkok is a foodie city and this pairs well with Norwegian seafood."

On the flip side, Thai food is growing in popularity across Norway. This could lead to increasing amount of culinary favourites from Thailand being imported into Norway.

"You're seeing Thai restaurants and food trucks pop-up everywhere in Norway. We mentioned that seafood exports from Norway to Thailand could grow. On the other hand, we could see growth in imports of Thai food products to Norway as well," Ms Rødsmoen says.

Renewable energy is another sector where Norway has the competencies and technologies to contribute. Mr Haug adds that they are having ongoing conversations with the Thai government regarding this and hope to continue these discussions moving forward since Thailand could benefit from utilising clean energy. In this regard, energy cooperation within ASEAN is also an area that would be interesting to pursue.

"Solar energy is a technology and commodity we export to many countries, but to less degree in Southeast Asia. Norwegian companies have a strong competency in this field and the price is now at a point where it can be a practical

solution. We can promote this instead of other sources of energy such as coal or diesel," Mr Haug details. "There are also opportunities for cleaner energy exports such as LNG where Norway also has a leading competence."

And it is not simply goods and services that can be exchanged between Norway and Thailand. Mr Haug reports there are many industries and topics where Norway has knowledge to share. Both countries have an interest in developing this aspect of the relationship further.

"There are still lots of opportunities for Thailand and Norway to exchange knowledge. Not much effort is required to make inroads," Ms Rødsmoen notes. "We will look to identify people and institutions in Norway that have knowledge of interest to Thailand. We want to put people together."

The Ambassador adds the government has established a knowledge bank that is designed to facilitate this exchange without costing a lot of money or being a huge project. It also allows the knowledge to flow both ways.

People focus

Thailand remains a popular destination for Norwegians. An estimated 130,000 to 140,000 visitors make the journey every year. This total impressed Ms Rødsmoen who believes Thailand is a popular destination because there is something in the country for everyone.

However, tourism is no longer a one-way street. More Thai visitors are now making the journey to Norway. The lure of the Northern Lights, expansive natural beauty and the snow has proven to be a hit with Thai travellers. This growth in tourism is something the embassy hopes to contribute to.

"We're looking to increase tourism

to Norway and this is something that has been growing. Arrivals from Thailand continue to increase and we hope to build on this momentum," Ms Rødsmoen says. "We expect more flights between Norway and Thailand which will allow for tourism to keep growing in both directions."

There are no immediate plans to change the visa process for Thai visitors travelling to Norway, but it is something the Embassy will monitor moving forward.

Our visa section at the embassy is continuously making strong efforts to streamline the visa process and to ensure a smooth and efficient experience for our visa applicants. At present almost all Thai applicants going to Norway for tourism, is granted a visa.

The baht is strong and we hope this will contribute to even more visitors from Thailand to Norway.

With more Norwegians heading to Thailand and a growing number of Thais flocking to Norway, the Embassy has plans to increase its capacity to support the needs of both groups.

"We will be expanding the Embassy next year. We are going to take on some of the visa responsibilities from other embassies around the region. It means we will have an even stronger embassy with the ability to serve more people," Ms Rødsmoen reports. "We are looking at adding ten new people in total with three of these coming from Norway and the others being recruited from around the region including Thailand."

And while the Embassy understands the importance of tourism and business, it hopes to promote education too. Mr Tor explains there is strong cooperation between the countries in academic fields that goes way back and there is hope this could be expanded.

"I look forward to reinforcing academic ties and encouraging more students to study in Thailand. This could be something we push for moving forward. I've read about students being happy with the experience here for many reasons," Ms Rødsmoen says. "I have two children myself, and I hope they may choose to spend some time studying here. I think it would be great for them."

Trade, business and people will keep Ms Rødsmoen and Mr Tor busy in the coming years. Ultimately, their focus remains on elevating the historic bond between Norway and Thailand that will improve all aspects of the relationship.

"We want to strengthen the relationship between Norway and Thailand. This is a very interesting moment for us. I have a positive impression of Thailand and I think our countries are compatible in so many areas. I'm very optimistic that relations will continue to grow," Ms Rødsmoen concludes. ■



PHOTO: TNCC/THOMAS ENGSTRÖM

Above left: Norway's recently appointed Ambassador to Thailand, Ms Kjersti Rødsmoen. Above: Minister Counsellor and Deputy Head of Mission, Mr Tor Haug.

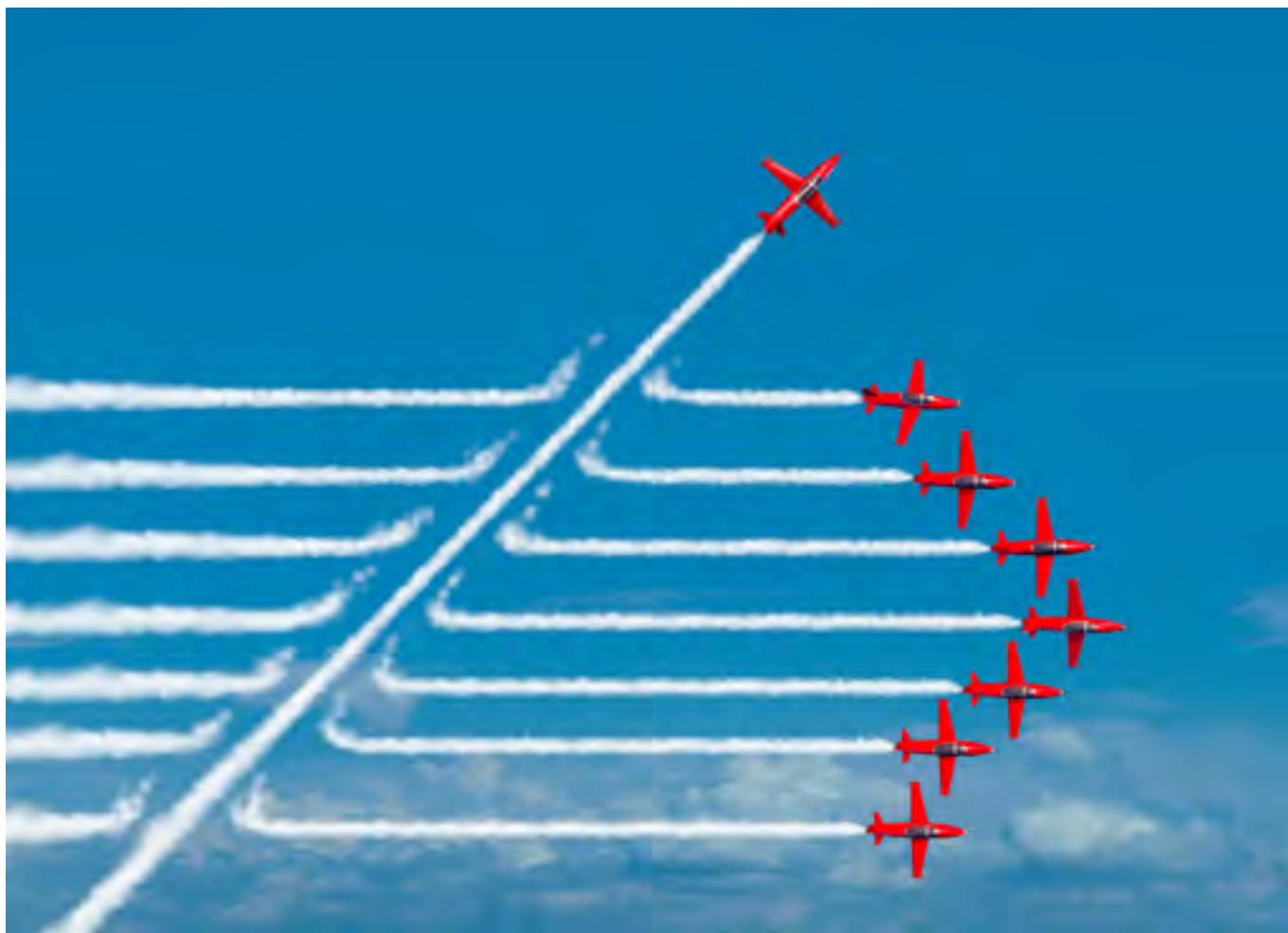


PHOTO: SHUTTERSTOCK

Washington, DC: Philosopher Thomas Kuhn wrote about something he called a “paradigm shift” in 1962.

Pardigm Shift: No longer Business as Usual

DR. DEBORAH ELMS, EXECUTIVE DIRECTOR, ASIAN TRADE CENTRE, SINGAPORE

He was trying to describe what happens in science when repeated evidence no longer can be convincingly fit inside the existing theoretical structure. For a long time, the system struggles to adapt but, at a certain point, an entirely new model of thought replaces the old.

Washington and the rest of the trading world seems to be witnessing a Kuhnian paradigm shift right now when the comforting models of the past no longer work.

Trump's tariff policies are the immediate trigger for this shift, but the larger forces have been building up for some time.

The change is disconcerting. It was described by one participant as a “culture shock,” which makes sense. All of a sudden, the basic structure of the world feels upside down and disoriented.

Trade lanes that have been open and frictionless for decades are closing with barely any advanced warning. Supply chains that have evolved in complex and organic ways are getting

broken apart. Years or even decades of time spent nurturing relationships with key stakeholders seems to make little difference in understanding what might happen next.

At first, the trade challenges appeared to be centered on Trump's highly unusual and deeply wrongheaded views on global trade. Hence, the original sense has been that if his time in office could be weathered, the system would revert to “normal.”

But in a paradigm shift, the old model no longer applies. There is no “normal” to return to, nor is Trump the primary problem (even if he presents a convenient scapegoat).

The basic problem, boiled down very simply, is that the global trading

system that currently exists was built for a world with economies structured much like the UK and the United States and where developing countries were largely smaller players. The handful of bigger countries were sufficient powerful to be willing to bear the burden of keeping up the trading system.

Against a backdrop of larger strategic interests, the United States, in particular, was fine with a certain amount of free riding from others. Of course, the system also brought significant benefits to US companies that became globally dominant.

One key assumption baked into the system was that all economies, including developing countries, would continue to evolve in the direction of becoming more like the UK and US. Development would spread and more countries would take up the burden of maintaining the system over time.

But this is not quite what has happened. Again, with gross simplification, the overwhelming dominance of the United States after WWII has diminished. Countries have not all evolved in the same way. Most, in fact, have not. This was not a particular problem until China's impressive rise. China's economy is not structured like the United States and it shows few signs of wanting to do so.

Hence the paradigm shift problem.

For a long time, “China” was shoved into an old model by many—it would eventually evolve. It would join the World Trade Organization (WTO) and change its economic structure. It would get richer and change. It would respond to demands from a rising middle class and restructure. And so forth.

But it has not done so and shows no clear signs of doing so. In fact, Chinese leaders have made no bones about their intention to become the global leader in next generation technologies.

Other developing countries, while not presenting quite the same structural challenge perhaps as China, have also not played the same role in the global system as originally anticipated. The WTO now has 164 members and most are developing countries. It is not possible for the developed countries to dictate the negotiating agenda. Yet getting an agreement that effectively meets the needs of a very divergent membership on anything is increasingly impossible.

The center of gravity has moved from the original “Quad” of the United States, the EU, Japan and Canada to a much more diverse set of countries. The rapid rise of Asia in growth and population suggests that it should play a much more prominent role in the future.

The global trading system is no longer fit for purpose. The sense of culture shock in Washington stems from a growing recognition that the new paradigm must include a diminished role for the United States. This is deeply disorienting.

The new paradigm has not been established yet. Kuhn describes a protracted battle that takes place during times of shift as the crisis plays out over what ought to replace the discredited old model.

Trump has fired the starting gun on the battle for the future of the global trading system. In his world, the US will draw up the gates and manage with only those favored few bilateral partners that share similar perspectives.

The European Union just presented a plan to save the current WTO. But because they have not yet recognized the extent to which we are standing on the precipice of the shift, the plan has already been derided as weak. It tweaks around the edges of the existing system.

Canada is holding a conference of “middle powers” next month to brainstorm new ideas. They will need to be bold. In designing a way forward, officials need to recognize that whatever comes in the future will—of necessity—be radically different than the system that we have been comfortable with for more than seven decades.

The culture shock is just beginning.

This Talking Trade was written by Dr. Deborah Elms, Executive Director, Asian Trade Centre, Singapore ■

SEA FROM
FROM NORWAY

Norway has perfect living conditions.

For salmon.

Why did humans settle in this inhospitable place? Because it's a perfect place for fish. Ice cold waters make the Norwegian Salmon grow slowly and develop a perfect taste.



PHOTO: YARA (THAILAND)

Yara wants to transform the image of farmers in Thailand. The company believes a prosperous era of Thai agriculture can be achieved by empowering farmers.

Farming Knowledge

CHEYENNE HOLLIS

It's safe to say no Norwegian company operating in Thailand has the visibility Yara now boasts. That's because the newly minted 100 baht note features a depiction of the visit of H.M. King Rama V to the official residence of the company's CEO in 1907.

Now immortalised on Thai currency, this event was the start of a long and fruitful relationship between Yara and Thailand.

"Not only did H.M. King Rama V visit Yara House in 1907, but he brought back our Calcium Nitrate fertiliser with him. We were the first mineral fertiliser used in Thailand and this product is still sold here and known well as YaraLiva today. Thousands of Thai farmers currently use it," Mr Mehdi Saint-Andre, Yara (Thailand) Ltd. Managing Director and Vice President of the group's Crop Nutrition Business, recalls. "A lot has changed since that visit. For example, we no longer use barrels to ship our fertilisers. One thing hasn't changed and that is our commitment to helping Thai farmers."

Yara has sold its products in Thailand for 45 years. It began by offering its fertilisers through a local distributor. In early 2010, the company

took over its distribution and has built its reputation even further. The firm now has 160 dealers and 3,000 sub-dealers in the Kingdom.

Despite Yara's long history in Thailand, which has seen it become known as an authentic, genuine and high quality fertiliser, it faced some recent brand confusion. Other companies tried to duplicate its Viking ship logo and brand name. As a result, Yara has had to commence legal action against such infringers – one such lawsuit resulted in the Thai Supreme Court recently ruling that the infringer's use of a Viking ship logo as well as the "[rua bai Viking in Thai words]" (translates to "Viking sailing ship") brand name is a violation of Yara's intellectual property rights.

Yara is currently undertaking a significant branding campaign to ensure it is known as the only Viking fertiliser in Thailand. The company has found other

ways to help these efforts as well.

"We were recently recertified by Thailand's Private Sector Collective Action Coalition Against Corruption and this is something that means a lot for us as a company," Mr Saint-Andre states. "Safety and compliance are extremely important to us and customers in Thailand recognise our commitment to these."

Smart farmers

Another one of Yara's efforts in Thailand is the alignment of its Yara Thailand 4.0 strategy with the government's Thailand 4.0 push. This includes a significant investment in digital farming, one of the company's main points of emphasis globally.

"Yara is bringing knowledge, tools and data together to drive and support farmer performance. I believe our local strategy based on farmer centricity, strong partnerships with SMEs and digital innovation will support Thai economic transformation while also creating more inspiration for the younger generation to invest in agriculture," Mr Saint-Andre says.

Mr Saint-Andre admits the first image many people have of Thai farmers is of the poor rice farmer. However, the company wants to change that perception. When people think of Thai agriculture, Yara wants them to see smart and successful farmers.

"Smart farmers already exist here.

You see them in places like Chantaburi where durian farmers have become very smart and are now enjoying a great deal of success,” Mr Saint-Andre points out. “But it can’t stop there. We want to make all farmers in Thailand smarter. Digital farming makes this possible. By combining data, tools and services to help farmers be more productive, the image will change.”

Weather reports, soil and leaf analysis and crop information are just some of the data now readily available to farmers. Yara believes that having access to this helps them make informed decisions that allows them to enjoy greater success. The company also has a digital presence via YouTube along with several other social media outlets and a number of mobile apps. This digital outreach is something Yara plans to expand in the coming years.

“Here in Asia, we believe it is important to invest in this technology. Having access to this information is what will help farmers to grow more productively and sustainably in Thailand. There are already many smart farmers in Thailand. It is important to promote these growers and show the rest of the country how to copy their work,” Mr Saint-Andre notes.

He continues, “We have a team focusing on how to share knowledge with farmers online as we look to build up more networks. We will invest in channels like Line in the future and find other ways to connect with Yara dealers and sub-dealers as well as farmers.”

In order to understand the needs of farmers and educate them, it is important to speak with them directly. Yara is continually meeting with farmers throughout the country to keep dialogue open.

“We are always meeting with farmers to find out what they need. This dialogue and knowledge sharing is important to our goal. Last year, we had face-to-face meetings with 40,000 farmers in Thailand,” Mr Saint-Andre says. “It is necessary to work with leaders in the farming community as they can be the foundation of our knowledge network.”

Yara will continue to scale up these efforts in order to create more networks and connections among the Thai farming community. The company hopes to eventually be in contact with millions of farmers, providing them with a platform to share knowledge and information.

“We don’t want to be entirely product focused. We need to be knowledge focused to have the greatest impact. We have to provide the knowledge along with our product,” Mr Saint-Andre details. “The Thai market is familiar with our fertilisers, but we are much more than that. We actually don’t sell products. We recommend a crop program based on the needs of what is being grown.”

This allows the company to guarantee extra revenue for farmers. And while Yara’s program costs more than their competitors’ products, this extra revenue has also been accounted into the pricing. While farmers are initially paying more, they will also make more by using Yara.

Business outlook

Yara currently works with 20 Thai crops with rubber being its biggest market. The company has seen significant growth in the durian and leafy vegetable markets with longan and citrus among other key crops. Mr Saint-Andre adds there are many opportunities here in Thailand for the company to explore

as it looks to increase its presence in the country.

Despite rice being one of Thailand’s main crops, Yara doesn’t work with the grain as its products are not designed for it. But the company does see room for maize in the Kingdom, a crop its fertilisers are well suited for and one that could replace rice on some Thai farms.

“Thailand currently imports maize so this is a crop we are monitoring. It could be scaled up in Thailand and this would be beneficial to the country in a few ways,” Mr Saint-Andre says. “It would allow Thailand to be less dependent on maize imports which are susceptible to price fluctuations. Additionally, conditions needed to grow maize and rice are similar. If farmers start to switch from rice to maize, some of the rice oversupply may be eliminated.”

Thailand Prime Minister Prayut Chan-o-cha urged rice farmers to cut output earlier this year to prevent another round of oversupply that may cause prices to plummet. He noted there are no plans in place to rollout a rice-buying scheme similar to what past governments had done to support the market.

And it is not just the farmers in Thailand facing obstacles. Mr Saint-Andre admits 2018 has been challenging for Yara, but the company was still able to record growth. Since many elements, such as weather and crop economics, are out of the company’s control, it can be hard to predict the prospects for next year, but Mr Saint-Andre is optimistic.

“We are growing, but that growth has been small this year. Our ambitions are bigger. If we grow five percent this year, we want to improve that to 20 percent next year. However, we don’t completely control this since there are many factors out of our control. There is no crystal ball when it comes to seeing our outlook,” Mr Saint-Andre explains. ■



PHOTO: YARA (THAILAND)

Above left: Yara (Thailand) Ltd. Managing Director, Mr Mehdi Saint-Andre explained the brand’s Viking identity during a recent press event. Above: The company’s fertilisers are being used by many Thai durian farmers who are enjoying success.

Facts

■ The Thai Supreme Court found that Yara’s intellectual property rights were violated by competitors

■ Other Thai companies were using Yara’s Viking ship logo and Viking fertiliser name causing brand confusion

■ Yara is currently undertaking a significant branding campaign so it’s known as the only Viking fertiliser in Thailand

■ Yara Thailand 4.0 strategy supports the government’s Thailand 4.0 push supporting SMEs and digital innovation

■ H.M. King Rama V brought Yara fertilisers to Thailand in 1907 after a trip to Norway

■ Yara works with 20 Thai crops with rubber being its biggest market and durian the fastest growing segment



PHOTO: MULTICONSULT

With more than 100 years of experience, Multiconsult is arguably Norway's leading engineering consultancy.

Same Face, New Place

CHEYENNE HOLLIS

The firm also has ambitious international expansion plans with its subsidiary, Multiconsult Asia, leading the charge in the region.

Multiconsult is no stranger in Norway with nearly 30 offices and 3,000 employees. The engineering and design consultancy has been working overseas for 40 years, but it began ramping up its global presence in 2013 as part of its 3-2-1 strategic vision.

The firm established a separate Asian subsidiary in March 2013 to assist with these expansion plans. A Bangkok branch joined the Singapore office last year allowing the firm to continue the momentum. Renewable energy is among the company's primary focuses as Multiconsult looks to bring its expertise and knowledge to Southeast Asia.

"The rapid climate change globally has created a focus and high demand for sustainable solutions when it comes to energy, water and the environment. This is why our focus in Asia is on these disciplines," Mr Erik Berger, Sales Manager Asia for Multiconsult, said.

Fuel, oil and coal power plants are prevalent in Southeast Asia at the

moment. However, these are harmful for the environment and are becoming increasingly expensive to operate. This has led governments in Asia to actively look at renewable alternatives, a field Multiconsult knows very well.

"Norway is one of the very few countries in the world running on 100 percent renewable energy. What's more, we've done this for more than a century," Mr Berger detailed. "Multiconsult has a unique competence and experience in the development of clean energy projects having been working in Norway all this time."

In 2016, the company updated the 3-2-1 strategic vision having hit most of its targets. The 3-2-1 GO strategy was rolled out and with it came a greater emphasis on its renewable energy international expansion efforts.

"Our long term goal is to increase our presence and market share in the region. We hope to this significantly over the next three to five years," Mr

Berger pointed out. "We aim to be one of the leading actors when it comes to delivering sustainable consultancy services for renewable energy projects in Asia."

Of course, Multiconsult is not only focused on renewable energy. Mr Berger noted the firm is skilled in many disciplines and hopes to share its expertise in these fields as well.

"Another area where we want to contribute is water resource management. Climate change has brought a lot of issues related to environmental disasters and water resource management. We have a large team of climate change specialists who can contribute knowledge to improving this area in Asia," Mr Berger stated. "This is something that is very important, especially in this region. Managing disasters and mitigating flood risks is something many Southeast Asian countries need to consider."

Building a brand

According to Mr Berger, the main challenge Multiconsult faces in Southeast Asia is building its brand and becoming a well-known and trusted company. In order to accomplish this, the company is working closely with international banks, donor organisations, embassies and chambers of commerce in the region. The goal is to prove it can deliver the best possible results.

"We are visiting with a lot of clients

and potential clients while participating in important conferences and summits around the region," Mr Berger reported. "We are confident that building up a solid brand known for high-quality work and sustainable, innovative solutions will help us increase our presence locally. We are gaining traction in the region and winning more projects."

Multiconsult primarily works with local clients such as the Asian Development Bank, SN Power, local governments, the Mekong River Commission and independent power producers. The company also serves Norwegian companies with a presence in Asia from time to time, but the main focus is on local entities.

"We are working on a number of hydropower projects in Laos as well as Malaysia and Papua New Guinea. We are also doing a study on the Mekong River Basin development," Mr Berger detailed. "Multiconsult has other projects in Myanmar, Pakistan, Nepal and Malaysia. The company is now focusing on the Philippines, Vietnam, Cambodia, Indonesia, Thailand and the Pacific Islands."

Mr Berger believes the key for Multiconsult in Southeast Asia is showing people how they are different. While the firm is known for its industry leading work in Norway, it needs to show its capabilities in the region in order to gain further trust.

"At Multiconsult, we leverage our in-house team who are skilled and experts in their respective fields. We combine our deep knowledge with state-of-the-art technology and tools to create the best possible solutions," Mr Berger said. "For example, we have opened power

plants that are completely paperless. The project does not need any paper since everything can be recorded digitally."

Perhaps the greatest distinction between Multiconsult and other companies is its ability to carry a project from the initial stage of investigations and surveys to design and construction and through to completion. And since Multiconsult experts are all in-house staff, they are not reliant on freelancers who can sometimes be unreliable.

"Another thing people realise when working with us is our commitment to customer satisfaction. We aim to be the industry leader at meeting customer expectations," Mr Berger said. "One of our top priorities is to have a reputation for achieving customer satisfaction. We are confident that clients in Southeast Asia will see this when they work with Multiconsult. We may be new to the region, but as a company we have a proven track record."

Regional renewables

Hydropower is expected to play a major role in the energy sector in most Southeast Asian countries, according to Mr Berger. He added market trends and governmental power development plans show very ambitious goals regarding the development of hydropower in the region during the next decade with most countries set to be involved in one form or another.

Of course, hydropower is not the only renewable energy source available in Southeast Asia. Wind and solar energy may not yet be accepted like hydropower is in the region, but that doesn't mean there isn't room for it.

"There is a lot of discussion on

what the best possible solution regarding renewable energy in Southeast Asia. Hydropower has had a lot of success. Small-scale hydro is also a source that has become more popular," Mr Berger said. "In terms of potential, offshore wind is a source that could greatly benefit the region. The same can be said for floating solar and other renewable energy sources."

He continues, "The key is to be open minded when it comes to new solutions. Most countries want renewable energy solutions and they already understand the benefits of them. However, it is important to be flexible since what works best in one location may not always be as effective somewhere else."

Renewable energy will have a positive impact in Asia moving forward, but it will also bring out new issues that are going to need to be addressed.

"While there is a lot of potential for wind, solar and hybrid energy projects in the region, there are also challenges that come along with it. As more renewable energy comes onto power grids, there will be a need for storage projects," Mr Berger noted. "Projects such as pump storage will be necessary to stabilise the energy grid. There is also a huge potential for interconnection between the various national grids in Asia with a common grid for the trade of power a future possibility."

Before that becomes a reality, grid infrastructure will need to be addressed by individual countries. In some cases, this creates a chicken and the egg scenario. The issue is something the firm, which has developed a deep understanding of power transmission and distribution, is seeing first hand.

"Sometimes it is a question of what comes first. Do you focus on improving the grid infrastructure and then build the renewable energy projects or do you get the renewable energy online and then put efforts into getting the grid up to speed? It is a question that will need to be answered," Mr Berger explained. ■



PHOTO: MULTICONSULT

Above left: Multiconsult is working on several hydropower projects in Laos.
Above: In addition to renewable energy, the company is also taking on water resource management projects in Asia

Facts

- In 2013, Multiconsult established a separate Asian subsidiary and opened a Singapore office
- The company is currently working on working hydropower projects in Laos, Malaysia and Papua New Guinea
- Multiconsult clients include Asian Development Bank, SN Power, local governments and the Mekong River Commission
- The company has more than 100 years' experience in Norway and has 30 offices in the country
- For more information, visit www.multiconsultgroup.com or email erik.berger@multiconsultgroup.com



Turning waste into a useful end product is a challenge. In the energy sector, the key to turning both solid and heat waste into something beneficial has been discovered by Viking Heat Engines.

Waste Powered

CHEYENNE HOLLIS

Research from the US Department of Energy and Lawrence Livermore National Laboratory found more than 50 percent of the energy generated in the world today ends up being wasted as heat.

That's because more than half of this heat generation is less than 120 degrees Celsius.

Any heat produced below this temperature is difficult to turn into something useful. Viking Heat Engines saw this problem and looked to find a solution. The company began with the idea to produce electricity from low temperature heat and to make the best Organic Rankine Cycle (ORC) machine in the world. Starting from scratch in 2009, the firm needed to find partners.

"We knew that to be successful we would have to use the best experts in the

world and turned to AVL Schrick GmbH (AVL), the world's largest engine design company, for assistance," Mr Tor Hodne, CEO and Managing Director at Viking Heat Engines, explains. "They put a team of 30 highly-skilled engineers on the task, who were supervised by us. The result was a brilliantly-designed piston engine, which was used as an expander in our CraftEngine."

The CraftEngine runs on any kind of waste heat and produces electricity. It can be used in numerous processes and sectors. Viking Heat Engines has already found success with small-scale

waste to energy systems, with biomass waste systems and with diesel and gas gensets. The company is now developing a large engine series that will allow the CraftEngine to be used in the geothermal market. The new product should be available in 2020.

Viking Heat Engines is also confident in the CraftEngine's ability to have a positive impact on the maritime industry. New International Maritime Organisation (IMO) sulphur emissions regulations set to take effect in less than a year means there are more than 50,000 merchant ships with engines that generate waste heat which could benefit from using the CraftEngine.

"At this stage we are focusing quite heavily on the shipping market. The reason is the new IMO regulations on sulphur emissions which come into effect early 2019," Mr Hodne notes. "Under the new regulations many ship owners will switch to new fuels with low Sulphur content and the CraftEngine will save them around five percent on their fuel costs. In these cases, we see a two-year payback and this is very attractive to the ship owners."



PHOTO: VIKING HEAT ENGINES

Vessels equipped with a CraftEngine on-board are able to produce a certain amount of electricity from the waste heat generated by the engine. This electricity allows the ship to reduce power from, or even turn off its auxiliary engines and run from the energy being generated by the CraftEngine. This in turn reduces fuel consumption and ultimately carbon dioxide emissions helping ships meet IMO regulations in addition to the cost savings provided.

Seeking heat

The company started by transforming waste heat into electricity, but it would later find the piston engine innovation used as an expander in the CraftEngine had other applications. However, this discovery required an outside point of view.

"The piston expander was specifically designed to handle temperatures in the range of 80 to 200 degrees Celsius, which is a great range to cover since most of the waste heat today is available in this temperature range," Mr Hodne states. "Now, during the summer of 2015, we had a visitor

from Chemours, the previous chemicals division of Dupont, comment that our piston expander was truly amazing in that it could handle these temperatures and asked us whether we had considered to also use it as a compressor in a heat pump application."

He continues, "The thought hadn't really crossed our mind too much, but the Chemours representative told us that if we could do it, we would have the fast-growing high temperature heat pump market pretty much to ourselves. Long story short, we went ahead and had the first prototype ready eight months later. We set an unofficial world record, producing 150 degrees Celsius with the innovation. This is a temperature that a large number of industries today can only obtain by burning fossil fuels."

The prototype would eventually become the HeatBooster, a heat pump that uses electricity to raise the temperature of a heat source up to 160 degrees Celsius. Currently, coal, oil, gas or electric heaters are used for this purpose but these create significant CO₂ emissions as well as excess low temperature heat that ends up being wasted.

Mr Hodne points out that there are a great deal of industrial processes using heat above 100 degrees Celsius across a wide range of industries including the food, paper and chemical sectors. The heat is required for drying, pasteurising, distillation, evaporation, boiling, laundering and colouring processes.

"Today, these companies typically burn gas, oil or even coal to produce the required temperatures. After the process, the heat is often wasted at temperatures below 100 degrees Celsius," Mr Hodne says. "A HeatBooster can reuse this low temperature waste heat, lift it back to the temperature necessary in the process and reuse the energy which would otherwise be wasted. By doing so we can actually switch off the fossil fuel heaters altogether."

The environmental benefits of the HeatBooster could be far reaching. A study performed by Delta Energy and Environment found the technical market potential of heat demand in the 100-150 Celsius range within the USA and EU to be nearly 500 terawatt hours. Of this amount, close to 15 percent of the demand is practically reachable, which would equate to 15,000 HeatBoosters.

Were Viking Heat Engines able to install that number of HeatBoosters, 32 million tonnes of CO₂ would be saved. That total is three percent of the World's CO₂ reduction target for any given year and it doesn't even factor in China, India, Japan, South Korea and some of the world's other large markets.

Powering the future

Despite being in business less

than a decade, the Viking Heat Engines team has a lot to show for their efforts. Its products are already being used in Norway, the UK, Germany and Japan and several well-known international firms are in discussion with the company.

"Starting a new company is always challenging. For us, having spent more than NOK 400 million to develop our fabulous products, obtaining financing has always been a tough battle," Mr Hodne says. "But we are now well on our way to making commercial headlines and our investors will surely be rewarded in the end."

As one of the first Norwegian sustainable energy technologies to venture out globally, Viking Heat Engines is looking for new opportunities with Asia a market of special interest. The company is already working on a few demo projects in Singapore and Indonesia and it hopes to gain momentum in the region as soon as the units are operational.

"Asia is very important to us for many reasons. First of all, the market opportunities are great. Also, a large portion of our management team has spent time in the region. Personally, I lived two years in Indonesia, two years in China and two years in Singapore," Mr Hodne recalls. "Many of the business connections made during those days are still valuable to us now. We need to be patient, but once we make a breakthrough in the region we will see a lot of sales."

Mr Hodne is enthusiastic about the team at Viking Heat Engines but adds it will be important for the company to connect with distribution partners that can market, sell, install and maintain the units globally.

"Everyone here is really passionate about what we do. Our vision is to accelerate the world's energy transition towards a sustainable future. And we are hard at work getting there," Mr Hodne concludes. "That said, we will need even more commercial force when going into new markets. We continue to look for potential distribution arrangements and business cooperation with companies in Southeast Asia." ■

Facts

- Viking Heat Engines was founded in 2009
- The company's CraftEngine turns low temperature waste heat into electricity
- More than 50 percent of the energy generated in the world is wasted
- Ships can use the CraftEngine to generate power and cut fuel consumption
- The HeatBooster is a heat pump that raises the temperature of a heat source
- Viking Heat Engines' products are used in eight countries



PHOTO: QUARTL

Many islands in Southeast Asia rely on gas powered generators for electricity. These are problematic for a number of reasons.

Powering Islands

CHEYENNE HOLLIS

However, one firm may have found a way to power islands with renewable electricity.

It was during a trip to Santo Niño in the Philippines when Mr Knut Kise, President of Spirit Electricity, began to see a potential solution to powering small islands in remote locations. His team was there to promote solar power to the island community which up until that point had been entirely reliant on diesel power.

Mr Kise explained the islands of Santo Niño only had electricity for eight hours a day. In addition to the limitations, diesel power was both expensive and bad for the environment. Solar power would offer the island a cheaper, cleaner alternative. But, he realised there was the potential for something greater during his time here.

"Seeing this island with plenty of room for dams, lots of people and no

power during daytime really made me think about a solution. We were there to promote solar power, but my background is in small hydro power," Mr Kise recalled. "I knew Framo, a Norwegian pump manufacturer delivered salt water pumps to ships and offshore installations. I wanted to put all of these elements together."

His stay on Santo Niño provided Mr Kise with the time to do just that. He recognised it was impossible for a cheap power source, such as coal, to exist on the island. Solar power was an alternative. However, it was not a stable power source and would only help during daytime hours.

"Here you have this island in the middle of the ocean. There is a lot of sun and salt water, but there aren't many

jobs. The work that is available is made difficult by the fact there isn't constant electricity. For example, fishermen must travel hours to get ice before they can even start catching fish," Mr Kise reported. "But, if you combined solar power with pump storage generation, it would be feasible to create constant electricity while cutting the reliance on diesel power by up to 95 percent."

Mr Kise and his team would spend a couple of months ironing out the concept eventually building the Hybrid Solar Powered Pump Storage solution. The project would require a salt water pond with a dam to be built 80 to 400 metres above sea level, salt water pumps, turbines, pipes and solar panels and inverters.

"This is similar to traditional pump storage facilities found elsewhere in the world. Cheap power is used to pump up water to the reservoir at night when the price is low. During the day, the turbines are then used to produce power when the price for electricity is high," Mr Kise said. "Essentially, I view the pond of sea water on the island as a battery that can be used as a stable, continuing source of electricity for the inhabitants."

Spirit Electricity conducted

feasibilities studies on the Hybrid Solar Powered Pump Storage solution and the potential cost savings is significant. For example, Santo Niño is currently paying USD 0.28 cost per kilowatt hour (c/kWh) but, according to Mr Kise, it could be possible to get the price to less than USD 0.15 US c/kWh with Hybrid Solar Powered Pump Storage.

"With 15-year financing, I believe we can deliver at least 50 percent lower electricity prices and over time these will be even lower," Mr Kise pointed out. "It would also reduce the costs associated with buying diesel including transportation to the island."

The benefits extend beyond cost savings. Mr Kise used the example of seafood farming which could be done in the salt water dam. This, along with the possibility of 24-hour cold storage, could allow a small island to carry out seafood processing and shipping out the finished product.

Additionally, having electricity on a 24-hour basis would greatly improve quality of life. Currently, schools on Santo Niño cannot carry out any computer training during the day since power is only available from 4 pm to midnight. Students are required to come in during the evening to complete any assignments requiring a computer.

Needing a spark

Santo Niño is not the only island in Southeast Asia dealing with these problems. Mr Kise estimated that there are at least 300 islands in the Philippines currently powered by diesel with more in Indonesia, Vietnam and southern Thailand.

Spirit Electricity is working with

several partners on the project including Framo, Energi-Teknikk, REC Group and Eltek who are conducting a theoretical study on the Hybrid Solar Powered Pump Storage control system. They will soon be ready to conduct calculations on a pilot site, but finding one has proven to be difficult.

"We have reached out to sites in both the Philippines and Vietnam, but have not heard anything back. We have also sent offers to Guam and the Solomon Islands. These have been met with no reply as well," Mr Kise commented. "We are in talks with the Electricity Generating Authority of Thailand regarding a site in Trat, but nothing is available at the moment. We have also not had a reply about an offer we sent to Ko Pha Ngan in southern Thailand."

The lack of action has been frustrating for Mr Kise who believes success on a pilot site will prove the Hybrid Solar Powered Pump Storage's feasibility. It mirrors a similar roadblock he has encountered with the Thai Royal Irrigation Department (RID) and highlights the struggles foreign renewable energy firms are encountering in Southeast Asia.

"Projects like this and the Hybrid Solar Powered Pump Storage can help out many people. But they face a lot of challenges at the local level getting started," Mr Kise said. "It is extremely important to get a test site up and running to show everyone the potential of this innovation. Once local authorities see it working, they could be more willing to embrace it."

The firm is facing some challenges, but the suppliers are ready to go. Once a pilot site for Hybrid Solar Powered Pump

Storage is approved, Spirit Electricity and its partners could have everything up and running in as little as 15 months.

"The delivery time for pumps, turbines and generators is estimated to be 12 months. We are assuming the construction of the dam, powerhouse and laying of the pipes can be done while waiting for the equipment," Mr Kise stated. "This means it would take roughly 15 months to complete, but this is only an estimate. The Asia Development Bank is interested and we have another entity willing to be partner up to 25 percent. At the moment, we really need a pilot site to turn this into a reality."

Protecting the environment

The Hybrid Solar Powered Pump Storage solution has a positive environmental impact in that it would cut greenhouse gas emissions. Mr Kise also explained it is possible to install a reverse osmosis fresh water maker at the site. This would aid in the production of drinking water in areas lacking the resource or dealing with contaminated water.

However, bringing salt water on land can harm the environment, especially in smaller spaces. Vegetation, crops and drinking water can all be affected. Flood risks are also increased since soils with high salinity levels struggle to absorb rainfall. Additionally, salt can corrode brick and concrete placing housing and infrastructure in danger.

"We will be very careful in terms of where the dam is placed. It must be just above a beach with no houses below. It will also be placed as far away from agricultural areas as possible," Mr Kise noted. "We are looking into different dam designs including splitting them up in smaller units. Doing this can limit potential breaches."

Mr Kise added Hybrid Solar Powered Pump Storage would feature a double membrane with leakage indicators for extra protection. Any leakage would be returned to the ocean via a designed channel or pipe to minimise possible contact with the local environment. ■



PHOTO: PRIVATE

Above left: Hybrid Solar Powered Pump Storage is already used in several European countries. Above: Mr Knut Kise, President of Spirit Electricity, during his trip to Santo Niño in the Philippines.

Facts

- The Hybrid Solar Powered Pump Storage solution is designed to help island communities
- Many smaller islands in Southeast Asia are reliant on diesel power generation
- Hybrid Solar Powered Pump Storage generate electricity for less than USD 0.15 US c/kWh
- Spirit Electricity is currently looking for pilot site in the region
- Once a site is approved, the company estimates it will take 15 months to get it running



PHOTO: GOLAR POWER

Golar LNG formed Golar Power to offer integrated downstream solutions and grow LNG-based opportunities globally.

Innovating LNG Solutions

CHEYENNE HOLLIS

The joint venture with Stonepeak Infrastructure Partners has created several innovations to make this possible by owning and operating floating storage and regasification units (FSRUs) as well as the associated terminal and power generation infrastructure.

Many countries in Asia still rely on diesel or coal to generate electricity despite the high costs and pollution these power sources bring. Alternatively, natural gas is the cleanest fossil fuel available and is a safe, sustainable alternative with an abundance of global reserves.

Recognising the benefits LNG could have on the energy sector, Golar Power continues to develop opportunities in downstream power projects. The firm is leveraging its expertise in floating storage and regasification units (FSRUs) as well as import terminal and pipeline infrastructure to create innovative LNG energy solutions.

"We enable underserved countries and regions to access and to utilise the superior benefits of LNG within the

energy matrix. It is worth noting that new power projects are being designed to cater specifically for the LNG solutions Golar Power proposes, standing as a confirmation of our processes effectiveness and reliability over the project's lifetime," Mr Robert Carter, Golar Power's Chief Commercial Officer, explains.

He notes that LNG-supplied power can have the greatest impact in countries depending extensively on imported coal and petroleum fuels. Lacking alternatives, several countries in Southeast Asia relying on diesel power generation fall into that group. At the moment, rising fuel prices prevent it from being a cost effective solution

"New policies are driving practical

changes in the power sector, steering countries away from those fuels to find substitutes. As renewable energies lack scalable storage technology today, and because some countries are reluctant to adopt nuclear energy due to safety considerations, natural gas is being considered as an alternative that bridges those gaps," Mr Carter says. "LNG's impact is therefore linked to the scale of the switching opportunity, as can be seen in China that is now the second largest LNG importer."

And while the environmental benefits of using LNG instead of diesel are well known and scientifically proven, the cost benefits and reliability of LNG power generation can be significant and isn't widely realised.

"From a cost perspective, regasified LNG has proven its reliability as a fuel for power generation, providing flexibility, scalability and environmental permitting over diesel. In some global markets, we see the cost-saving potential of LNG approaching 50 percent over diesel," Mr Carter states. "Our infrastructure is designed to operate without interruption in diverse weather conditions. With strict environmental policies progressively limiting the usage of diesel in the power and transport sector, LNG is gradually entering new segments and carrying those benefits to the market."

To that end, Golar Power is

constantly looking for innovative ways to introduce LNG solutions while working with new partners to develop the gas-to-power processes. The end goal is to create the best possible LNG solution for each area.

"Projects are very different from one country to another, or even from one location to another within the same state. In some projects, the scope of work requires providing the full range from gas supply, floating regasification, mooring infrastructure to pipeline for delivery at the power plant, whereas others require a more limited scope of work, which does not come with less complexity," Mr Carter details.

Fully capable

The 1,550 MW Porto de Sergipe gas-to-power project in Brazil has reached financial closing earlier this year and is now more than 70 percent complete, according to Mr Carter. Everything is on track for the facility to commence operations next year. The project will showcase Golar Power's full capabilities once it is up-and-running.

"The construction site is supported by more than 2,000 workers occupied with the installation of different equipment components such as gas turbines, steam turbine, generators, heat recovery steam generators, electrical transformers, switchyard, substation and transmission lines, pipeline and mooring infrastructure for the FSRU" Mr Carter says. "Golar will also be delivering the Golar Nanook, a new FSRU specifically built for the project, and it is expected to be delivered to site in the first half of 2019."

The company created the project by working jointly with international and local partners as it looks to provide

additional power to the grid and help meet this region's growing electricity demand.

"The project is of strategic importance to Golar Power and Brazil, as it represents a critical entry point for LNG into the country and acts as a system backup for the intermittent hydropower generation capacity in the area," Mr Carter notes. "Golar Power sees a number of attractive opportunities to increase the demand for environmentally friendly LNG solutions and to substitute more expensive fuel based consumption. Using spare bulk capacity from our vessel, we are targeting to further develop the downstream industrial and commercial markets with LNG supply."

Golar Power is currently exploring opportunities on every continent and the firm holds a long-standing interest in Southeast Asia. That's because it views the region as a leading market for developing LNG-powered solutions.

"Golar Power owns and operates two LNG carriers the Golar Celsius and Golar Penguin dedicated to supply global markets with liquefied natural gas. We are also looking for new development opportunities throughout Southeast Asia by providing reliable and flexible solutions to meet the increasing demand and have the capacity to convert our LNG Carriers into FSRUs under short delivery time" Mr Carter reports.

Floating solutions

Golar Power is using floating solutions to support its goals, including LNG-to-energy initiatives. The company's FSRUs allow for shipboard LNG regasification, which can then be dispatched to onshore facilities. This requires less upfront investment than traditional onshore regasification plants

while providing countries without LNG infrastructure flexible solutions and faster access to the marketplace.

"The floating units can be moored away from shore providing a long term alternative to the major construction work required by onshore regasification plants as well as the related environmental land permitting issues," Mr Carter says. "Golar achieved the world's first FSRU conversion, the Golar Spirit, which went into operation in 2008."

The company is currently looking to take advantage of its available shipping resources to secure additional FSRUs to long-term commitments. Mr Carter adds the company is always searching for ways to maximise the usage of its regasification floating assets around the world.

"We consider every project with the same perspective of presenting the opportunity to enhance LNG usage and provide practical alternatives to more expensive or polluting fuels," Mr Carter says. "Golar Power has acquired a unique expertise of forming strategic alliances with credible international players and being able to successfully lead teams on different projects across the globe."

This experience is something Golar Power can leverage in Asia, a region where it can continue to grow. With additional gas supply expected from the US and new export terminals coming online, the company expects the price of LNG to remain competitive in the coming years ensuring LNG-to-power generation is an attractive alternative.

"We are deeply involved in diverse opportunities in Asia, providing end users with reliable, safe and environmentally responsible means of power generation. Golar Power is committed to the development of downstream activities and to opening up new markets for LNG and FSRUs," Mr Carter concludes. ■



PHOTO: GOLAR POWER

Above left: The Golar Nanook, the FSRU built for the Sergipe gas-to-power project. Above: Power equipment under installation at Golar Power's Sergipe site in Brazil.

Facts

- Golar Power is a joint venture between Golar LNG and Stonepeak Infrastructure Partners
- The company's 1,550 MW Porto de Sergipe gas-to-power project in Brazil is 70 percent complete
- LNG-supplied power can have the greatest impact in countries relying on coal or petroleum fuels
- LNG-to-power has a cost-saving potential approaching 50 percent over diesel in some markets
- The company owns and operates two LNG carriers dedicated to supplying global markets with LNG
- In 2008, Golar achieved the world's first FSRU conversion with the Golar Spirit
- Golar Power continues to explore global opportunities and holds a long-standing interest in Southeast Asia



The Norwegian Australian Chamber of Commerce was founded three years ago, but hasn't wasted any time establishing itself.

Rising Down Under

CHEYENNE HOLLIS

With nearly 100 members, the organisation wants to find new ways to support its members and bring more companies down under. The Norwegian British Chamber of Commerce and the Norwegian American Chamber of Commerce are both more than 100 years old.

Meanwhile, the Swedish-Australian Chamber of Commerce has been in existence since 1911. Given this history, one might think that a Norwegian chamber in Australia would boast a similar lineage, but it took until 2015 for the Norwegian Australian Chamber of Commerce (NACC) to come into existence.

"The NACC wasn't something that had been in the pipeline before we launched it. It ended up filling a gap," Ms Sophia Demetriades Toftdahl, NACC President, notes. "There was the Scandinavian Club before us, but it was very much an old-school group and a lot of members grew old. No one wanted to be a leader and it sort of fizzled away."

Ms Demetriades Toftdahl believes the closure of the Sjømannskirken [the Norwegian Seaman's Church] in Sydney was a key turning point. The church needed funding and more volunteering to survive, but no one in the Norwegian community was aware of this until it was too late. If the Norwegian community in Australia had been organised, this could have been prevented. The closure of the Sjømannskirken was unfortunate, but it would help lead others to understand the need for community.

"Previously, no one had the drive to start the chamber. There was a group of us that thought we should do it," Ms Demetriades Toftdahl says. "The embassy was cautious about their involvement and

support at first, but several companies said they would be interested as long as we didn't host too many events they had to be present at".

Ms Demetriades Toftdahl's interests, experience and studies provided a lot of useful resources for setting up the NACC. She also understood the importance of community being so far away from Norway. "I've always been involved in building communities that build strength, and this is especially necessary when you are this far away from Norway. Living or working in a place as far away from Norway as Australia is very different from living in a place closer to home such as Denmark or Germany. The distance itself makes it strange even if the country and it's people are nice," Ms Demetriades Toftdahl points out. "Being a part of NACC is more than simply a business decision. It's a place of belonging, community, trust and friendship".

In order to be successful, the NACC needed a clear, actionable plan that would benefit members and show the Norwegian embassy in Australia they were serious in their efforts.

"Our first step was to create a strategic plan. We started organising



PHOTO: NACC

events and eventually launched groups in Perth and Melbourne. This allowed us to cover the cities with the most Norwegian businesses," Ms Demetriades Toftdahl details. "After about one year of getting it off the ground, the embassy got involved which was a big boost for us. It would have been nice to have their support from the start, but I also understand why they were cautious. They wanted us to prove that we were serious and in it for the long haul."

The geography of Australia presents the NACC with a few logistical issues that some other Norwegian Chamber of Commerce chapters may not have to deal with. For example, Sydney is more than a four-hour flight away from Perth.

"We have to travel a bit and needed to set up communication via social media to keep in touch with all of our members," Ms Demetriades Toftdahl says. "It is quite important to reach out to everyone. Given the distance between our branches, we continue to look at ways we can improve our communication to ensure everyone can stay in touch." Distance and communication challenges can also be an advantage. Those of us who travel a lot all make sure to catch up with each other when we are in town.

Award-winning effort

Despite being only three-years old, the NACC has already been recognised for its efforts. At the APAC 2018 International Chamber of Commerce Awards, it was named as the Small Chamber of the Year. Other winners included the British Malaysian Chamber of Commerce and the Federation of Karnataka Chamber of Commerce & Industry, a pair of organisations with more than 150 years of experience combined.

"This isn't the world's biggest award, but there aren't that many awards for chambers to win. We feel like it is a great achievement and it validates our efforts in many ways," Ms Demetriades Toftdahl proclaims. "We were judged on our strategic plan and rapid growth, which proves our efforts were worth it. It wasn't just a PR stunt."

For the entire team at the NACC, the past three years have been an exhausting yet rewarding experience. While members have seen the NACC's efforts in organising events, the efforts behind the scenes to get the organisation off the ground may be overlooked.

"It is a lot of work. We had to show we were serious as a business network before we could even officially apply to be a chamber. Doing that required us to jump through quite a few hoops," Ms Demetriades Toftdahl explains. "There was a lot of paperwork and expenses, which we had to pay for out of our own pocket. We learned a lot and it was a lot of fun, but it wasn't easy to get this going."

The NACC may be a relative newcomer, but Ms Demetriades Toftdahl is confident Norwegian businesses are already seeing the benefits that having a chamber brings.

"Not having a chamber in Australia puts Norwegian companies at a disadvantage compared to our European and Asian counterparts. We are stronger together," Ms Demetriades Toftdahl states. "Norwegian businesses here have experienced both having and not having a chamber of commerce and they all mention how they can feel the difference. It is possible to get by without one, but the support and community is a valuable thing to have."

Looking ahead, the NACC is optimistic about expanding even if there are a few challenges that will need to be addressed.

"Funding is always important. It can also be difficult to find people with the drive to volunteer. People who do volunteer find the benefits of experience and networking are well worth it," Ms Demetriades Toftdahl says. "We also want to keep expanding our operations. Hiring staff and ensuring we provide real outcomes for members. The most

important thing is to keep building on what we have done. If we stagnate or simply maintain the status quo, we won't survive."

Connecting with Asia

Norwegian businesses have been eager to expand into Asia, eyeing both China and Southeast Asia where a growing middle class and strong GDP numbers have created new opportunities. However, the economy in Australia is solid with the Reserve Bank of Australia predicting GDP growth to average more than three percent in 2018 and 2019.

According to Ms Demetriades Toftdahl, this, along with Australia's high per capita income, makes it an attractive place for Norwegian businesses, especially those already in Asia.

"Australia is quite isolated. We want to connect to Asia since this is a region Norway pays a lot of attention to. Australia is closer to Asia than Norway, but at the moment it feels like we are on the outside of this activity," Ms Demetriades Toftdahl notes. "We have to connect up to Asia. Australia should be seen as a part of it, not its own separate region."

She adds that Asia shouldn't be the final destination. A number of Norwegian companies are already operating in Southeast Asia and it makes sense for these firms to at least consider Australia. The NACC is looking at ways to get Norwegian businesses in Australia more involved in Asia as well.

For businesses, new opportunities and support are an important reason to join with a chamber of commerce. However, Ms Demetriades Toftdahl urges that they also be active and contribute.

"Perhaps the most important thing about being part of a chamber is that it isn't about what you get out, but what you put in. If everyone contributes, everyone benefits," Ms Demetriades Toftdahl concludes. ■

The NACC was founded in 2015 and now has more than 100 members in its ranks

Facts

- The Norway-Australian Chamber of Commerce was founded in 2015
- The NACC currently covers Sydney, Melbourne and Perth, the three cities where the majority of Norwegian businesses are based
- The organisation won Small Chamber of the Year at the APAC 2018 International Chamber of Commerce Awards
- Nearly 100 members have joined the NACC
- NACC now works with the Norwegian Embassy as well as several consulates from Oceania nations



PHOTO: WAVETRAIN

Oslo-based Wavetrain Systems aims to improve safety at railway level crossings across the globe.

Catch the Wavetrain

CHEYENNE HOLLIS

After finding success in Europe, the company decided to spread its wings in 2015 pulling into Australia.

Level crossings represent the single biggest risk factor for global railway authorities. These areas where roads and railway tracks intersect are the location for a quarter of all train accidents, according to the European Railway Agency. Wavetrain Systems estimates there are 1,250 accidents and approximately 330 casualties in Europe each year connected to level crossings.

Recognising the need to reduce danger in this area, Wavetrain Systems outsourced a market analysis to confirm if there was an appetite for an innovative and cost-effective solution to increase safety at railway level crossings on the global level. Mr Mark Foster, who assisted with the survey and now works as the Asia Pacific Country Manager at Wavetrain Systems, notes the answer was a resounding yes.

A group of scientists at the Norwegian Seismic Array (NORSAR) originally developed the core technology that would become the key component of Wavetrain Systems functionality. The

innovation makes it possible to detect trains directly at level crossings by using acoustics. All of these components are normally located within 15 metres of the site which is different from traditional setups where the system is much further away from the crossing.

These acoustic sensors are mounted on the rails and listen for distinct sound waves generated by approaching trains. The digital data is analysed by a nearby control unit, which activates the customer's preferred warning devices, such as gates and flashing lights, at the appropriate time. The company's Level Crossing Warning System is an end-to-end SIL 2 certified product that uses SIL 4 certified acoustic sensors.

Despite its high-tech nature, the inspiration of Wavetrain Systems is actually quite simple. In an interview with Science X, NORSAR Chairman of the Board, Anders Dahle, explained, "We liken Wavetrain Systems to the Native American practice of putting one's ear to the ground. Our system is literally on the

track, listening for trains."

Mr Foster says the Wavetrain Systems solution can significantly reduce installation and life cycle costs while retaining the required quality and security at the crossing. This aspect is appealing to railway authorities worldwide but it is not the only thing the technology can help with.

"Our technology not only detects trains acoustically, but we can 'hear' anomalies in the rails themselves. So we can warn of pending rail breakages or other issues," he points out.

Southern Express

Wavetrain Systems tabbed Mr Foster to lead its Australian entity in 2015 based on the need of the market there. Cooperative Research Centre (CRC) for Rail Innovation found there were more than 725 million annual customer journeys and 720 million tonnes of freight moved across Australia via rail. Despite rail's high usage in the country, there is room for safety improvements across the board.

"There are circa 23,000 passive level crossings in Australia alone that could benefit from a system to detect trains and activate warning lights and boom gates," Mr Foster states. "These can all be upgraded to active crossings and this is why Wavetrain Systems felt the Australian market would welcome our technology."

One key decision for Wavetrain Systems was the establishment of an

Australian arm as opposed to another type of arrangement. While being a Norwegian-based company doesn't help or hurt Wavetrain Systems in Foster's view, being a registered entity allows the firm to provide clients with greater peace of mind.

"I have had to explain in our instance that we are working with the British rail business, from our Oslo headquarters, on a day to day basis. This gives my local base comfort," Mr Foster says. "It does help if a company has a local registered entity in the region. Supplier accreditation does take local content rules seriously."

Australia also serves as an ideal launching pad for Wavetrain Systems' expansion efforts in Asia. The company is already in talks with several countries and remains optimistic that it will be able to have a regional presence in the near future.

"We are actively engaged with the rail authorities in China, Taiwan, Cambodia, Thailand, Vietnam and Japan. We are working on solutions for them surrounding level crossing protection and asset monitoring also," Mr Foster details.

In Southeast Asia, rail safety isn't necessarily seen as a priority. Even as work begins on high-speed rail links between the region and China, level crossings on current lines in Thailand, Cambodia and Vietnam are quite basic with some relying on manual gates operated by on-duty guards. Mr Foster acknowledges changing current infrastructure may not be feasible.

"It is difficult to get the authorities in Southeast Asia to act on level crossing safety generally. Our progression in

that region will ultimately be asset monitoring for future rail projects," Mr Foster explains.

Looking towards the coming years, Wavetrain Systems has several goals it hopes to accomplish in addition to regional expansion that will help it improve business on multiple levels.

"In the short term, we want to achieve product type approvals which are a requirement for safety critical systems in Australia, New Zealand, United Kingdom and France. Then our system can be considered in rail project tenders without further system evaluation," Mr Foster notes. "In the long term, we want to find success in Southeast Asia, USA and Europe. Manufacture our systems under license in the regions we are active and adding cost benefit to our end users."

From Norway to Australia

The path from Norway to Australia isn't one travelled by many Norwegian businesses. For whatever reason, domestic firms do not target the land down under despite a strong economy and high spending power. There are quite a few challenges for Norwegian companies thinking about the expansion and the sheer size of the country can be overwhelming.

"Australia is a vast land and servicing all the states is expensive. There can be a lot of travel. This must be a consideration in start-up estimations and budgets," Mr Foster describes. "You also need to secure a relationship with a freight carrier that gives you all the options, such as good freight rates for air and sea, consolidated hub options out of Europe, local customs broking and local bond storage options."

And, of course, you have the usual considerations such as time zones, insurance, human resources and office space. Talent is another aspect that must be planned for. Mr Foster had experience with Wavetrain Systems and previously worked with a European-based rail business allowing for a smooth transition. Most businesses won't be as fortunate.

That being said, there are a number of things Norwegian businesses in Australia can do for support. The local business community may be small, but it can still be quite powerful. There is no better place to start than the Norwegian Australian Chamber of Commerce.

"Make contact with your local Norwegian Australian Chamber of Commerce. My early contact and on-going involvement led to numerous networking opportunities," Mr Foster proclaims. "The relationship also led to various opportunities to have the Norwegian Ambassador perform joint visits to potential clients. The support of the Embassy was invaluable and very well received in our meetings."

Additionally, Mr Foster urges those companies either in Australia or considering an expansion to engage with other Norwegian corporates already there. These conversations can often reveal useful strategies and other contacts to further your growth in the country.

As an Australian, working with Wavetrain Systems has provided Mr Foster with a first-hand look of the Norwegian culture and work environment and it has made an impression on him.

"I really envy the Norwegian culture in that when my colleagues are on leave or have left work for the day, they generally do shut-off, relax and wind-down. I can attest to the fact that this does create a healthier work environment overall, with well-rested and re-invigorated staff. This is something we Aussies could learn from," Mr Foster concludes. ■



PHOTO: WAVETRRAIN

Above left: Wavetrain sensors being installed along railroad tracks.
Above: The Wavetrain Systems Level Crossing Controller in action.

Facts

- A group of scientists at the Norwegian Seismic Array (NORSAR) developed Wavetrain Systems' technology
- The innovation detects trains directly at a level crossing by using acoustics
- Wavetrain Systems was founded in 2009
- Its registered Australian entity began operations in 2015
- Wavetrain Systems technology can reduce installation and life cycle costs
- There are 23,000 passive-level crossings in Australia that can be fitted with Wavetrain Systems
- More than 720 million tonnes of freight moved across Australia via rail
- The Norwegian Australian Chamber of Commerce helped the company in its early stages



DESIGN FUTURES

elc International Schools are places where children are active protagonists in their own learning. They comprise a family of unique schools where students base their research, discovery, and experimentation within the context of contemporary culture and learning. Those within strive to resolve dilemmas of individual and shared importance in their quest for knowledge, and understanding but most importantly, imagine possibilities for a better future.

In the daily life of elc schools, we can perceive a pronounced increase in children's creativity, the quality of their research, and their ability to access information. This facilitates the development of complex digital projects and products of knowledge, which are elaborated between children and between children and adults.

elc international schools

THE CITY SCHOOL

Ages 3-11 years
#18 Soi Arkaphat,
Sukhumvit Road 49/4,
Bangkok 10110
Tel: (662) 381-2919,
391-5901, 712-5338
Fax: (662) 391-1334

THE COUNTRY SCHOOL

Ages 2-5 years
#44 Samakee Road,
T. Tasai,
Muang Nonthaburi 11000
Tel: (662) 588-1063,
952-4147
Fax: (662) 589-4809

THE PURPLE ELEPHANT at 55

Ages 18-36 months
79 Soi 8,
Sukhumvit Road 55,
Bangkok 10110
Tel: (662) 662-7653,
662-7654, 391-4866
Fax: (662) 260-5947

THE PURPLE ELEPHANT at 39

Ages 18-36 months
61 Soi Prommitr,
Sukhumvit Road 39,
Bangkok 10110
Tel: (662) 662-4570,
662-4571,
Fax: (662) 662-4572



digital bicycles for enjoyment in the park using arduino technology
 designed by Pop and Anna (ages 8 to 9 years)



automated solar and wind-powered street cleaner using arduino technology
 designed by Caden, Fabian and India (ages 10 to 11 years)

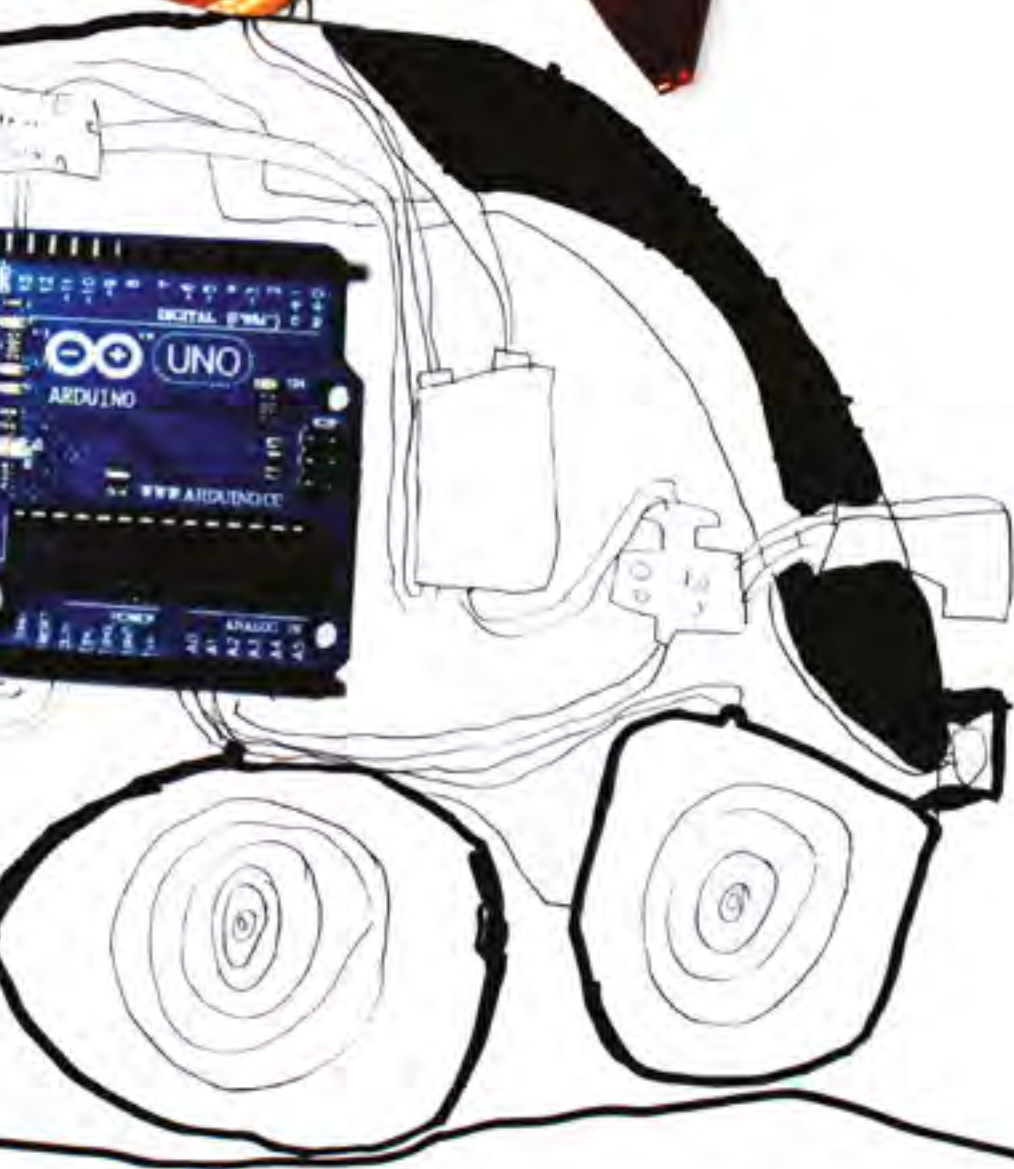




only elephants should wear ivory



elc international schools



The Norwegian Seafood Gala Dinner 2018 surpassed all expectations in showcasing seafood from the cold, clear waters of Norway. The event held on 12 October at the Mandarin Oriental Hotel in Kuala Lumpur.

Showcasing Seafood from Norway

Gunn Jorid Roset, Ambassador of Norway to Malaysia hosted this year's Seafood Gala Dinner in Kuala Lumpur attracting close to 700 guests. As always, renowned Norwegian chef Frank Næsheim and his team of culinary professionals from Norway, Malaysia and Singapore outdid each other in presenting mouth-watering dishes. Photos by Choy Peng/choypengism.blogspot.com.





7



11



8



12



9



10

1. Winner of the Malaysia Norway Business Council Award 2018, Jon Erik Steenslid of Norwegian Seafood Council with Malaysian Minister of Foreign Affairs Dato' Saifuddin Abdullah and Mr. Eric Goh, owner of Euro-Atlantic and C-Food Portions Sdn Bhd (CFP)
3. Norwegian salmon is the hero at Pink Fish, a new global restaurant concept brought to you by Chef Geir Skeie.
5. A smiling Ambassador Gunn Jorid Roset
6. Frank Næsheim and his team of culinary professionals from Norway, Malaysia and Singapore
7. Blogger Choy Peng with some of the rich pickings from the table
8. Ambassador Roset thanking Frank Næsheim and his culinary team
12. Smiling Chefs Markus Dybwad and Kenneth Loke Mun Kit, the bronze medal winner of Bocuse d'or Asia Pacific 2014, both from Fisk Seafood Bar & Market in Singapore.

EMOTION THROUGH INNOVATION

CHOOSE
the right
partner



Manufacturing a quality collection requires trust, **patience**,
knowledge, **experience** and a lot of diplomacy.

They say, behind every **great** designer,
there is a **great** manufacturer.



HIGH END JEWELRY MANUFACTURER
www.feliciadesign.com



image © Caras Ionut



PHOTO: TIQRI CORPORATION

TIQRI's founder and former CEO reminisces about the successes so far, while outlining future challenges as the company continues to evolve into an international player.

The Personal Touch

HENRI VIIRALT

This year marks the tenth year anniversary for the global software development firm and Microsoft gold partner TIQRI Corporation, which has offices in several geographies.

This October marked another significant event for the company, when founder Finn Worm-Petersen stepped down from his position as CEO. Taking the reigns over is Shamira Dias, an industry-savvy professional, who has taken on the challenge ahead in moulding TIQRI from a SME to a truly global enterprise.

I am very happy about transitioning to Chairman because Shamira has been with me for a long time – he was with me at Exilesoft for seven years (the software company Mr. Worm-Petersen founded and helmed prior to TIQRI), right up until I left with the company. He spent several years at Nasdaq-listed company VirtUSA, leading business transformation programs and a team of 300 software developers and IT

specialists," Mr Worm-Petersen says.

After stepping down from overseeing day-to-day operations, Mr. Worm-Petersen says he is still fully engaged, spending "a lot more time in the market", which subsequently allows him to take a more strategic overview of TIQRI, and how their customers experience the organisation.

"Now that we're up to 200 people, we're definitely undergoing a paradigm shift – up to this point we've been a classical SME where everybody knows everybody, and all of the sudden you're bumping into people in the staircase, wondering who that was."

Heading forward, Mr Worm-Petersen says one of the primary areas of focus is making sure all TIQRI employees

are pulling in the same direction as the company is transforming into a larger entity.

It's a tough thing at times to bring to the board, but you have to maintain a long-time perspective on what you're doing and swallowing those costs pays a dividend in the end - we now have people celebrating their 10th year work anniversaries with us at TIQRI. Investing in people has been absolutely pivotal to our success".

As the company keeps growing, another side of the equation is how to successfully manage the increasing number of teams and ensuring they are able to meet the high expectations of clients in mature markets.

"We're doing a lot of work on how teams and project management has to adapt to these new challenges. Basically, the goal is to have a series of small companies running under one umbrella company. I've always been impressed of how well IBM has managed to run a half a million-strong workforce, acting as a small company. In practice, it means there is a very short distance to travel from when something needs to be done to decision-making, without all the layers of bureaucracy in between."

TIQRI has major clients in the credit card, transportation, healthcare,

automation and sensor systems on their roster, which means dealing with extremely tech-savvy clients on a daily basis.

“The hardest part has been bringing together people from different parts of the world and organise them to work as a team. This means overcoming any obstacles, as well as establishing a mutual understanding based on the same basic goals and principles. This can be a tough job with people sitting in the same room, let alone different countries!

It was extremely tough 20 years ago when I started in Sri Lanka and we didn’t have video conferencing technology, but even with all the technological advances, at the end of the day, it’s vital to have people meet face to face - it’s the only way to move past the ‘us and them’ or ‘you and me’ sort of thing. We invite our clients to come down to spend 1-2 weeks with us, doing workshops and have a laugh and a beer – let people be people.”

One of the key initiatives to bridge the cultural gap and bring the world closer to Sri Lanka’s booming tech scene has been DEV DAY, an annual international tech conference held by TIQRI, is now in its sixth year running.

“The initial idea behind DEV DAY was that since it’s impossible for us to send all of our employees to all these conferences around the world, we started thinking why don’t we get a world-class, international conference going in Colombo instead. It helps to expose our employees to cutting-edge technologies and what the customer, living in a hi-tech environment, expects as a baseline.

In the first few years, we had some speakers from Norway joining, now they’re coming from all over the world. This year, for example, we have dr. Anita Sengupta, a rocket scientist with Elon Musk at Hyperloop One, and formerly

with NASA’s jet propulsion laboratory. Her keynote is titled ‘The next frontier; Humans on Mars’. When we have people of her calibre coming in, that adds a lot of value to the local community and inspires our people.

There are three separate tracks to choose from and we’re completely sold out with over 400 registered participants this year. I guess it’s becoming a bit of a thing, really.”

In October, Sri Lankan Prime Minister Ranil Wickremesinghe commenced on a three-day official visit to Norway, the agenda including a visit to XXL Warehouse, where the robotic warehouse technology of TIQRI-partner Element Logic is deployed.

“We’ve been working with ICT Norway and their Sri Lankan counterpart SLASSCOM over many years, playing a role in establishing their partnership and bringing more awareness of the Sri Lankan tech capabilities to Norway. Earlier this year, I had met with one of the local ministers in a private social setting, discussing how to further the cooperation between our two countries. Later, they organised the visit with the Norwegian Foreign Ministry.

One of the companies the PM visited was our partner Element Logic, whom we’ve enjoyed a successful relationship with for the last ten years. They’re on the cutting edge of warehouse automation and well on their way to becoming a billion NOK company. Overall, it was a very successful visit and I hope to see more Norwegian companies doing business with Sri Lanka, since it’s a much closer fit between our small countries than India, which tends to be the go-to outsourcing country. Mind you, the average company there has anywhere between 5,000 – 30,000 employees, which is not a great match with a Norwegian

company with 50 – 200 employees.

In terms of future prospects, Mr Worm-Petersen says the industry is becoming a lot tougher as a whole and internally it means TIQRI has several challenges to overcome. He attributes a large portion of the company’s success to long-term partnerships with their clients, playing an extended technology partner role, and being able to scale up and down as the need may be of the client. Moving forward, “business as usual” will be challenged by increasingly complex software scenarios, and shorter software lifecycles. With Artificial Intelligence (AI) as the holy grail of the tech industry, it means that there is a lot of pressure on the engineers, who have to continuously adapt to an ever-shifting landscape.

“We have to really ask ourselves why we want to grow past 200 employees – and in order to scale up, we need more resources, more people on the job and of course, more money. As the technological challenges increase, it will be increasingly difficult to remain relevant and a successful SME in our business over the next ten years. That’s my biggest concern– the minute we stop challenging ourselves and stop growing, we’re probably heading for the dust bin.

It’s an all-in game to go international with software development, it’s not about finding a bunch of guys in Asia, setting up an office and doing some Skype calls; you have to take it as seriously as you would in Norway or Brussels. The key learning from over the last decade is that there are no shortcuts or half measures – it’s boots on the ground, all in for the long-haul. It starts with engaging the community and ends with making sure your every individual employee is marching in the same direction.

It takes grit and commitment in order to globalise a small company the way we have done, but I must admit that I’m thankful I didn’t foresee all the challenges we would encounter along the way.

That being said, it’s been a most exciting and rewarding journey, and I’ve enjoyed every step of the way. I can’t wait to see what TIQRI will manage to achieve over the next decade.” ■



PHOTO: TIQRI CORPORATION

Above Left: Outgoing TIQRI Corporation CEO and now Chairman Finn Worm Petersen and incoming CEO Shamira Dias in front of the company’s Colombo office. Above: Peter D’Almeida, CEO of n*able at DEV DAY in November 2018.

Facts

- TIQRI has offices in Norway, Sweden, Australia, Sri Lanka, Singapore and Vietnam
- Key areas of expertise include digitisation and software engineering
- Fuji Xerox, Element Logic, Cushman & Wakefield, and Sensor Link are some of TIQRI’s portfolio clients
- TIQRI organises DEV Day, an annual global tech conference and Kids Can Code, a monthly coding club for kids
- has over 200 active employees



PHOTO: NORDIC TOUCH

An ambitious and unconventional Norwegian business consultancy sets its sights on becoming the go-to-market entry partner for Scandinavian companies looking toward the East.

Cultural Curiosities

HENRI VIIRALT

China and the EU in opposition to Trump's USA. The recently held 20th EU-China summit came at a time of political turmoil and uncertainty. As a result of the Trump's administration unilaterally introducing tariffs on steel and aluminium, old alliances are being broken and new battle lines are being drawn in the sand.

China and the EU are now entering a trade war with the US, as both deem those tariffs to be illegal.

The Trump administration also pulled out of the Paris climate deal in addition to the Iran nuclear agreement, both of which are strongly backed by the EU and China. Both Beijing and Brussels are now finding themselves siding on several issues, in stark opposition with Washington.

As trading with the US lately has been aggravated, many businesses are now looking for new opportunities in foreign markets. The bond between China and the EU is becoming stronger than ever, and the Nordic region, too, is waking up to the importance of having China as a key trade partner. Nordic Touch sees an opportunity to grow and improve this relationship.

What is Nordic Touch?

Nordic Touch is a Lillehammer-based business consultancy, which aims to position itself as a company that will be the go-to partner for Norwegian (and later Scandinavian) businesses looking to enter the Chinese market, helping them to smoothly navigate the bureaucratic waters and assist in bridging the gaps between business cultures. It is also helped by a 24-year-old entrepreneur.

Even Moss Lundemo, the CEO of Nordic Touch grew up in a entrepreneurial family. His parents ran several flower shops, and also sold garden furniture. Mr Lundemo explains how he from a very early age spent all his time around the family businesses, interacting with the customers – which is what he liked best. “I made my first sale before turning 10”, he says.

As a young sports enthusiast, he became a professional water skier, which enabled him to go to train abroad in

America, unaccompanied, at the age of 13.

“It really opened my eyes, being exposed to a different culture and seeing how society operates in a different part of the world, being that young. I think that developing an international perspective at an early age is certainly something that has helped me achieve success in business later on,” Mr Lundemo says.

At the age of 15, Lundemo joined the board of the family business that quickly increased their number of flower shops and garden centers across the country, effectively turning each dinner at home in to a board meeting.

With his understanding of the intricacies and complexities of running a growing business, Lundemo started setting his eyes on new challenges.

“During my studies, I had an idea of selling bottled Norwegian fresh air as a luxury good on the Chinese market – not because it was a particularly novel or brilliant idea, but because I really wanted to test my capabilities of commercialise an idea. I figured that if I manage to successfully sell air, I could probably sell anything,” Says Lundemo.

During that time, Lundemo began to capture interest for the Chinese market. He raised money for his idea from private investors as well as receiving funding from Innovation Norway to map out the market opportunity for selling Norwegian air. Albeit being young and at that time inexperienced, Mr Lundemo was exceptional ambitious and forward thinking. He named his company Nordic

Touch from the beginning, making it easier pivoting into interesting business areas, other than selling air.

His first business idea led him to Beijing, where he quickly bonded with a wide range of business associates in a variety of fields. Many of them still working with Lundemo and Nordic Touch today.

During his studies he did not only come up with his first business idea, he was also fortunate enough to work for the Lillehammer municipality as a consultant, helping them work with their Chinese Olympic city counterpart and sister city, Zhangjiakou. The work revolved largely around assisting them with cultural issues, translations and business development. This made a great impact on his increasing traction and network in China.

Although Mr Lundemo ultimately decided not to sell bottled air to China, he sold the air to several tourism and gift shops in Norway. As a result of his enthusiasm for business, Mr Lundemo has over the two last years pivoted his company from bottled air to investing in resources that helped map out the Chinese market, and identify the various opportunities for Norwegian goods and services. Since he have been representing a handful Norwegian companies trying to enter China, he began to notice pain points.

"The problem I constantly see Norwegian companies - and Nordic ones for that matter - struggle with the most, is that they often are faced with a cultural crash, which results in frustration and lack of willingness to adapt to the different way of doing business in China".

Mr Lundemo says that this cultural divide is one of the key challenges that Nordic Touch is trying to solve. Helping him achieve his goal, is a team

of experienced industry veterans coming from varied backgrounds. This enables Nordic Touch, as a complete team, which is able to deliver the whole chain of the market entry, including market research, choice of channels, arrangement of the export/import, legal issues, negotiations, marketing and more.

"We have a very unconventional team - me as the youngest person is 24, while our chairman, Jo Kiese, our wisest, is 81 years young. As the founder, I am the least experienced person in the company and I've spent a lot of time figuring out what my strengths and weaknesses are".

Further on, CEO Lundemo explains that he is the guy running the frontlines. "I have a great team of professionals that can complement my shortcomings and actually catch the balls I'm throwing out there. We have unconventional working methods and we believe that the combination of old and young is dynamite."

According to Mr Lundemo, the main objective for Nordic Touch is to become the go-to partner to help Norwegian companies enter China and vice versa, facilitating anything from setting up meetings, contracts, to helping with strategy, and linking clients to any services that are not covered in-house.

Nordic Touch differentiates their services by working hands-on with strong local partners utilising personal network and making sure of execution and follow up, in order to guide their clients the best way possible. Nordic Touch wants to offer their customers more than just an introduction, and aims to continuously give guidance for as long as necessary. This will help them avoid common pitfalls that other newcomers to China are likely to encounter.

Besides helping Norwegian businesses entering the Chinese market,

Nordic Touch also has Chinese clients looking for opportunities in Scandinavia. Lundemo explains how his team uses a lot of time with their clients to create a good understanding of the major cultural differences in doing business in each other's cultures. "We see that companies, both big and small, have similar challenges to overcome" Lundemo explains.

Nordic Touch represent a variety of companies in a wide range of industries. They have clients working with everything from Next Generation Sequencing(NGS) and Blockchain, to F&B and fashion brands.

Currently, the bulk of the work for China-bound Norwegian companies revolves around market research which Lundemo says "is made difficult by two factors: the language barrier and the vastness of the market, making it hard to know where to do research". What he refers to is the great Chinese firewall, which consists of legal regulations regarding internet and foreign websites, such as Google and Facebook.

Up to this point, most of the Nordic Touch clients have come through word of mouth - either through companies that have noticed the work Nordic Touch previously have accomplished and for that reason reached out, or through introductions and business associates in their network. Mr Lundemo says that for the Chinese, trust plays a huge role. Thanks to close bonds between the CEO and several Chinese business partners, Nordic Touch has already shown that his company can be an agile and a dependable partner - which goes a long way in a country like China.

The company has already started some projects in Indonesia and the plan is to eventually partner up and help Nordic companies enter any market in Asia. According to the CEO, one of Nordic Touch's strengths is their big network in China, and their expertise is now growing across borders in Asia.

"If your company wants a meeting, name a company or a person and we will find a way. That's our leverage," Mr Lundemo concludes. ■

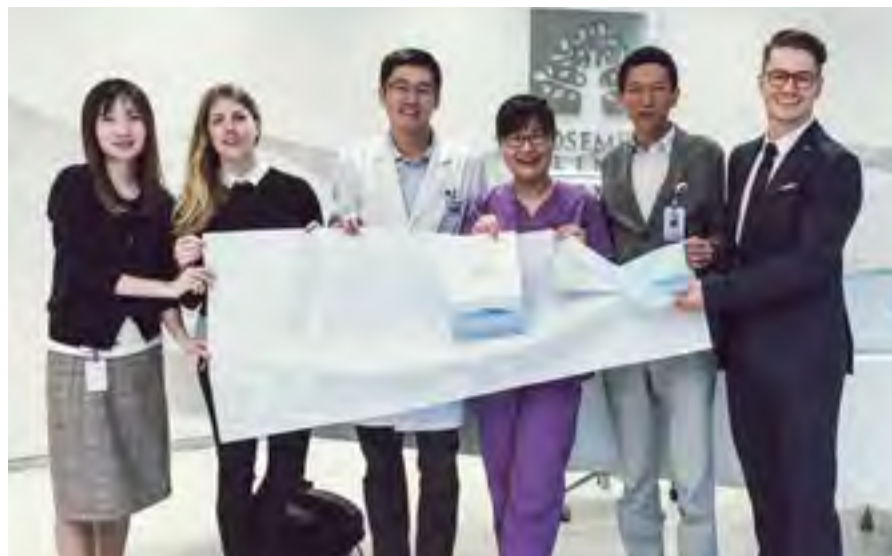


PHOTO: NORDIC TOUCH

Above Left: Nordic Touch CEO Even Moss Lundemo.
Above: Hands on: Nordic Touch visiting a private hospital in Shanghai, representing Norwegian Health Technology.

Facts

- Nordic Touch is based in Lillehammer (Norway), Shanghai and Beijing
- Founded in 2016
- CEO is 24 years old
- Nordic Touch represents a variety of companies ranging from high-technology to fashion brands
- Aims to become the go-to company for Scandinavian companies enter China and the broader Asia, as well as Chinese/Asian companies looking to enter Scandinavia
- Services range from business development to market-entry strategy



PHOTO: nHACK

n'Hack is a newcomer VC firm specialised in bringing Nordic startups to China and Asia is quickly solidifying its position as a key player in the region.

Viking Ventures

HENRI VIIRALT

Founded in 2017, nHack is a venture capital firm that has scaled its operations in mainland China in rapid succession, and has recently expanded to Singapore, to be close the vibrant Southeast Asian region.

"What sets nHack apart from the competition is the fact that it's the only Venture Capital fund set up to help Nordic startups enter China. We are not only sector neutral, but tend to work with startups and companies in a more personal, one-to-one relationship basis, which allows us to cater to their specific needs," said Heidi Berg, Program Director at the Shanghai office.

As a relatively new player, nHack has already managed to open offices in many strategic locations in China: the Beijing office covers sectors such as gaming, software as a service (SaaS) and educational technology (EdTech). In Shenzhen, the "Silicon Valley of hardware", the emphasis is on AI, robotics, Internet of Things (IoT), and automation. In its hometown of Hangzhou, global tech giant Alibaba is cooperating with nHack, Danske Bank and the local government, are planning to launch a brand new accelerator that aims to gather the best startups from health & MedTech, pharma and

e-commerce under its wings.

Shanghai, the first office of nHack, is home to the Ocean Technology Center (OCT), which has been set up to improve Sino-Nordic cooperation in the ocean technology and maritime sector by commercialising Nordic ocean and marine technology in China, but also to attract Chinese capital to the Nordic region through nHack's wide investor network.

The work at OCT is centred around pushing market driven innovation, making prototypes, sourcing components and getting customer verification, building investment networks and meeting venues. nHack's internal investment strategy will be to identify Nordic ocean research companies that are prime for international scaling.

"We're supporting Nordic startups working in maritime technology through investments and introducing them to key stakeholders in China and Asia. Norway has a long history in the marine area, and research at institutions like NTNU

is globally leading. Asia, and particularly China, is now the largest market for Norwegian businesses and we don't see that trend slowing down anytime soon," Ms. Berg said.

Albeit a young firm, nHack's core team has invested in Asia for over two decades and have succeed in finding strong strategic partners that have enabled to scale nHack very quickly. The founder Chris Rynning, an investor and long-time China veteran, has formed a partnership with Danske Bank, who have both invested in the company, but are also working with nHack's portfolio companies. Another key partner, WeWork, the global leader in coworking communities, found their investment model interesting enough to invest in the fund, as well as providing office space in all of nHack's locations.

Typically, nHack's investments range from USD 25-100,000, in exchange for 7-10% equity in the startup, along with a "nominal fee" for participating in the acceleration program. In addition, nHack will in most cases have an option to double down on their investment at original terms within a 3 to 5-month period from the start of the acceleration.

The core concept behind nHack is that Nordic founders and startups are generally good at design and development, but they lack critical scale and access to customers and capital in much larger markets in China and Asia. Even with access, Nordic companies will need help in funding, setting up operations and commercial contracts,

all the while navigating bureaucratic pitfalls and avoiding costly mistakes.

Although there are quick wins to be had in the region, Ms Berg believes that in order to guarantee success in China and Asia, Nordic companies need to take a longer perspective.

"I don't believe one should come to Asia, looking for quick wins. There should be a long-term commitment either on the production side, where China currently offers great possibilities for high quality at good prices, or being in a niche segment which makes the Nordic markets too small for viability."

Now in preparing for their third cohort of startups to be accelerated, some of nHack's early bets have been starting to pay off in a big way, especially in the maritime sector.

Scout Drone Inspection, a spin-off from NTNU, has taken a consumer product and applied it in a niche field with a huge market opportunity worldwide.

"Scout Drone Inspection have developed a unique drone for use inside closed environments, where regular navigation systems don't work. The company does not only provide drones for this, but also a specially developed system for storing and managing information gathered from the drone inspections. Hull and tank inspection today is a cumbersome process, with scaffolding needed to be installed, alongside other laborious manual work.

Annually, there are 2,500-3,000 dry dockings in China, so the market opportunity here is huge. We participated in the seed round, and introduced the Scout team to relevant ship owners, inspection societies and shipyards."

Another success story out of the Shanghai office has been Blueye Robotics, which has its roots in the well

regarded Centre for Autonomous Marine Operations and Systems (AMOS) at NTNU in Norway. Having access to world leading marine competence and technical resources from AMOS had been vital for the development of Blueye Pioneer, a commercial underwater drone that allows inspections and mapping to be performed by private individuals and small companies at a depth of 150m, something that has previously required extensive planning, resources and external services.

According to the company, the Pioneer's use cases range from environmental monitoring and research, to ports and marinas, shipping and aquaculture, to even providing unique opportunities to see the world from a different point of view on cruise ships.

"Blueye has started the first batch of serial production with a hardware production partner in China, which nHack introduced them to. To date, 60% of their inventory has been sold via pre-orders. Their major customers are ship owners, port authorities and search & rescue operators.

Recently, nHack has entered into a joint venture with Antler, a Singapore-based startup generator, to offer Nordic businesses access to Singapore, and it will serve as an entrepreneurial hub for Nordic businesses and entrepreneurs to the wider Southeast Asian markets.

The Antler team's experience in successfully building and growing companies in Southeast Asia will offer on-ground expertise and support for companies in localising their product or service. Selected companies are offered the option to continue to nHack's program in China, and all of them will also gain access to nHack's extensive network in China, Japan and Korea, in addition to Antler's global team of advisors.

nHack Singapore offer strategic, legal, human resource, production and client introduction support services. Both Antler and nHack founding partners will also provide capital, direct involvement and mentorship to all teams.

The program has a rolling intake and will be custom built to suit the Nordic business structure, with different speeds and levels of support catered to the maturity of each company. nHack founder, Chris Rynning adds, "nHack Singapore will initially focus on companies from the Nordic region, but we aim to include Germany, Austria, Switzerland and Holland in our next batches. We now encourage Nordic CEOs and Chairpersons to contact us to explore Asian growth opportunities".

Aside from identifying and investing in promising startups, nHack has bigger plans and growth targets for its future.

"In addition to our core business of investing, we are also developing nHack Academy. We see that businesses and organizations in the Nordics other than the startups need to start looking to China for inspiration and ideas. In areas like FinTech, we have traditionally been ahead in the Nordics. Now, China is by far the leader in mobile payment solutions with players like Alipay and WeChat Pay. nHack Academy is aiming to bridge that gap by organising trips, hackathons and workshops, as well as holding seminars on 'New China'".

nHack is currently taking applications for the 3rd cohort from the Nordic region. It welcomes applications from scale ups, startups and joint ventures that are looking to expand to China and Singapore now. nHack welcomes applications before September 27, 2018 for the fall cohort.

"We offer a unique network in China through the partners who have all been in China from 10-20 years, with market research capabilities in Chinese, and practicalities like office spaces with WeWork. We are the only VC fund working to bring Nordic startups to China," Ms Berg concludes. ■



PHOTO: SHUTTERSTOCK

Above Left: nHack Director Heidi Berg enlightening the audience.

Above: Robotics specialists working at a computer science research laboratory in China.

Facts

- Founded in 2017, by entrepreneur Chris Rynning
- nHack has offices in Shanghai, Beijing, Shenzhen, Hangzhou, Singapore (in partnership with Antler)
- The core team has been investing in Asia for over two decades
- Works with startups and established companies
- Has established strategic partnerships with Danske Bank and WeWork
- Is the only Venture Capital fund specialising in bringing Nordic startups to China and Asia



PHOTO: SHUTTERSTOCK

With some big hits and misses in recent years, augmented reality is finally starting to unveil the potential it wields and how it could one day radically alter how we interface with computers.

Through the Looking Glass

HENRI VIIRALT

The term “augmented reality” (AR) was coined back in 1990, by Boeing company researchers Thomas Caudell and David Mizell, who at the time were exploring experimental techniques of presenting information on altitude, direction and speed of the plane to the heads-up displays (HUDs) of fighter aircraft.

Soon after proof of concepts by the military had commenced, commercial applications followed. AR, albeit rudimentary, first made its way into television in the early 90s. With the pace of technological innovation that gave birth to the Internet and smartphones, AR has been grabbing headlines in recent years, with many of the largest tech companies making massive bets on the technology.

The basic idea behind AR is to superimpose graphics, audio and other sensory enhancements over a real-world environment, with the 3D models projected directly onto physical things, all of it rendered in real-time.

Unlike virtual reality (VR) - which requires the user to fully immerse in an entirely virtual environment - AR maps

out and uses the surrounding real-world environment to simply overlay digital information on top of it. As both virtual and real worlds inhabit the same space, users of augmented reality experience a new and improved natural world, where virtual information is used as a tool to provide assistance in everyday activities - ranging from a simple incoming email notification to potentially providing instruction on how to perform intricate surgical procedures.

From using photo filters on social media networks like Facebook or Snapchat that manipulate images in real-time to improving productivity, AR is rapidly growing in popularity for its ability to highlight certain features, enhance understandings and provide contextual and timely data, all the while

remaining somewhere in the middle of the mixed reality spectrum, between the real and the virtual.

Most AR apps allow the user to see both synthetic and natural light - a feat achieved by overlaying projected images onto a pair of goggles or glasses, allowing the images and interactive virtual objects to appear as part of the environment.

Over the past decade, many labs and companies have been perfecting the underlying technology and building better gadgets that allow us to experience AR in all its glory.

In 2009, the MIT Media Lab's Fluid Interfaces Group presented SixthSense, a device combining a mirror, smartphone, camera and a small projector. Although clunky and unpractical, the device hung from the user's neck and the four sensor devices on the user's fingers could be used to manipulate the images projected from the device. More importantly, it generated more interest in the technology, offering a glimpse into exciting possibilities just beyond the horizon.

In 2013, Google rolled out Google Glass, a significantly more accessible iteration of the technology, comprising a pair of glasses that displayed interactive 3D models on the user's lens screen through a small projector and even responding to voice commands. Although lambasted by the media thanks to the wonky-looking form factor and limited use cases, causing Google to pull it from the marketplace in late 2015, it served as yet another historical milestone towards

technological maturity.

"The growth of augmented reality (AR) applications in recent years can be attributed to solutions that allow consumers to visualise products and imagine what it might feel like to own the product or experience the service before actually purchasing it. As augmented technology becomes more sophisticated and the cost-saving and business applications expand, the demand and investment in AR will increase," writes Bernard Marr in a recent Forbes article.

By far, AR's biggest hit to date has been the 2016 game Pokémon Go, which became a worldwide sensation seemingly overnight, with over 100 million estimated users at its peak, according to CNET. At its core, the game allowed users to seek out and collect Pokémon characters that had been scattered around the real world, and to use these monster characters to do battle with other users locally. Forbes estimates that it ended up raking in over USD 2 billion in revenue for the Japanese developer, Niantic.

Interestingly, before Pokémon Go, nobody had considered using AR applications on a smartphone or a tablet. Nowadays, the tech is embedded in nearly every smartphone and tablet, making the technology much more accessible to the masses.

The demand for AR apps spiked in 2017, when Apple and Google released ARKit and ARCore software developer kits for iOS and Android respectively, allowing anyone with the necessary technical acumen to create their own AR apps.

The same year, Ikea introduced Ikea Place app, built using Apple's ARKit technology, which allows the user to scan the room and design it by placing Ikea objects directly in the room.

Cosmetic company Sephora

leveraged AR tech to allow customers to try different beauty products on the digital scan of their face. Even luxury brands like Rolex have jumped on the AR bandwagon, by creating an app where prospective buyers can try on various styles and models on their wrists.

As such, AR has quickly risen to become a powerful and novel way of boosting sales and provide customers a unique, memorable branded experience. According to Statista, the forecast market size for AR and VR technology will be over USD 200 billion by 2022.

Although the AR ecosystem is maturing quickly, there are still several obstacles to overcome, such as technological limitations, lack of standardization and high price tags.

"Today, we're in a state of compromise with augmented and virtual reality devices. None of the existing systems give users a complete, bondless and immersive experience. Most of the systems lack a natural, wide field of view (FOV), have limited display resolution, low brightness, a short battery life and lacking 3D sensing capabilities. It will be another three to five years before we will experience true, unconstrained AR/VR applications," Alex Aharonov writes in Jabil.

One of the companies trying to solve some of these technological issues is Magic Leap, a secretive startup based in Florida, that after years of testing the tech and raising over USD 2 billion from investors such as Google, JP Morgan, Alibaba, and Warner Bros., to name a few, finally announced that Magic Leap One Creator Edition - comprising a small, wearable computer and a pair of goggles - was finally hitting the shelves in August 2018, setting the entire tech industry in an uproar.

Alas, the virtually unlimited

resources and years of lofty promises to revolutionise personal computing didn't help Magic Leap escape the lukewarm media reception. The Verge's Adi Robertson wrote a lengthy hands-on review of the device, which she described as a 'flawed glimpse' at the potential of the technology.

"Based on an afternoon with Magic Leap, the Magic Leap One Creator Edition - which ships in the US today for USD 2,295 - is a functional, thoughtfully designed headset with some very real advantages over competitors like the Microsoft HoloLens.

But it doesn't seem like a satisfying computing device or a radical step forward for mixed reality. Magic Leap's vision is a compelling alternative to that of Silicon Valley's tech giants. But there's a baffling disconnect between its vast resources and parts of its actual product. I genuinely believe Magic Leap has given me a glimpse of the future of computing, but it might take a long time to reach that future, and I'm not sure Magic Leap will be the company that gets there first."

Unveiled at Apple's yearly media spectacle in mid-September, this year's updated range of iPhones, too, have a strong focus on new artificial intelligence-driven chipsets, which promise to deliver strong augmented reality experiences - Apple even brought out former NBA star point guard Steve Nash to showcase HomeCourt, a new iPhone app that can detect a hoop and basketball to measure kinematics, trajectory, release times, and number of shots made. It certainly seems that Apple is doubling down on AR, to the extent that industry murmurings of an impending launch of an AR interface of some sorts are getting stronger and stronger.

Admittedly, while some of the current generation AR devices have not lived up to the hype, all of them have done their part in propelling the technology forward in one shape or another. And with many tech giants clearly carving out the ecosystem for their future devices, it seems to be only a matter of time until they finally deliver on their futuristic promises. ■



PHOTO: CHRONO24

Above Left: Augmented Reality allows mobile devices to display useful information against real time images. Above: The Virtual Showroom app allows prospective buyers to try on various timepieces on their wrists from the comfort of their own homes.

Facts

- The term "augmented reality" was coined in 1990, by Boeing researchers
- Microsoft HoloLens, Magic Leap One Creator Edition, Google Glass Enterprise Edition, Every sight Raptor and Epson MOVERIO BT-300 are some of the best devices currently available to experience AR
- According to Statista, the forecast market size for AR and VR technology will be over USD 200bn by 2022
- There are more than 543 startups listed under augmented reality companies on Angelist



PHOTO: SHUTTERSTOCK

Myanmar is stepping up its efforts to attract foreign investment and boost economic development.

Myanmar: Hungry for Foreign Investment

LARRY JAGAN

They have launched a diplomatic offensive to improve their international image, although the problems in Rakhine have overshadowed the government's appeal to western companies.

"Myanmar is now definitely open for business," the new chairman of the Myanmar Investment Commission (MIC), U Thaung Thun told Business Review after addressing a group of foreign businessmen in Yangon recently.

"Measures to make doing business easier in Myanmar, to attract investment and reduce bureaucratic delays have recently been put into place," he added. This is a point the State Counsellor, Daw Aung San Suu Kyi also made when she addressed an international audience of academics, business people and students in Singapore in August, encouraging investors to explore the country's investment possibilities.

"I would like to invite our friends to join us on our journey. Our journey is not a simple one; it is an adventure into our unknown future," she said. "We have many challenges to face, many weaknesses that we must address, but we

have confidence, confidence in the ability and the capacity of our people to grow into these challenges."

The government is relaunching its drive to boost economic development. With elections some two years away, government ministers understand the political future of the country is on the line. A series of organisational changes have been rolled out that are intended to revitalise the government's economic plans and implement a comprehensive strategy.

This is partly in response to the business community's increasing frustration with the lack of government direction and policies. For months Myanmar's business people have been complaining that the government has not shown any leadership, its economic policies direction, and there was an absence of new initiatives on the horizon -- amid general economic stagnation, and

plummeting business confidence.

In the eyes of the Myanmar business community, one of the problems hitherto has been the government's pre-occupation with the peace process and constitutional reform.

"The government -- led by State Counsellor Daw Aung San Suu Kyi -- has prioritised the peace process at the expense of economic reforms," said U Zaw Naing, head of the local company, Mandalay Technologies. But the two are not mutually exclusive he said, and should be delivered in tandem.

"On top of that, the business community feels that the government does not have enough competent leaders in the area of economic policies," he added.

The most important change has been the appointment of a new finance minister, U Soe Win in May. He is determined to revitalise the government's economic policies and ensure their effective implementation, according to government insiders. Although he has only been in his job for a little over three months, there are significant signs that with him at the helm, that the government is committed to boost economic growth.

The economic committee structure that oversees policy and coordinates government initiatives has been revamped. The State Counsellor Daw Aung San Suu Kyi, is now clearly committed to addressing the country's economic needs. She has taken over as chairman of the country's top economic

policy committee: the National Economic Coordinating Committee (NECC), which combines economic ministers, Central Bankers, and members of the National League for Democracy's economic committee.

At the same time, this committee has been strengthened and elevated to the pinnacle of the government's economic policy-making. With the State Counsellor as Chairman, this group has added political authority. It is meant to help formulate economic policy and coordinate the government's implementation of economic policy initiatives and strategy.

One of those is the new Companies Law that came into effect two months ago. The government hopes this will help kick-start their efforts to attract foreign investment. The law, which more than two years to finalise, will eliminate layers of bureaucracy and streamline the company registration process, creating greater investment opportunities, especially for foreign businesses. Under the new law foreign investors will also be permitted trade on the Yangon Stock Exchange (YSX), but officials have cautioned that more time will be needed before this is fully implemented.

"It's a game changer," said U Aung Naing Oo, Director General of the Directorate of Investment and Company Administration (DICA). "It will support the momentum of economic growth and provide a major impetus for foreign investment, by making it much easier for foreign investors," he told Business Review.

Under the law, foreign investors can invest in Myanmar companies, and secure up to a 35% stake in the local firm, opening up enormous potential for foreign participation. "More foreign investment is likely to be attracted as international investors will be able to consider alternative financial deals, and not be restricted to forming joint ventures," said Dr Maung Maung Lay, Vice President of the national employers group, the Union of Myanmar Federation of Chambers of Commerce and Industry (UMFCCI).

Registration and regulations are all to be simplified and the bureaucracy involved streamlined. "Everything is being done online: it's a clear and simple process that significantly reduces the regulatory burden and compliance costs on companies," said U Aung Naing Oo. It also introduces a level playing field for both local and foreign companies, he added.

"This is a positive step in the eyes of international investors as there will be more reliable information available," said Ms Vicky Bowman, Director of the Myanmar Centre for Responsible Business. "It's a solid law, a well-drafted law and a well-translated law," she told

Business Review. The main weakness is not in the law itself but whether it is effectively implemented and enforced, and the ability of companies to live up to the ambitions of the law, she reflected.

The Myanmar Investment Commission (MIC) has also been restructured, and new members added, precipitated by the resignation of the former Finance Minister, U Kyaw Win – who used to chair it. It approves all investment applications, especially for joint ventures, and spearheads the government's efforts to attract foreign investment. U Thaung Tun, the Minister for the Ministry of the Office of the Union Government Minister and National Security Advisor – was recently appointed as Chairman of the commission.

An important part of the MIC's work is to attract foreign investment through international trade road shows and promotional campaigns. An experienced former career diplomat and a fluent English speaker, U Thaung Tun is a perfect fit for the job.

"Myanmar needs to aggressively and actively attract investors," said U Zaw Naing. "Investment promotion, especially in infrastructure and the government's development strategy is sorely needed at this point of time," he added. The government is simultaneously preparing a public investment pipeline or project bank – as it is more commonly called – to coordinate investment in the country's infrastructure.

This is a list of prioritised potential infrastructure projects that are in the pipeline – intended to avoid random selection, as well as introduce rationality and transparency into the selection process, according to the government's economic advisor, Sean Turnell. They are ranked according to socio-economic impact, access to finance and contract terms – whether government funded, with overseas development assistance, or public private partnership.

Within this context, there are great opportunities for Norwegian companies, the President of the Myanmar-Norway Business Council, Mr Ola Borge told Business Review. "There are good potential prospects in sectors like energy and aquaculture – where there is very strong need for new investments – and are areas in which Norwegian companies are world leaders."

But investing in Myanmar is out without its dangers and pitfalls. "We see that many Norwegian – and other Westerners companies – have entered the market without a good strategy and understanding of the business environment," he added. "Those businesses have often failed, while businesses that have done their homework have had very good commercial success," he warned. "So I guess the message is: 'Do your homework!'"

But while the government's push to boost economic development and attract foreign investment is full-steam ahead, the Rakhine problems still cast a long shadow over the country's investment climate, especially in attracting foreign investment. In the interim, Myanmar will have to rely on Asian investors, said U Aung Naing Oo. "We cannot expect investment from the West in the near future," he said. Not for two or three years at least.

"We totally underestimated the impact of the Rakhine crisis – now compounded by the verdict in Reuters's journalists case – on foreign direct investment from the West," U Aung Naing Oo told Business Review. "We are fearful of the effect the continued crisis will have on investment from Europe and the US. We don't expect it to change in the near future, not until after the 2020 elections," he lamented. Though the government will try to restore better relations with those countries and as a consequence, we hope investment from them will come.

The State Counsellor is spearheading the government's efforts to improve its international image and attract foreign investment. Her speech to the World Economic Forum in Vietnam in mid-September was another example of her attempt to ally international concerns and emphasise the government's message: Myanmar is open for business. ■

Left: Yangon is becoming a modern metropolis with new buildings reaching for the sky.

Facts

Factbox

■ Myanmar's foreign direct investment fell by around USD 900 million in 2017-18 compared to 2016-17.

■ In the 2017-18, Myanmar received USD 5.7 billion for 222 projects. By comparison, the country received USD 6.6 billion for 135 investments the year before.

■ Around a third of the investment was into the industrial sector, while real estate and construction absorbed around 22%.

■ Investments came from 28 countries: with China, the Netherlands, Japan, South Korea, the UK and the US among the top investors.

■ In the first two months of this financial year, in April and May 2018, foreign direct investment was only USD 200 million compared to USD 700 million.

■ Most of the investment this year came from ASEAN and Asia: China, Korea, Japan and Hong Kong, with Singapore the top investor – though much of that was also originally from China

■ According to DICA, there are more than 50,000 local companies and 7,000 foreign companies currently registered in Myanmar.



PHOTO: WIKIPEDIA/DAN SCAVINO JR

U.S.-North Korean relations have gone from cold to hot to cold again. How does the current temperature affect business and the geopolitical landscape in the region?

A Tale of Two Outcomes

SOFIE LISBY

The world held its breath in July 2017 as North Korea in a display of brazen defiance fired its first-ever intercontinental ballistic missile on U.S. Independence Day.

Outcry and condemnation from the international community, including North Korea's strongest ally China, didn't stop North Korean leader Kim Jong-un from firing another intercontinental ballistic missile just three weeks later, prompting South Korea's President Moon Jae-in to convene an emergency security meeting in the middle of the night, and Japanese Prime Minister Shinzo Abe to note that "The threat to Japan's security [had] become grave and real".

The message from The White House was a little blunter. Speaking from his golf course in New Jersey, US President Donald Trump told reporters that any more threats from North Korea would be met with the now-famous "fire and fury like the world has never seen".

Despite the rhetoric, North

Korea went on to conduct no less than seven missile tests before the year was over, including the Hwasong-15, an intercontinental ballistic missile believed to be capable of hitting the entire continental U.S., two intermediate-range ballistic missiles over Japan, and a nuclear test in the form of an advanced hydrogen bomb.

In early 2018, however, there was a shift in North Korean foreign policy. A South Korean diplomat returning from an official visit to Pyongyang said Kim Jong-un was willing to discuss North Korea's nuclear programme with the U.S. and just three months later the two leaders finally met at a summit in Singapore.

Mixed reactions

The summit was great news for

business. In the lead-up to the event, stocks across major Asian markets rallied, and on the day of the actual summit, key markets closed higher. Japan's Nikkei 225 rose 0.33 percent to close at 22,878.35, slightly lower than the season high of 23,011.57 it reached that same morning. Food, retail and land transports indexes were among the highest performing, rising more than one percent. The Shanghai composite gained 0.91 percent to finish at 3,080.55, while the smaller Shenzhen composite gained more than 1 percent. However, other markets were less buoyant. South Korea's Kospi slipped 0.05 percent to close at 2,468.83, and Singapore's Straits Times Index slipping 0.13 percent.

Given the immediate result of the summit – a signed joint agreement pledging nuclear disarmament by North Korea in exchange for U.S. security guarantees – a more pronounced market reaction might have been expected. However, critics were not late to sound the alarm. "Vague and with little substance" was the overarching theme of the criticism, with many taking the stance that President Trump had made too many concessions to the North Korean regime, including the decision to halt joint U.S.-South Korean military exercises, which have been a major contention point for the North for years.

"Unfortunately, we do not know if Kim Jong-un has made a strategic decision to denuclearise and it is unclear if further negotiations will lead to the end goal of denuclearisation," Anthony Ruggiero, a senior fellow at the conservative Foundation for Defense of Democracies think tank, told Reuters. "This looks like a restatement of where we left negotiations more than 10 years ago and not a major step forward."

Slow, if any, progress

Since the summit, North Korea has indeed halted its nuclear and missile tests and claims to have dismantled a nuclear testing site. The regime even returned remains that are believed to be of U.S. soldiers killed in the Korean War.

However, a UN report commissioned by the UN Security Council concluded that North Korea is continuing to work on its nuclear programme, mirroring claims by U.S. officials that spy satellites had spotted continued activity at a site that has produced ballistic missiles. The UN report also said that there has been a massive increase in ship-to-ship oil product transfers and that North Korea has been trying to sell weapons abroad, both violations of UN sanctions.

As recent as August, President Trump, whose government is in the mid of an intense trade war with China, blamed the Chinese government, which yields significant influence over the North Korean government for stalling progress. An official visit by Secretary of State Mike Pompeo was cancelled due to lack of progress in dismantling the nuclear programme.

Now what?

The slowing down or lack of progress begs the question: Now what? With not only North Korea's nuclear capabilities on the line but also the relationship between China and the U.S. and the geopolitical balance in the region, some feel that a Pandora's box has been opened and that Asia's security landscape will change, disarmament or no disarmament. Pyongyang has previously said that it will only dismantle if the U.S. removes its 28,500 troops stationed in South Korea, a scenario that will significantly change the geopolitical balance in the region as Asian allies rely on U.S.'s defence commitments in the face of an increasingly assertive China.

President Trump himself at a press conference after the summit indicated a desire to bring the troops home, a move that media branded "a huge win for Pyongyang and Beijing" and prompted concerned remarks from South Korea and Japan. "At this point, we need to know President Trump's exact meaning or intentions," said the Blue House, South Korea's equivalent of the White

House. Meanwhile, Japanese Defence Minister Itsunori Onodera said the U.S.-South Korea drills were "vital" to East Asia, adding that his country wished to "seek an understanding of this between Japan, the U.S. and South Korea."

Furthermore, the timing of disarmament could pose a threat to stability in the region. Staged disarmament combined with the removal of U.S. troops in South Korea could prompt the closure of military bases in Japan as well, leaving both countries vulnerable to North Korean short-range missiles. "Any agreement that removes the North Korean nuclear threat from the United States, but leaves Japan and South Korea vulnerable to a North Korean attack would be cause for concern," Troy Stangarone, senior director at Korea Economic Institute, a Washington-based think tank told CNBC.

According to an analysis by CNBC, if no progress is made towards disarmament, it may indicate to U.S. and North Korean officials that diplomacy as a strategy has failed, leaving only military solutions on the table. "Failure to reach any deal would almost certainly return the military option to the fore as the U.S. administration's preferred means of removing the North Korean threat," said a note from the International Institute for Strategic Studies.

From a business perspective, Korean and Japanese markets are most sensitive to the North Korean risk and would also benefit the most from a denuclearisation of the Korean Peninsula. According to an analysis by Oanda, a leading provider of currency data, the Korean won is very sensitive to conflict on the peninsula, and disarmament is likely to boost the won significantly. The data provider also noted that although the Japanese yen has traditionally performed well during geopolitical strife, permanent disarmament will likely result in an increase in value.

An end to maximum pressure

Even if disarmament does not happen, some believe that a return to President Trump's campaign of "maximum pressure" is impossible. According to Reuters, North Korean officials have toured China to discuss economic development, speculators are snapping up properties along the Chinese-North Korean border, and South Korea is studying ways in which to boost engagement with its northern neighbour.

"Trump's campaign is over," Kim Hyun Wook, a professor at the Korea National Diplomatic Academy told Reuters. "The diplomatic openings with North Korea have already been taking a toll on the maximum pressure campaign."

A similar sentiment was expressed

by Joseph Yun, the United States' former top negotiator with North Korea. "Practically it is not possible to continue maximum pressure when you're talking with your adversary. I don't think you can have serious engagement as well as maximum pressure." ■

Facts

Fact box:

North Korea missile and nuclear tests in 2017

■ 21 February: Pukkuksong-2, a medium-range ballistic missile, is launched from North Pyongan province and travels 310 miles before landing in the Sea of Japan

■ 6 March: Launches four ballistic missiles from the Tongchang-ri region close to the border with China, three of which land in Japan's exclusive economic zone.

■ 19 March: Failed missile launch from Wonsan airbase.

■ 5 April: Hwasong-12, a liquid-fueled intermediate-range ballistic missile is launched from North Korea's east coast but travels only 40 miles before spinning out of control.

■ 16 April: Another Hwasong-12 missile is fired but explodes seconds after launch.

■ 29 April: Another ballistic missile is fired but breaks up shortly after launch.

■ 14 May: The launch of a successful Hwasong-12 from a location near the city of Kusong. The missile flies for approximately 30 minutes.

■ 21 May: Another Pukkuksong-2 is launched just weeks after South Korean President Moon Jae-in takes office.

■ 28 May: A new short-range ballistic missile travels around 380 miles before falling into the Sea of Japan.

■ 7 June: Less than a week after new UN sanctions, North Korea launches four land-to-ship missiles off its east coast.

■ 4 July: In a clear message to President Trump, the North launches Hwasong-14, its first ever intercontinental ballistic missile. According to South Korean intelligence, the missile travelled for more than 578 miles.

■ 28 July: A second Hwasong-14 missile is launched, travelling about 620 miles.

■ 26 August: Three short-range ballistic missiles are launched into the sea between the Korean Peninsula and Japan.

■ 28 August: An intermediate-range ballistic missile is launched and flies 1,678 miles before crashing into the Sea of Japan.

■ 3 September: North Korea carries out its sixth and more powerful nuclear test, an advanced hydrogen bomb designed for a long-range missile.

■ 14 September: A Jwasong-12 is launched over Japan, travelling 2,300 miles.

■ 28 November: North Korea unveils its largest and most powerful rocket, the Hwasong-15, in its third intercontinental ballistic missile test. The missile is believed to be capable of hitting the entire continental U.S.

Source: CNBC

Remember when building this was the most meaningful thing in the world.

**WE BUILD CODE
WITH THE SAME PASSION
YOU HAD FOR LEGO**



TIQRI

Technology Partner | Software Services

www.tiqri.com

The Graphs

In order to give the readers an understanding of where the Asian countries are in their development, we have assembled an overview of various indicators for Norway, USA and the most important South and Southeast Asian markets. The graphs in the two right columns are the result. Countries are listed by their two-letter ISO 3166-1 code. The data is assembled from a number of sources. See below for a full list.

Basic Figures Norway (2017)

| | |
|------------------------------|----------------|
| GDP Growth 2017 | 1.9% |
| GDP Growth 2018 projected | 2.0% |
| Export Growth 2017 | 0.8% |
| Export Growth 2018 projected | 1.9% |
| Trade Balance | NOK 176.1 bill |
| Current Account Balance | NOK 35.0 bill |
| International Rsv (Apr18) | NOK 542.5 bill |
| Unemployment | 4.2% |
| Corporate Income Tax | 28% |
| Value Added Tax | 25% |

Norway's Top 10 Exports 2017

| | %/value | NOK bill |
|------------------------|------------------|----------|
| Petroleum | 31.5% | 271,462 |
| Gas | 25.9% | 222,562 |
| Fish | 10.7% | 92,241 |
| Engineering products | 9.5% | 81,920 |
| Chemicals | 6.4% | 54,689 |
| Non-ferrous metals | 5.5% | 47,293 |
| Raw materials | 1.9% | 16,566 |
| Scientific instruments | 1.2% | 10,298 |
| Iron and steel | 1.7% | 15,018 |
| Others | 10.8% | 92,851 |
| Total | (+14.5% vs 2016) | 860,692 |

Geography

| | |
|----------------------------|----------------|
| Geographic Area: | 385,199 sq. km |
| Highest peak: Galdhøpiggen | 2,469 m |
| Inland water areas: | 16,360 sq. km |
| Coastline: | 25,148 km |

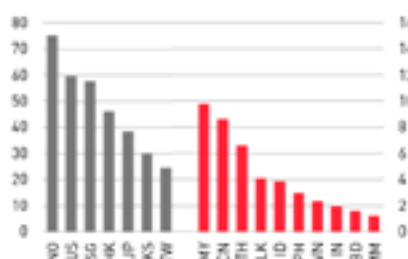
Demographics 2017

| | |
|-----------------------------------|----------|
| Population Norway: | 5.3 mill |
| Population Oslo: | 975,000 |
| Life expectancy M/F NO: | 81/84 |
| Inhabitants per sq. km land area: | 14.4 |
| Population Growth: | 0.84% |

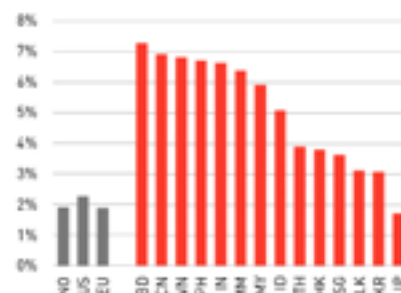
Sources:

GDP/Capita: Wikipedia/IMF; GDP Growth: Wikipedia/CIA Factbook; Global Competitiveness: World Economic Forum; Inflation 2015: CIA; Ease of Doing Business and Days to Start a Business: World Bank; Corruption: Transparency International; Democracy Index: Economist Intelligence Unit; Mobile Telephone Penetration: World Bank; Electric Consumption: International Energy Agency
Basic Figures, Norway: Statistics Norway. Data was downloaded from sources on 1 November 2018.

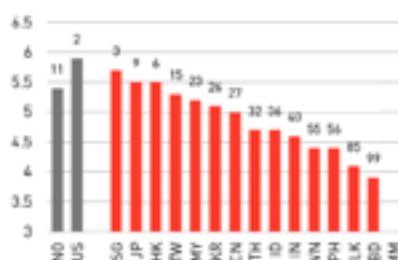
Nominal GDP/Capita 2017 (TUSD)



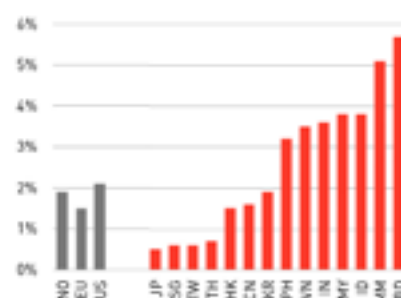
GDP% Growth 2017



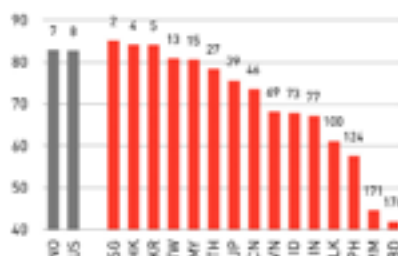
Global Competitiveness Ranking 2017-18



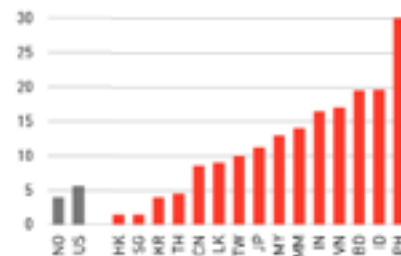
Inflation 2017



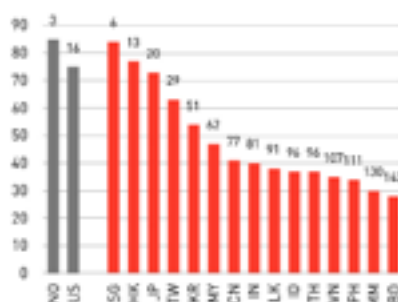
Ease of Doing Business Ranking 2019



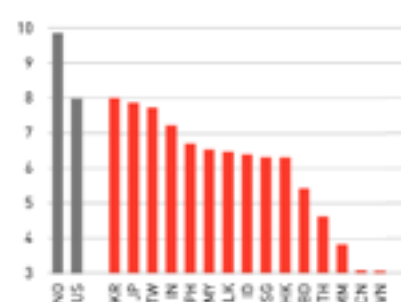
Doing Business 2019 Days to Start a Business



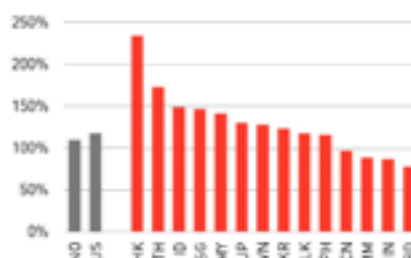
Corruption Ranking 2017



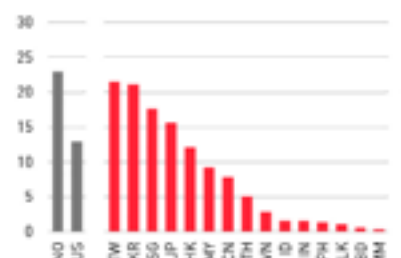
Democracy Index 2017



Mobile Telephone Penetration 2016



Electric Consumption kWh/Capita 2015



Norwegian Chambers of Commerce and Business Associations are established in most major Asian countries. The organisations work to create venues and channels for exchanging and sharing information, to improve local business conditions and opportunities for Norwegian companies and to increase trade between their respective host countries and Norway.

Norway in Asia

Indonesia Norway Business Council

c/o Royal Norwegian Embassy
Menara Rajawali Building, 20th Floor
Mega Kuningan District,
Jakarta 12950, Indonesia
W: www.inbc.web.id
E: execsec@inbc.web.id
T: +62 21 2965 0000

Malaysia Norway Business Council

c/o Royal Norwegian Embassy,
P.O. Box 10332,
50710 Kuala Lumpur, Malaysia
W: www.mnbc.com.my
E: malaysianorwaybc@gmail.com
T: +60 3217 10000

Myanmar-Norway Business Council

c/o Royal Norwegian Embassy
Nordic House
No. 3, Pyay Road, 6 Miles
Hlaing Township
Yangon, Myanmar
W: www.myanmar-norway.com
E: contact@myanmar-norway.com

Nordic Chamber of Commerce and Industry

c/o GraphicPeople Ltd.
3rd Floor, Plot 76/A,
Road 11 Block M, Banani,
Dhaka 1213 Bangladesh
W: <http://nccib.com>
E: info@nccib.com
T: 88017 777 00752

Nordic Chamber of Commerce Cambodia

#30 Preah Norodom (corner st. 148) Bred
Bank Building, 3rd Floor
Khan Daun, Phnom Penh, Cambodia E:
info@eurocham-cambodia.org
T: +855 023 964 141

Nordic Chamber of Commerce Vietnam

Petroland Tower, 17th Floor
No. 12 Tan Trao Street,
Tan Phu Ward, District 7
Ho Chi Minh City, Vietnam
W: <http://nordcham.com>
E: contact@nordcham.com
T: +84 85 416 0922

Norwegian Australian Chamber of Commerce

c/o Schweizer Kobras Lawyers
Level 5, 23-25 O'Connell Street,
Sydney NSW 2000, Australia
W: <https://norwegianchamber.com.au>
E: contact@norwegianchamber.com.au
T: +61 416 246 946

Norwegian Business Association China

Rm. 1701, Bund Center,
No. 222 East Yan'an Road,
Huangpu District,
Shanghai 200002, China
W: <http://norbachina.com>
E: administration@norbachina.com
T: +86 1391 7839679

Norwegian Business Association (India)

c/o Innovation Norway
92, Golf Links
New Delhi 110 003, India
W: <http://www.nbai.in>
E: nbai@nbai.in
T: +91 1149 099200

Norwegian Business Association (NBA), Korea

Royal Norwegian Embassy
13th fl. Jeong-dong Building
21-15 Jeongdong-gil Jung-gu
Seoul 100-784, South Korea
W: <http://www.norway.or.kr>
E: yky@mfa.no
T: +82 0272 77157

Norwegian Business Association (Singapore)

c/o The Royal Norwegian Embassy
16 Raffles Quay #44-01
Hong Leong Building
Singapore 048581
W: <http://nbas.org.sg>
E: admin@nbas.org.sg
T: +65 9780 9674

Norwegian Business Association Sri Lanka

c/o Tiqui
201, Sir James Peiris Mawatha
Colombo 02, Sri Lanka
T: +47 95923712

Norwegian Chamber of Commerce, Hong Kong

Room 3003, 30/F, The Centrium
60 Wyndham Street, Central,
Hong Kong SAR
W: <http://www.ncchk.org.hk>
E: info@ncchk.org.hk
T: +852 6502 1630

Norwegian Chamber of Commerce, Japan

c/o Innovation Norway, Tokyo,
5-12-2 Minami Azabu, Minato-ku,
Tokyo, Japan 106-0047
W: www.nccj.or.jp
E: contact@nccj.or.jp
T: +81 3344 09935

Philippines Norway Business Council

c/o The Royal Norwegian Embassy
DelRosarioLaw Centre, 12th Floor, 21st
Drive corner 20th Drive
Bonifacio Global City,
1630 Taguig City, Metro Manila
Philippines
W: <http://www.pnbc.ph>
E: info@pnbc.ph
T: +63 2317 2700

Singapore-Norway Chamber of Commerce

W: www.sncc.no
E: secretariat@sncc.no
T: +47 930 54 259

Thai-Norwegian Chamber of Commerce

14th Fl., Mahatun Plaza
888/142 Ploenchit Road
Bangkok 10330, Thailand
W: www.norcham.com
E: contact@norcham.com
T: +66 2650 8444



Knowledge grows



At Yara, our knowledge, products and solutions grow farmers', distributors' and industrial customers' businesses profitably and responsibly, while protecting the earth's resources, food and environment. We grow by sharing knowledge.

Visit us at
Yara (Thailand) Limited
Bhiraj Tower at EmQuartier
689 Unit 2709-2713 27th Floor,
Sukhumvit Road, Klongton Nuea,
Vadhana 10110 Bangkok, Thailand
Tel. 02-261-3242
Email: yth.marketing@yara.com



Yara Thailand



www.yara.co.th



A STAR ALLIANCE MEMBER 



LIVE YOUR PASSIONS IN **EUROPE**

Turn your passion into a European journey. Whether you're an art lover, a foodie, a musician, or a sports fan, Europe can give you limitless inspirations.

Fly THAI to over 60 European cities and enjoy exclusive fares to explore Europe the way you like through our 9 gateway cities of Stockholm, Copenhagen, Oslo, Brussels, Frankfurt, Munich, Zurich, Milan and Rome.

BEGIN YOUR QUEST OF PASSION NOW.

thaiairways.com

 **THAI**
Smooth as silk