

Executive Spotlight

U Sithu Moe Myint
Country Manager & Executive Director

My fellow readers; it is good to have an opportunity to feature an article in Insight! once again and to share some of my perspectives which I hope will help you better understand and relate to one of the common challenges that many of us face today.

Energy is an essential part of our lives and remains an essential part of our nation's transportation sector. Energy resources such as fuel are needed for us to travel from one place to another, for transporting food from our growers or distributors to consumers, for transporting goods and services, and also for the purpose of powering our homes, buildings, and facilities.

Given its widespread uses and importance, the energy resources underpinning the transportation sector of any nation are considered a crucial part of a nation's energy security. The availability of an adequate supply of fuel to meet demand, as well as the affordability and price, are all important factors that have a material impact on not just a country's economy but also has a direct impact on each and every individual's livelihoods.

This is the very reason why nations cannot rely solely on energy resources from foreign countries, making it essential to have a diverse mix of fuel, including from all available and sustainable domestic sources, for stable and consistent supplies as well as affordable prices. Over-reliance on imported fuels is a serious threat to any nation's energy security on the basis of reductions in control as well as on the basis of increased costs.

At present, our country of Myanmar remains a net importer of fuel. What this means is that Myanmar does not produce enough domestic energy resources in terms of supply to meet the fuel demand required from our entire transportation sector. Myanmar thus has to rely on the import of fuel from other nations to bridge the gap. Over 90% of the entire Myanmar fuel market consists of fuel that is imported.

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Sizing Up the A-6 Ultra-Deepwater Development

Brian Logan
Development Team Lead

For the average person who is not experienced in the offshore oil and gas industry, it is difficult to understand the true reality of the business. This is completely understandable considering that most people have only seen the Hollywood version of the oilfield, which includes either oil

blowing out above the drilling rig while people dance around in celebration as if they've won the lottery, or flamboyant characters driving around in a big car, wearing big cowboy hats, and making lucrative multi-million dollar deals in Texas.

In light of the skewed portrayal of the oil industry, it is no surprise that the average person has no idea what is really involved in oil and gas development. Even less understood is a project such as the A-6 ultra-deepwater development, which involves state-of-the-art technology and methods which have been used in such extreme water depths in less than twenty fields worldwide.



Flaring Gas from Shwe Yee Htun-2 Well, Offshore Block A-6, West Ayeyarwaddy Basin

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From the Desk of the Editor

Dear Readers,

Hope you and your family are staying safe and healthy through these unusual times! The COVID-19 pandemic has brought us all in an unprecedented situation, and we have challenging and uncertain times ahead.

It is a great honor for me to be part of the Insight! team and I look forward to working together with the editorial team to further heights of qualitative information and readership. With this being said, I am excited to share these articles in this issue with you and I hope that we continue to showcase our contributions to the nation as a group and further provide accurate and valuable information to foster the growth of the energy sector within our community.

The highlight of this publication is the breaking news about Ingenuity, a small helicopter that has made history by becoming the first spacecraft to successfully fly on another planet, a project led by a Myanmar woman leader in California.

What a delightful piece of article about science, technology, hard work, and dedication. A powerful success story that we can't miss because it gives us a feeling of optimism, hope, and positivity—something we all yearn to experience during these hard times. I am also pleased to share a few coping mechanisms or tips with you about how to find calm in the midst of chaos, I hope you find them useful.

Amidst all this chaos, we are also facing an "existential" threat called global warming as a result of climate change. We have included a very informative article on biodiversity in this issue and its relation to infectious diseases and outbreaks and what the future holds if we do not work together to face these challenges together. Then, we have a cover story written by our Country Manager where he simply explains the components of fuel cost and how it impacts our daily life, and the role of energy in the transportation sector. We also have a featured article on Block A-6 that sheds light on the

ongoing ultra-deepwater project providing knowledgeable information about every aspect of its project and challenges that lie ahead. And we can't forget about our internal efforts on the CSR front; as a responsible business operator, we are building a community-based learning program called Farm Field School (FFS) for the farmers and extension staff so that we form a more successful agro farming culture in areas we operate. As you flip through the pages, you will find many more interesting pieces from other contributors that will fuel your knowledge and hopefully, bring a little excitement to your reading experience.

The achievement of the year so far for us is the publication of the MPRL E&P corporate brochure; it is now printed and ready for us to share with our colleagues and current and future partners. I would personally like to thank the brochure team and management for their collective effort, dedication, and contribution to making it a smooth and successful process. I encourage you to grab one and share your thoughts with us.

On behalf of the editorial team, I would like to thank our many authors and contributors who helped to maintain the newsletter interesting and fun. Our contributors are all rock stars; they set aside time to compose their stories and we would not exist without them. I look forward to receiving your contributions for the upcoming issue. I would also like to extend our gratitude to our readers for reading and engaging with us, and most importantly, your continuing support. Thank you all.

As I look forward to our next issue, I welcome input from you, our readers, and contributors to continue to enhance the overall quality of the internal journal. Stay safe, stay resilient, and stay positive. ■

Sincerely yours,
Hnin W. Zaw

As our business continues to develop, we have re-designed our brochure to show and explain all of the services we provide. It is now available in both electronic and hard copy format.



Your Opinion : How Important is the Feedback Culture in an Organization?



Kyaw Naing
Junior Engineer
Field Operations
Team

Having feedback built into a company's culture has proven to increase employee engagement, which in turn increases productivity, morale, and success. For instance, giving and receiving feedback during Performance Management Process (PMP), is essential. PMP is a system where the supervisor and the employee set goals together which are to be fulfilled within a year. Some of them are team goals and others are discussed between the supervisor and the employee. Certain assignments can

be set to be carried out at the workplace because it pushes the employee to be more productive and motivated. It is also necessary to have clear communication between the immediate supervisor and the employee because feedback and suggestions have a positive impact on the employees' performance while informing the supervisor how to boost the productivity of the team.

From my point of view, Toolbox Talk is one of the most efficient ways to communicate with the team and colleagues. We discuss Job Safety Analysis (JSA) and Standard Operation Procedure (SOP) on a regular basis. We conduct a SOP refreshment session to provide feedback on how to improve workplace procedures. Moreover, I believe that CARE cards play an important role in the feedback culture. It provides a lot of useful information including unsafe conditions, potential hazards,

and the reliability of equipment. CARE cards also motivate the employees with positive feedback.

I believe that a healthy feedback culture is crucially important for any organizational success for various reasons. We need a feedback culture to create a positive work environment that encourages employee engagement because engaged employees are more productive and committed and they are more likely to stay loyal to the company.

Just like employee engagement, feedback culture creates a more positive workplace and I think that having a positive and fun work environment creates a huge impact on employees' performance. Above all, I find it easier to communicate corporate objectives, goals, and areas of improvement through a feedback culture. ■



Nandar Lin
Junior Executive
Office Assistant
Executive
Management
Office

I believe two-way communication is necessary in everyday life especially for every business organization. To achieve effective communication, to obtain effective outcomes, and to create a healthy work environment, there has to be a two-way process between the colleagues like team members, team leaders, and/or department heads. For instance, when performing a task, having two-way communication is important, in other words, giving and receiving honest feedback reduces frustration and miscommunication between colleagues, which in most cases, turns out to be time-consuming and ultimately affects overall productivity. At work, we have performance evaluations and according to the PMP process, we need to first write a self-assessment where we write down what we do and

what we think about our performance. Then, we share and talk with our team leaders and/or department head about our performance. During our discussion, our team leader would discuss what he or she thinks about our performance including areas where we are good at and also, areas that need improvement. Further, we would talk about our current assigned jobs and share ideas, suggestions and feedback on how to improve our performance. I think this is a delightful culture of our department and the company.

To further highlight the importance of having effective communication in a professional work environment, developing a communication strategy among the employees is essential. Listening is important as much as giving honest feedback, suggestions, and asking questions. When we work on an assignment or give out information to our colleagues, we have to make sure that there is no misunderstanding between us and the message is clearly delivered as intended between the senders and the receivers. This type of effective communication fosters a more successful work environment.

As an employee, I consider receiving feedback from my manager or team leader is a great opportunity for us to become better performers because only then, we can spot and understand our weaknesses and strengths and what the organization expects from us. This can drive us to become more motivated and productive employees at work.

At our organization, we can freely state our opinions and receive a positive response, both formally and informally. Most of the time, I give positive feedback and offer constructive ideas. Some people would relate the word 'feedback' to something negative but we need to realize that it is a great opportunity to make changes and improvement so that we become better at what we do.

Therefore, I'd like to say that it is healthy and essential to stay engaged with one another at work by giving and receiving information about our performance or overall experience. I believe in good quality feedback and two-way communication at work. Remember that developing communication skills can help us avoid conflicts and compromise, and help us in better decision making. ■

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A TRIBUTE TO INGENUITY

Dr. Eloi Dolivo @ the OGDR (Old Geezer Doc Rock)
Exploration & JV Manager

Ingenuity (from the Latin word for "engineering") is the quality of being inventive, clever, smart, and original in generating and applying ideas to solve problems or challenges.

On Monday 19 April 2021, a drone helicopter lifted up to 12 feet, about the height of the ceiling of the room you are sitting in at your home or office, hovered for 39 seconds, and safely landed. So what?

Except that this helicopter was flown by NASA on planet Mars, and became the first-ever plane successfully flown by mankind outside of planet Earth. Except that the project manager is a Myanmar-born and raised, later US-educated, lady. This achievement is deemed comparable to the first controlled flight on 17 December 1903 of a heavier-than-air airplane on a North Carolina US beach by the Wright brothers.

This note is a tribute to the Ingenuity, as well as the tenacity and the humility, of Daw MiMi Aung, who may be an example to all of us in these most challenging times of the history of the country for more than a generation. But to appreciate the person, let's first appreciate the awesome science and technology behind her feats and foremost the landscape where it took place.

Planet Mars: super-far, super-thin atmosphere, super-cold

No greenish beings are living there for sure. Aren't there plenty on Earth already?

Super-far: Mars is the next planet beyond Earth away from the Sun, with an orbit at 34 million miles from our still blue planet, some 55 million kilometers, about 1,425 times the distance from Moon to Earth. These days, at the time of this issue of Insight, Mars is about 225 million miles (362 million kilometers) away since Earth and Mars do not revolve around the Sun at the same speed. This means that a radio signal takes 20 minutes to reach the Red Planet.



Super-thin atmosphere:

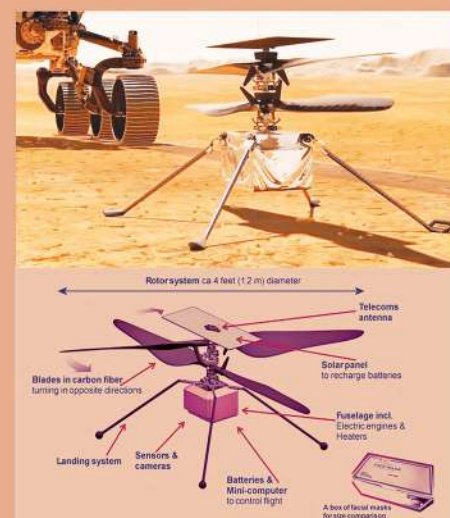
Mars is so far devoid of life and water, but once upon a time, some four billion years ago, long before life existed on Earth, there had been some running water on Mars. Meanwhile, however, Mars still has an atmosphere, not

a breath-taking one though, filled with carbon dioxide to approximately 0.6% (or 1/160) of the atmospheric pressure at sea level on Earth. In other words, the Martian atmosphere is as thin as the atmosphere on our planet 112,000 feet (34 kilometers, almost four times the height of Mount Everest) above sea level. No helicopter can fly at this altitude on Earth.

Super-cold: It is also incredibly cold, on average minus 51°F (minus 46°C, compared to 3°F or minus 16°C in our deep freezers). As of April 2021, at the time and site of the "Ingenuity" flights, the temperature varied between minus 13°F (minus 11°C) during the day and minus 116°F (minus 47°C) at night.

The "Ingenuity" Mars helicopter The aircraft

After the Phoenix mission in 2007-2008, the US government decided in 2013 to go back to Mars to check whether some free water had existed on the Red Planet, and therefore possibly even some sort of early life. In preparation for the return of US spatial agency NASA on Mars, a special rover named "Perseverance" was designed, which gave its name to the mission.



The Ingenuity Mars helicopter; modified drawing from NASA press kit

It was also decided to take this opportunity to build a Martian helicopter on a small design by NASA's Jet Propulsion Laboratory (JPL) in 2014.

That helicopter would be to serve various purposes in case of success, such as scouting paths for rovers and reaching areas that the rovers could not reach.

The challenges were to design a helicopter that would fly in ultra-thin atmosphere, even though in lesser gravity, in ultra-cold conditions, while monitoring and flying it from up 250 million miles away.

Some promising engineering designs and trials were successful from 2016 to 2018, but it is only in 2018 that it was decided to attach the tiny robotic helicopter under the belly of the "Perseverance" rover, which was launched on 30 July 2020.

Named "Ingenuity" after a country-wide contest, the little chopper weighs 4 pounds, 1.8 kilograms, barely the weight of the latest generation laptop, and is smaller than a child's bicycle. Yet it is packed with the latest technology. It is electrically propelled by two rotors turning in opposite directions to prevent it to rotate uncontrollably, and which are mounted along the same vertical axes.

Its payload is a heating system to keep critical components at a reasonable temperature, a high-resolution camera for navigation, landing, and surveying the terrain, and a communication system to relay data to the "Perseverance" rover. The engines are powered by six lithium-ion batteries charged by a solar panel, providing enough power for flying for some 90 seconds.

To provide lift in this ultra-thin atmosphere, the rotors turn at 2,400 revolutions per minute (about as fast as a diesel engine) versus 400-500 revolutions per minute for the main rotor of a helicopter on Earth.

Because of the incredible distance between Earth and Mars, it is impossible to play with a joystick as on a TV game to fly this helicopter. Instead, operators on Earth send their pre-programmed instructions to the Mars orbiter, which relays them to the "Perseverance" rover, which in turn talks to the "Ingenuity" helicopter, from which the answers and data travel the reverse way back to the control center at the JPL in California.

While this is an aircraft, it was constructed to spacecraft specifications in order to endure the tremendous acceleration and vibration during launch.

Operations

The "Perseverance" mission was launched on 30 July 2020, and rover "Perseverance" landed on Mars on 18 February 2021. After unloading the drone from its underbelly, "Perseverance" drove approximately 100 meters away to allow for a safe distance while being able to communicate. The "Ingenuity" helicopter was deployed on 3 April 2021 and sent a picture of its surroundings transmitted back to Earth on that same day.

After several tests, on 19 April 2021, at 11:30 hrs Universal Time (6:00 pm Yangon time), the "Ingenuity" helicopter successfully performed the first powered flight on Mars, lasting 39.1 seconds. It rose vertically about ten feet, hovered, rotated in place 96° in a planned maneuver, and landed. This first flight was filmed by the "Perseverance" rover from a safe distance of about 100 meters.

On 22 April, a second flight was also successful, with "Ingenuity" climbing to 16 feet (5 meters, the height of the lobby of Vantage Tower) and traveling 2 meters away and back, making three turns, and hovering for 52 seconds as instructed. As of 20 May, this flight had been followed by three more flights which all exceeded expectations of its planned missions. On its fifth trip, on 7 May, "Ingenuity" traveled up to 129 meters (423 feet) away, climbed to a record altitude of 10 meters, hovering for more than a minute and a half in the Martian atmosphere while flying to a new "helipad" that it had been scouting during its fourth flight.

Way Forward: Such is the Success that Mission is Expanded!

As of 20 May, this story is truly to become an extraordinary feat of Ingenuity: a sixth flight is now planned for the last week of May. This flight is entirely unplanned, even after the first successful flights of the "technology demonstration", and will be the first of an entirely new "operations demonstration phase", considerably extending the life of this amazing chopper. For the first time, the Ingenuity helicopter will land on its next helipad without having scouted it beforehand, just by surveying it on the spot and making its own decisions on where to land.

The "Ingenuity" helicopter will now be tried to scout for the "Perseverance" rover next routes and parking spots, adding a third dimension to the two-dimensional perspective of the rover. This new operational task was in fact the objective of the next mission on Mars but is now to become a reality years ahead of plans. A bit like reaching 70 years of age, and hearing "tomorrow you'll be 17 again".

The Team and the Leader

Such awesome feats are always the feats of a team, and the quality of a team reflects the quality of its leader. Designing, developing, building, powering, trying, improving, packing, delivering, monitoring, flying this amazing ingenious little helicopter, was the feat of some 120-people team of engineers, led by project manager Daw MiMi Aung, a 53-year-old lady of Myanmar ascent.

She was born in Illinois in 1968 where her parents met while preparing their doctorates. Daw Hla Hla Sein, Daw MiMi Aung's mother, was the first lady holding a doctorate in mathematics in Myanmar and became an extremely popular teacher here when the family returned to their home country in the early 1970s.



Young Daw MiMi Aung with her family in Yangon, Source : www.mmmtimes.com/news/burmese-american-engineer-powering-nasa-mars.html

Daw MiMi Aung returned to the USA aged 16, to pursue her education, and studied electronic engineering at the University of Illinois, where she earned her Master's Degree in 1990. Her thesis was on communications and signal processing. During her Master's studies, one of her professors mentioned NASA's Jet Propulsion Laboratory (JPL) work in deep space exploration, and on the year of graduation, she joined JPL in Pasadena, California where "Ingenuity" was later developed.



Source : mars.nasa.gov

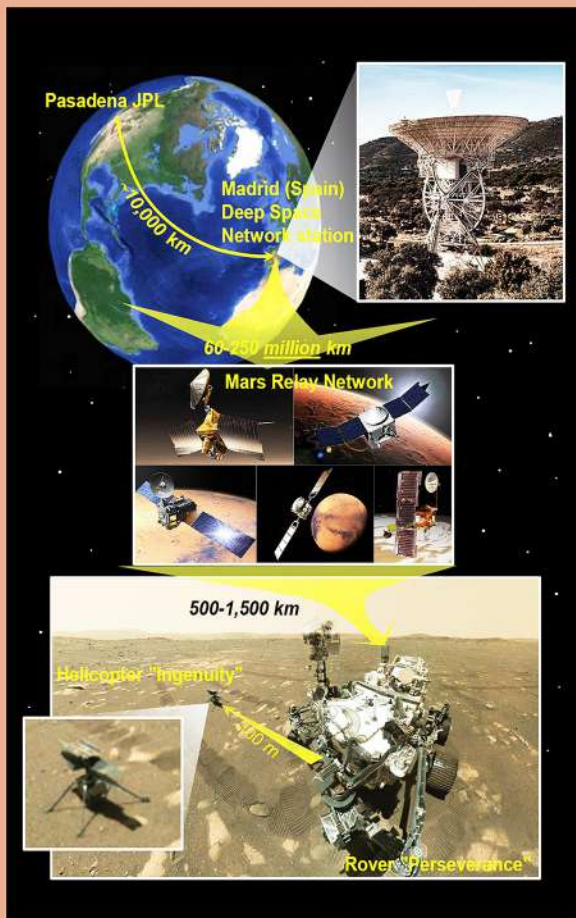
As an electronic engineer by trade, Daw MiMi Aung worked on a variety of projects related to spaceflight and interplanetary communications, such as NASA's Deep Space Network, the global network of facilities that supports NASA's communications with all of its satellites, including five now revolving around planet Mars to talk to the "Perseverance" rover and the "Ingenuity" helicopter.

Daw MiMi Aung then exercised her skills and talents on spatial communications, guidance, navigation, and control sensors, and she was promoted to group supervisor in 2011.

In 2013, Daw MiMi Aung became deputy manager of the Autonomous Systems Division, and in 2015, was appointed head of the Mars "Ingenuity" helicopter mission. On this opportunity, acutely aware that she was spending taxpayer's money, Daw MiMi Aung installed a webcam in the clean-room at JPL that allowed the public to watch the development of the helicopter. Daw MiMi Aung was selected as one of the top "100 inspiring and influential women" in the world by the BBC in 2019.



Project Manager Daw MiMi Aung with deputy operations lead Teddy Tzanetos and chief engineer J. (Bob) Balaram (an alumnus of the Indian Institute of Technology-Madras) monitoring ground trials of the "Ingenuity" helicopter



The long journey of instructions to helicopter "Ingenuity" from command center in JPL Pasadena, via Madrid's station of NASA Deep Space Network to one of five satellites now orbiting around Mars to rover "Perseverance" and finally to helicopter "Ingenuity"



The Field is the School; Plants are the Teachers

Wit Hmone Tin Latt

Being a farmer is more than a job. It is a way of life full of learning opportunities.

For farmers, the weather is never predictable, and there is always something that needs to get done before the sun goes down. But at the end of each day, they achieve something palpable. Without even noticing, working on a farm can develop a level of patience and integrity that takes many people years to acquire and learn. Nowadays, most of the rural youth do not want to farm for a living. We cannot blame them—it is hard work. Aging farmers often rely on hired labor, which pushes up production costs. But underneath that notion, there are many life lessons one can learn from farming.

Children who grow up on a farm in rural areas learn to create their own fun and entertainment. The great outdoors is a real-time video game, filled with trees to climb, bugs to catch, and sunshine to soak up. Kids who grow up on a farm do not need to play with farm animals on their iPads, because they actually have real farm animals to watch and play with. Farming teaches a person from a young age to appreciate the ability to create his or her own fun, rather than rely on others for happiness and enjoyment.

Farming can truly be a family affair. Families that farm together share and pass on family values, knowledge and skills which can lead to forming stronger communities and sustainable lifestyle. Children who grow up on the farms are resilient and tough, and they understand life struggles and know how to cope with inconveniences and challenges. They learn to appreciate togetherness and simplicity of life.

Nowadays, farming communities in the Dry Zone are found to be most sensitive to the impacts of erratic rain, land degradation, limited access to quality inputs, and unsupportive agricultural policies. Moreover, these shocks and stresses were found to be in a state of constant interaction, serving to exacerbate one another in several ways. The overall result is a deepening cycle of debt that further reduces the ability of households to cope and adapt to dynamic social, economic, and environmental conditions. For example, farmers often have to cope with restrictive repayment conditions by

selling their crops immediately at harvest when prices are at their lowest. In turn, farmers are unable to produce an adequate profit, invest in higher quality inputs, or invest in savings. As a result, farmers and laborers are becoming increasingly impacted by acute shocks that affect product quality and quantity due to low rainfall or pest infestations.

In the near future, MPRL E&P's CSR program aims to establish community-based, non-formal educational programs to groups of 20-30 farmers from Mann Field communities through self-discovery and participatory learning principles. The school will bring together farmers who live in the same village or catchment that are sharing the same ecological settings and socio-economic situations. This will in turn provide them with knowledge and realization that they can actually control many factors which influence their harvests.



The upcoming Farm Field School (FFS) is a participatory non-formal adult learning program where farmers and extension staff will have a chance to debate over observations including climate monitoring and apply their previous experiences and share new information from outside the community. Thus, FFS as an extension methodology will form a dynamic process that is practiced and controlled by the farmers to transform their observations to create a more scientific understanding of the crop or livestock agroecosystem.

MPRL E&P CSR program's ultimate aim of initiating the Farm Field School is to improve farmers' knowledge and decision-making abilities, so they can build up sustainable agricultural systems that preserve environmental integrity, increase economic benefits, and promote social equity. FFS will consist of groups of people with a common interest, who get together regularly to study the "how and why" of a particular topic. The results of the meetings will be management decisions on what actions to take. All learning will be hands-on and based in the field, and learning materials will be learner-generated. The role of the extension worker will be very much that of a facilitator rather than a conventional teacher. Once the farmers learn and know what they have to do after observation and being in the fields, the extension worker will take a back-seat role and offer help and guidance only when required. This way, farmers understand the ecology and become experts in their own field.

FFS will also provide an opportunity for farmers to practice and test or evaluate sustainable land-use technologies and further introduce new technologies by comparing their conventional technologies developed using their own traditions and culture. Pretty much, FFS will be a school without walls. It will be centered on the concept of hands-on learning with the goal of building on the farmers' skills and enhancing their capacity to critically analyze and solve local agricultural challenges. The school will also help provide vulnerable young people a community to tap into and build a foundation for life skills that are invaluable for a better future. ■



From Cover Page

Imported fuel comes with higher costs than fuel that is sourced from domestic energy resources. Imported fuel incurs additional costs associated with shipping or transport, handling fees, insurance, and customs duties. Let's take a closer look at just one of these cost factors: shipping and transportation.

At the start of the COVID-19 pandemic, expectations were that seaborne trade, including containerized trade, would experience a strong downturn. However, although this was true at the very onset of the pandemic, the cost of shipping over the past year has nearly tripled. The increase is a result of dramatic shifts in consumption as consumers have redirected money, previously spent elsewhere (for example, at restaurants, malls, or at the cinema), towards a record amount of imported goods purchased online. This dramatic shift in consumer behavior also appears likely to be sustained even in the post-pandemic future. In the near term, with the pandemic being far from over particularly in the ASEAN region (for example, Thailand, Singapore, and Malaysia have locked down major cities and areas once again) the cost of shipping is projected to continue to set new records going forward.

You may have noticed that prices of gasoline as well as food in Myanmar have risen and is understood to continue to escalate going forward. This is partly due to the increasing costs of imported fuel which in turn makes transportation of goods more expensive. It is worth recognizing that the general

“ Oil produced from the Mann field is entirely absorbed by MOGE, refined to become fuel, and is then entirely sold back in the domestic market at a far more affordable price than fuel that is imported from overseas. ”

public and more specifically, the consumer (like you or me) ultimately pays for and absorbs this higher cost of fuel.

What is further not helping to address the escalation of fuel prices is the fact that many onshore oil-producing assets in Myanmar have suspended production since February this year, including our Mann field project. At this point, I also believe it is worth clarifying a misconception that has materialized regarding assets such as Mann field. Oil produced from the Mann field is entirely absorbed by MOGE, refined to become fuel, and is then entirely sold back in the domestic market at a far more affordable price than fuel that is imported from overseas. As a result, there are no direct revenues that MOGE is able to receive from the Mann field project, whereby the key benefit is to simply

provide a domestic source of much more affordable fuel to consumers within our nation. This is very different from the current offshore producing assets such as the Yadana field where a majority of the gas produced is purchased by a third party (Thailand in the case of Yadana) which actually generates revenues for the project and MOGE.

The overall impact of this domestic production shutdown is felt most by ordinary people and citizens of the nation in terms of increased fuel costs since the domestic supply of fuel for the transportation sector accounts for a portion of overall consumption and supplementing this with supply from overseas sources is more costly. Although it makes up a smaller proportion of overall consumption, crude oil from onshore fields produced and refined domestically benefits the general public largely because of its price and quality, which is suitable for common machinery used by the majority of our people. To date, our country has enjoyed almost US\$350 million in savings as a result of our company's efforts towards enhancing incremental production in Mann field. I am proud that ultimately, these savings are enjoyed by the consumers and end-users within our country.

In closing, I take this opportunity to revisit the core principle of MPRL E&P's mission - to improve livelihoods by being at the forefront of providing energy to drive progress in the nation. I hope you have enjoyed my perspectives, and in the meantime, hope you all continue to stay positive and test negative. ■





EMBRACING A STEADY RIDE

Thal Sandy Tun

Meet Daw Soe Thinzar Aung who serves as the Executive Secretary to the Country Manager at MPRL E&P. She leads a life underpinned by the qualities of stability and humility with a strong belief in karma.

Soe Thinzar Aung
Executive Secretary
Executive Management Office

Taunggyi native, Soe Thinzar Aung spent her childhood and adolescent life miles away from the busy commercial hub, Yangon. "In my early teenage years, I did not know where Yangon was, much less thought I would go there one day," the 27-year-old said with a chuckle.

A mother of three daughters who was staying in Yangon was a customer of Soe Thinzar Aung's mother who runs a tailor shop. During one of her visits to the shop, she randomly asked Soe Thinzar Aung's mother what her plans were for her daughter as she was approaching her graduation from high school in Taunggyi.

When her mother said that her daughter Soe Thinzar Aung might be going to a local college, the woman suggested that she move to Yangon during the holidays and take some English and basic computer classes while she waits for her matriculation marks and that she could stay with them at their apartment during the break.

"Following her suggestion, I came to Yangon and took English and basic computer classes in Hledan for about three months", said Soe Thinzar Aung.

Then, her pivot into the professional world in Yangon a few years later seemed like a work of karma, Soe Thinzar Aung insisted. She explained, "When my matriculation marks resulted in a narrow miss from enrolling into top universities in the country—the University of Medicine, University of Foreign Languages, and Myanmar Maritime University, I could not think about what else I should study or pursue. I had no plan B and so I relied on my brother, the only sibling I have, who helped me with the process of choosing other schools that were not on my list and submitting college applications. Long story short, I ended up furthering my studies at the National Management Degree College (NMDC) in downtown Yangon which kind of was a blessing in disguise for me! I felt that I was meant to study the management field."

Soe Thinzar Aung spent three years at NMDC touching on a variety of subjects related to the

field of business as well as English as a language course. She was very content with the broad base of subjects she got to study from HR, Sales and Marketing to International Business, Management and stock markets.

"I found the subjects new and very interesting. The professors were very good at teaching as they were veteran lecturers from the Yangon University of Economics. I took part in site visits to factories in the outskirts of the city and submitted a group-based term paper on customer satisfaction of a well-known restaurant chain in Yangon at the end of the course. I received my Bachelor's Degree in Business Management in 2013."

As a fresh graduate from college, Soe Thinzar Aung was not sure about whether she should go back to Taunggyi and be with family or stay in Yangon but soon enough, she found herself a sales executive position at a long-time pump specialist company and decided to stay in Yangon.

During her professional work at the company, she somehow got to come in contact with her future employer: "I visited Vantage Tower about three times while it was still being constructed. At that time, the company I was working for was to install a water tank at the top of the building and my task was to collect the necessary information for the sales agreement contract. I never thought I would be working in that structure of bravura one day!"

Another coincidence was when she bumped into an employee from MPRL E&P at a part-time diploma class.

"I graduated in January and I started working full time the following month. I spent three years at the company before I started thinking about joining an INGO based in Yangon. I even made an effort to materialize the plan by attending a part-time diploma course in International Relations at the Yangon University. That was where I met a staff working at MPRL E&P and I mentioned to her during our first conversation that I had applied for a position at the company and was waiting for a reply," Soe Thinzar Aung recalled. Soon enough,

she received an invitation for a face-to-face interview and right away, she received the job offer letter. That fast!

At MPRL E&P, Soe Thinzar Aung's working day normally starts at 8:30 A.M. in the office, in her well-ironed uniform with a neatly-styled hairdo. Her first task is to ensure all computers and machines in her boss's room are working and operating efficiently. Then she would check the calendar to stay on top of the upcoming administrative responsibilities for the day.

"My job involves both routine assignments as well as ad hoc ones. Some of the important skills I have garnered include building trust, developing a high level of discretion, representing myself well as Executive Secretary, completing the tasks in a timely and efficient manner, and making myself efficient and productive. Because my parents live in Taunggyi, I have no family responsibilities to fulfill once I get home from work," said the Executive Secretary.

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DELIVERING STRATEGIC VALUE

Thal Sandy Tun

This is an interview with U Khaing Tun Zaw, Senior Auditor at the Internal Audit Department of MPRL E&P as part of the Employee Spotlight series.

Khaing Tun Zaw

Senior Auditor
Internal Audit Department

What does an internal auditor do? What kind of company ecosystems or processes do you have to audit in addition to financial ones?

An internal auditor is a trusted consultant tasked with advising upper management on how to best manage the company's risks and goals.

The role of an internal auditor is to provide an independent assurance that an organization's risk management systems, internal controls, including its corporate governance, processes, and compliance with relevant laws and regulations are adhered to. As such, the audit encompasses beyond financial reporting or the Finance Department and can often include audit on IT, Procurement, and HR as well.

Given the importance of this function, internal audit often reports directly to the Board of Directors rather than Senior Management of the company, to ensure check and balance can be maintained and its work is absent from any undue influence.

How is the field of internal audit different from accounting or finance?

Strictly from an accounting and finance perspective, accounting is the function of measuring and recording financial transactions which culminate in the preparation of a full set of financial statements of an entity, however, auditing involves verifying the accuracy and correctness of these accounting entries and that financial statements are prepared based on generally accepted accounting standards.

Beyond this, an internal auditor reviews the process by which financial transactions are recorded, for instance, whether appropriate approvals have been obtained for a certain payment transaction; approval limits have been observed; accuracy of financial numbers recorded against supporting documents; validating if proper internal controls are in place to identify and minimize any potential risks, ranging from erroneous financial numbers to fraud.

Both accounting and auditing are integral functions to the various finance functions and they complement each other—with accounts being unreliable without any audit and audit being redundant without the completion of financial statements.

Could you please give us a general description of an internal auditing process in the upstream oil and gas industry?

The primary role of internal audit in the oil and gas industry is no different from that of internal audit in any other sector—to review and assess independently the integrity of the financial statements, adequacy of the system of controls in place to identify and manage key business risks.

How does an internal auditor differ from an external auditor? What does it mean to be 'independent' in adding value to the business operations as an internal audit team?

Internal auditors are company employees, while external auditors work for an outside audit firm. Internal auditors will examine issues related to company business practices and risks, while external auditors examine the financial records and issue an opinion regarding the financial statements of the company.

According to the Institute of Internal Auditors, internal auditing is "an independent, objective assurance and consulting activity designed to add value and improve an organization's operations. It helps an organization accomplish its objectives by bringing a systematic, disciplined approach to evaluate and improve the effectiveness of risk management, control, and governance processes. The role of internal audit is to provide independent assurance that an organization's risk management, governance, and internal control processes are operating effectively. We must be independent from the operations we evaluate and report to the highest level in an organization: Board of Directors or Senior Management.

What kind of support can an internal audit team provide to the company's leaders in managing risks in the context of a developing economy as well as the recent coronavirus pandemic?

Operating in a developing economy usually means the business eco-system is not fully developed and can be exposed to various kinds of risks associated with corruption or fraud, cyber-security, supply chain, counter-party's reputation, human capital (such as not having the right talent for a specific role) and frequent cash-based transactions. In these instances, the Internal Audit team can identify if the organization's current process is equipped to identify and minimize high-risk areas and recommend ways to implement more controls to mitigate the risks.

In the case of the recent coronavirus pandemic, the Internal Audit team can evaluate if the company's business continuity plan is sufficiently robust to accommodate employees that are working remotely, security of data or information being transmitted over private or public internet network; the ability of the organization to continue to function uninterrupted; as well as that health and safety measures are adequate to minimize the spread of virus amongst the essential staff who are required to attend office.

Could you please share your education and professional background?

I graduated with a Bachelor's Degree in Commerce from the Yangon University of Economics in 2010. I am qualified to continue my further education to obtain a Master's Degree.

In December 2010, I started my first professional career at Win Group Audit and Consultant Firm as External Auditor.

In July 2012, I joined Myint & Associates Co., Ltd. as a Junior Auditor. I was initially assigned to Myint & Associates Construction Co., Ltd. to perform certain roles related to the construction of Ngwe Saung Yacht Club & Resort (NSYC). In 2013,

I was re-assigned to M&A's Internal Audit Department. I was then transferred to MPRL E&P Pte Ltd. in March 2020 as Senior Auditor.

What are the most enjoyable and interesting aspects of your job as an internal auditor at MPRL E&P?

I was fortunate to gain new experiences and knowledge in the oil and gas sector, both onshore and offshore, by working as a Senior Auditor at MPRL E&P. In addition, the Head of Department assigned me to prepare financial statements of the head office which further enhanced my accounting knowledge, considering that I have not been heavily involved in preparing financial statements since 2012. I always look forward to taking on new responsibilities and learning more about the industry.

What kind of skills and expertise should an excellent internal auditor have?

Generally, an internal auditor should have the following skills and expertise:

- Integrity
- Relationship-building skills



- Communications skills, including oral communications, report writing, and presentation
- Teamwork
- Diversity
- Continuous learning
- Problem-solving skills

- Knowledge in auditing, internal audit standards, fraud awareness, and professional ethical standards
- Knowledge in enterprise risk management

In the case of a company with no proper internal audit programs in place, what could happen?

A company which does not have proper internal audit programs is likely to experience lapses in corporate governance or at worst, breach regulatory requirements since proper check and balances are not in place. The implication could be reputational and/ or financial loss depending on the nature of breaches.

When was the last time you had traveled for recreational purposes amid your busy schedule? Was it a great trip?

The last time I had traveled for recreational purpose was in March 2020. I went to Bagan, also known as the Ancient City of Myanmar. While there were plans to travel within the country to visit other local attractions, I had to postpone my trips due to the coronavirus pandemic. I hope to resume my travels once the situation stabilizes. ■

From Page 5



Daw MiMi Aung rips up her contingency speech after the successful flight of Ingenuity on Mars. Her success represents hard work, exceeding performance, respected leading skills and a sense of humility.

Daw MiMi Aung is quoted to have said after the success of the first flight of "Ingenuity": "We have been thinking for so long about having our Wright brothers' moment on Mars, and here it is. We will take a moment to celebrate our success and then take a cue from Orville and Wilbur regarding what to do next. History shows they got back to work—to learn as much as they could about their new aircraft—and so will we."



The "Ingenuity" team

This most telling picture as a conclusion shows Daw MiMi Aung on 19 April at the announcement of the success of the first flight, while she was ripping apart the speech she had prepared in case of failure.

Hardly anybody, especially male probably, would have prepared for such an instance. Ignorance of what we do not know may lead to failures, especially in such challenging and complex projects. Daw MiMi Aung acknowledged this possibility of failure in an awesome sign of humility. Maybe along the lines of her ripped-up speech was a mention that we are fallible beings, it is okay to fail, as long as we learn from these failures. This is how science and technology progress, and we always win at the end through ... perseverance, the name of this Mars mission. ■

Hard work, exceeding performance, respected leading skills, yet humility

Want to follow the fate of "Ingenuity"? Just link to [Mars Helicopter - NASA Mars](#).

And what about building a paper chopper with your kids? [Student Project: Make a Paper Mars Helicopter | NASA/JPL Edu](#)





1989

The first office
on University Avenue
Kamayut township

The second office
near the 8-mile junction
Mayangone township



A Brief Trip Down Memory Lane

MPRL E&P Group of Companies was born out of the parent company, Myint & Associates Co., Ltd. (M&A) when it took up the Mann Field Project in 1996. All the companies share a founding story marked with milestone projects and old offices in their early entrepreneurial days while the country was testing with the idea of a market-oriented economy. In this issue of Insight!, we represent a photowalk to let both our colleagues and readers capture a sense of nostalgia by walking through a memory lane involving the very first office of Myint & Associates Co., Ltd. (M&A) located on University Avenue, Kamayut township, the second office near the 8-mile junction, Mayangone township, and the newest corporate office on Pyay Road, Kamayut township, widely known as the Vantage Tower. You can also find photos of the Kanbauk Project in Dawei where you will see many familiar faces that will bring out sentimental memories as we draw on inspiration for overcoming our current challenges.



The Myint & Associates Group

Suite 33, Building II, 8-mile junction, Pyay Road,
Mayangon Township



All Roads Start



N
E



1994

Base Camp
(Yadana Project)
Kambauk, Dawei



2000

Old Office Building of
MPRL E&P
Group of Companies
Pyay Road
Kamayut Township



t Here
**EVER STOP
XPLORING**

TRASH HERO

MYANMAR

not all HEROES Wear Capes

Hnin Wynt Zaw

A wise woman once said, “never doubt that a small group of thoughtful committed citizens can change the world: indeed, it’s the only thing that ever has.” That wise woman was Margaret Mead, a well-known American anthropologist, writer, and speaker throughout the 1960s-1970s. Here is a story about a small group of heroes, and they do not wear capes nor have “super” powers. In fact, they are everyday men and women that do extraordinary things that are super to us. They represent true humility by giving those in need and at the same time, as responsible citizens of the earth, take proactive measures to take care of our planet through education, collaboration, and kindness. So who are these heroes?

In April 2021, a group of 44 men, women, and children participated in a cleanup event in Bugwe Village in Ngwe Saung under the guidance of Trash Hero Myanmar. 200 kilograms of trash was collected around the community and in return, each participant of a household received a 28 pound bag (a sack) of rice, a staple necessity for a very ordinary family, thus the project name “Trash for Food”, a campaign led by Trash Hero Myanmar Coordinator Phone Kyaw Moe Myint. The initial idea was developed in April 2020 by a British lady known as “Mummy Sue”, a founder of Vera Thomson English School in Linthar Village, Ngapali, Rakhine. Since 2002, she and her team have been actively involved in helping the local communities get free English education and healthcare by providing them with life-changing opportunities one can only dream of in remote places like this. COVID-19 has brought more hardships to the local residents during the time of simultaneous financial and political crisis that is having an impact on everyone. Many local residents in tour destinations are confronted with unemployment, which in turn affected their family income. Coming together to create change, is something a superhero believes in especially in a time of ambiguity. A true hero steps up in times of crisis and this time around, Trash Hero Myanmar materialized the idea of giving and ran this “Trash for Food” campaign to provide relief for those in need while contributing to the community they live in.



Mummy Sue
Founder of Vera Thomson English School
Linthar Village, Ngapali

Led by Phone Kyaw Moe Myint, the second event was initiated a month after, on 8 May 2021 in Thazin Village, Ngwe Saung where 36 households participated in the cleanup and collected 260 kilograms of trash. The “Trash for Food” initiative has gained widespread popularity among the locals in Ngwe Saung because it was conducted by an already known group called Trash Hero Myanmar, a bunch of energetic diverse group of people carrying garbage bags wearing bright yellow shirts. Such a sight is hard to miss!



Phone Kyaw Moe Myint
Country Coordinator
Trash Hero Myanmar

In light of the current state of affairs around the country, the events are placed on hold for the time being, but the chapter has plans to continue with its efforts once the situation eases up. “The simplest act of kindness are by far more powerful than a thousand heads bowing in prayer,” said Mahatma Gandhi, powerful words from the father of the nation India who is also widely recognized as one of the 20th century’s greatest political and spiritual leaders. Kindness is free and has no limit.





Kindness is having a generous heart and having a selfless personality. A good citizen or hero does things to help others, not because of who they are or what they do in return, but because of who he or she is. This is epitomized by the campaign leader, Phone Kyaw Moe Myint who believes in fostering an awareness of mindful disposal of trash and yet expects nothing in return, just a simple show up and a smile. And as Buddhists, we believe in Dāna, a Sanskrit and Pali word for giving, generosity, and charity, which is an integral part of the Buddhist ethos and also a belief that is intertwined in the Trash Hero Myanmar mission. Remember, a simple act of kindness is never wasted and a simple act of caring is heroic.

Trash Hero Myanmar chapter began in 2016 and from the start, the goal is to expand its global footprint, a movement led and supported by Trash Hero World. The twist and turn of establishing the Myanmar chapter was unfolded by a passionate modest citizen, an avid sailor who has spent his life on the water, especially in the waters of Inya Lake which have sadly grown green and polluted over the years. Phone Kyaw Moe Myint never acknowledged this as a problem until he had a personal experience that has impacted his beloved

water sport and livelihood. So much to do but small steps can enable change; through small behavioral changes, building awareness, and spreading the word to help solve the global garbage crisis. A millennial that he is, his lifelong affair with the environment and the community will only grow bigger just like his commitment and passion for a better future. The upcoming generation called the “Zoomers” (born after 1996) who are more progressive, open-minded, and racially and ethnically diverse than their predecessors, will continue to strive for sustainability as they are more environmentally conscious people. It is not wrong to think our future is bright after all.

“Trash for Food” campaign has not only brought a tangible contribution to the community, but it also shows the power of unity, giving, and positivity because this year has been difficult for so many, and taking the time to help others if you are able is more important than ever. It can still be hard to find motivation or energy to get up and go—particularly when things around you are unstable and especially when you have to pick up someone else’s trash. But one must not be discouraged or get “turned off”, but instead be resilient and supportive of a good cause, something that is simple, non-confrontational, and attainable, and most importantly, an initiative that can be integrated seamlessly into any culture or tradition.

Today, Trash Hero Myanmar has grown quickly with 15 national chapters, who together have collected nearing 130,835 kilograms of trash with the help of almost 29,873 volunteers. Stories like this speak louder than words and through committed action, rising statistics, and rapid expansion of the organization, it is clear to see why the Trash Hero community has been standing strong as ever as a non-profit with charitable objectives. Because it is a charity, all programs are conducted by volunteers, and costs are covered by donations from various sponsors.

It is important to remember that giving back to the community does not need to be through financial donations, as long as we work together towards affecting societal and environmental change that increases the greater public good for all is what makes us a hero. Not all heroes wear capes; to me, anyone who gives from the heart is a hero. The iconic Superman, Christopher Reeves, says “a hero is an ordinary individual who finds the strength to persevere and endure in spite of overwhelming obstacles.” We live in an imperfect world and obstacles take us by surprise. We can all be heroes as long as we encourage each other and show acts of kindness, selflessness, and respect towards one another. The unknown heroes are around us. Heroes come in different shapes and forms, and remember, not all heroes wear capes. ■



From Page 9

During the public holidays, Soe Thinzar Aung likes to visit her family in Taunggyi and take care of her mother and grandmother, which means she misses opportunities to travel around the country like her colleagues and friends to explore, have fun, and recharge. There are still many places in the country that she has never been to: “Believe it or not, I have not been to Mandalay, the second largest and one of the historically important cities of the country!”

Belonging to the Danu, an indigenous tribe found only in Myanmar, Soe Thinzar Aung clarified she would normally be expected to speak the Myanmar language with an accent similar to that of

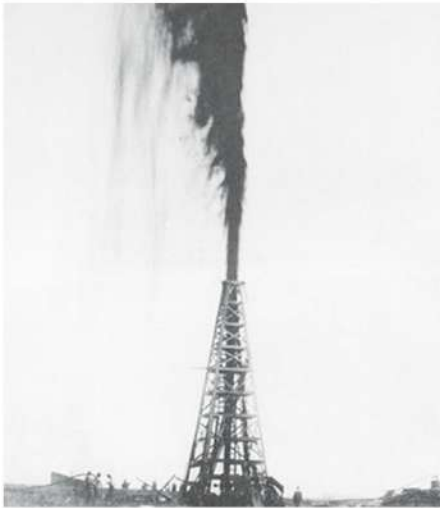
Intha, a Tibeto-Burman ethnic group living in the vicinity of the magnificent Inle Lake in the southern Shan State. Among the Danu population of approximately 160,000, the majority are Buddhist. Soe Thinzar Aung herself is one and she believes karma plays a key role in her life story: “I have no doubt that karma serves as the primary explanation as to why I happened to meet good people and work in a respectful workplace where I feel empowered and satisfied. It also encourages me to focus on the present and to make the best of it.”

Apart from her current profession, Soe Thinzar Aung revealed that she sometimes would dream about making fashion-forward bridal frocks as she

enjoys watching fashion shows on TV and looking at wedding gowns on display at high-end tailor shops. Maybe this is because of her mother who is a dressmaker and it seems that the apple doesn’t fall far from the tree!

She uttered, “When I was in high school, my exercise book for Geography was filled with pencil sketches of dress designs. If I were to join a medical school, I would try to become a plastic surgeon. If I were to become a designer in the future, I would like to be a wedding dress designer. The idea is the same—I want to make everyone look good, comfortable, and happy in their own skin.” ■

From Cover Page



The magnitude and complexity of an ultra-deep-water development, which will be installed roughly 2-1/2 km under the sea, is difficult to put into words. The size, cost, fabrication time, and functionality of the equipment are much more extensive compared to onshore and shallow water offshore fields and require much more pre-planning and design before moving forward with fabrication and installation.

The purpose of this article is to put into perspective, in very simple terms, the size and scope of the A-6 Ultra-Deepwater Project. The old saying, "A picture is worth a thousand words" will be applied to spare the reader a lot of boring technical jargon. The objective is not to fully describe the project, but to simply show with a few examples the magnitude and scope of the A-6 Project challenge that lies ahead.

By contrast with onshore and shallow water production projects, whereby much of the hardware is available "off the shelf", practically every component of deep-water production project is fabricated for the purpose and intent of the project on demand with stringent specifications.

First of all, a quick overview of what is involved in extracting gas from a mile and a half of ground below another mile and a half of ocean waters.

Wells are to be drilled into gas-filled sandstones deposited in submarine channels a few million years ago. Each of these wells will be capped by a production tree, to control the pressure, and to close or open the well depending on requirements. The gas from various wells will flow to a manifold, which controls the contribution of each well to the shallow water gas processing platform, before letting it flow to the markets. Meanwhile, a parallel circuit starting from the gas-processing platform is to send down the fluids and the power to control the gas flow with the manifolds and the production trees, via complex cabling and piping system known as "umbilicals".



Fig. 1: Typical Christmas tree used on onshore wells or offshore platforms with dry (i.e. off the water) trees. (Source: oilandgasmanpowerprovider.blogspot.com)

The Production Tree

Let's start with a comparison of a surface production tree to a subsea tree. The surface production tree, also known as Christmas tree, is found on land such as in the Mann Field, or on a production platform for petroleum fields under shallow water. A production tree is a system of valves placed on top of the well to control and direct the flow from the well into the flowline. The valves are either closed to stop the flow from the well, or opened to allow flow from the well, just like water

taps, but with much more pressure. On a surface tree, sometimes referred to as a "dry tree" because it is above the water, the valves can be manually opened and closed by a person by simply walking up to the tree and turning the handles on the valves. Easy surface access allows the valves to be serviced, repaired, or replaced as needed throughout the life of the well. In fact, the entire tree can be easily removed and replaced if needed. There are also emergency valves on the surface tree, which are controlled either with hydraulics or pneumatics, which automatically close to secure the well in an emergency situation. Due to easy surface access, these valves can also be easily serviced, repaired, or replaced as needed.

Figure 1 shows a typical surface tree, or Christmas tree, which is only slightly taller than an average person, weighs a few thousand pounds or less and usually costs in the range of US\$ 50,000 to 200,000 depending on the location and exact specifications. The delivery time for a tree of this type is usually a few weeks to a couple of months and is moved and installed with a standard crane.

Now let's compare that to a subsea tree. A subsea tree serves the same function as a surface tree, except all of the valves have to be operated remotely from a faraway surface location. In the case of the A-6 Project, the trees will be operated from the shallow water platform located about 30 km away using electric and/or hydraulic controls.

Because underwater repair and replacement are not practical and extremely costly, there is extensive redundancy built into every tree function: every valve, electronic and hydraulic circuit is duplicated to mitigate a breakdown. The trees have to be designed and built to last the entire life of the well, in the order of 15 to 25 years, without the need for any intervention. Not only do the trees need to withstand the conditions of the well, but they also need to withstand the severe conditions in 2,000 m of water, which includes hydrostatic pressures in excess of some 3,000 psi, i.e. some 200 times the pressure of your pressure cooker, and near freezing temperatures.

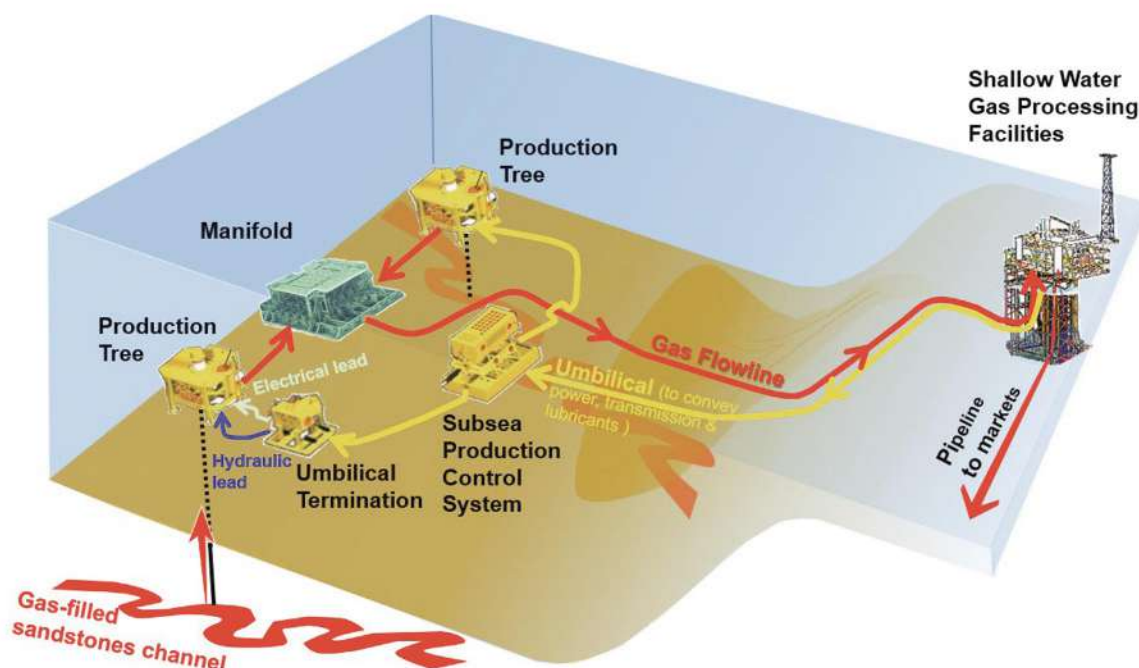


Figure 2 shows typical ultra-deepwater subsea trees. There is no such thing as a "typical" subsea tree because each one is specifically designed and fabricated for its specific destination depending on its application. However, to provide a perspective for comparison, these trees are suitable for 1000 to 3000 m water depth, weigh in the range of 20-50 metric tons (say two to five times the weight of a full Yangon commuter bus), cost US\$ 3-6 million, and require at least 12-18 months delivery time, starting with the procurement of special steel alloy for the application, which is then machined into the required components.



Fig. 2: Typical deep-water subsea Christmas trees (Source: Cameron/OneSubsea and GE/Baker Hughes)

The Control Systems

Production from onshore and shallow waters

One of the big challenges for subsea operations is how to open, close, and function the critical production components such as production tree and flowline valves.

Onshore and offshore platform operations typically allow for manual operation of all functions, with only key safety functions automated by hydraulic or pneumatic controls. This safety feature automatically shuts down the facility and closes all valves to stop well flow in an emergency. The entire system, which is located on the surface at the onshore production facility or offshore production platform, can be easily accessed for service, repair, and modification as needed.

The control system used for surface operations is typically via direct hydraulic control, a bit like the control between the steering wheel of your car and the wheels. Small stainless-steel tubing is run from a hydraulic control unit directly to the subject valve or control device. Putting or releasing hydraulic pressure on that tubing controls the function of the control device. Because the length of the tubing is short and the line is small, the volume of hydraulic fluid is small, and the response time is nearly instantaneous.



Fig. 3: Typical onshore hydraulic control unit (on left) with stainless steel tubing installed directly from the control unit to the valves or control devices (on right) (Source: Dynex/Rivett Inc)

Figure 3 shows a typical hydraulic control unit used onshore or on an offshore platform when the wells are very close to the production facility. The small tubing is installed from the control unit directly to the valves or control devices, which is an easy installation process by technicians, using standard materials which are cut, bent, and fitted as needed. An entire field installation can be done within a few weeks using readily available materials and tools.

Production from Deepwater

By contrast, in deep-water operations, where there is no or limited access, all functions must be controlled remotely. In the case of the A-6 Project, the control of the subsea systems will be from the shallow water production platform some 30 km away. Because of the long distance and the much larger volume of hydraulic fluid in the line, the response time to activate the device is too slow. Therefore, direct hydraulic control is replaced by electric or a combination of electric and hydraulic controls, and the simple stainless steel tubing lines are replaced by a complex bundle of control lines inside what is called an "umbilical". The word comes from the Latin word for "navel string" and somewhat describes the same system of complex blood vessels and nerves.

The umbilical serves as the communication between the platform and the subsea systems by transporting such features as electrical power, hydraulic pressure, data communications, and chemical injection. Other than the flowline that transports the oil and gas from the wells to the platform, the umbilical is the only connection from production trees to manifolds in deep waters to the processing platform in shallow waters. The interior of the umbilical contains steel hydraulic tubes, electrical cables, and fiber optic lines. The exterior is designed to be absolutely waterproof and withstand installation and operational conditions, as well as the extreme environmental conditions under some 2,000 m of water.

Each umbilical is specially fabricated for the type of functions of specific projects, and the exact length required. The fabrication process takes about 18 months, starting with the procurement of all the specialty materials needed, in the exact lengths required. Then the bundle of components is manufactured within the umbilical as one continuous length, and loaded onto large spools suitable for transport and field installation. This entire process for procurement, manufacturing, and transportation is typically about two years and can cost tens of millions of US dollars depending on the length and functions included in the umbilical.

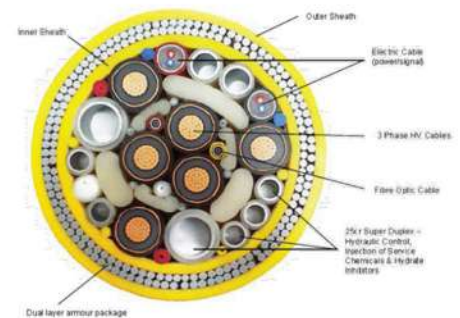
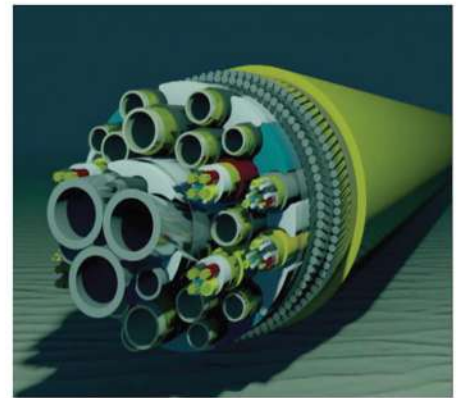


Fig. 4: Example of umbilical showing the internal bundle of control lines and the protective outer layer (Source: JDR and Oceaneering)

Figure 4 shows the internal components in a subsea umbilical, as well as the external protective outer layers, which provide waterproof insulation, tensile strength, and crush resistance during installation, as well as long term protection from the environmental conditions in extreme water depths. Figure 5 meanwhile shows the finished product on spools ready for installation.



Fig. 5: Example umbilical manufactured as one continuous length and loaded onto multiple spools for transport and installation (Source: JDR and Oceaneering)

Remotely Operated Vehicles (ROV)

Subsea components are designed to last and have built-in redundancy to avoid the need for intervention. After all, you can't just walk up and fix a broken part like the plumber in your bathroom, where divers aren't even able to access such extreme water depths. However, there are times when subsea components need to be accessed, such as when installed, periodic servicing, and when a device is not functioning normally. For those interventions, we use Remotely Operated Vehicles (ROVs).

ROVs are analogous to an underwater robot with two hands, which are equipped with manipulators that have high degrees of freedom and movement, as well as lights and cameras to serve as our eyes from the surface. The ROV is propelled by hydraulic or electric thrusters and piloted by skilled operators from a control room in a vessel stationed above the site of the facilities. The arms and hands of the ROV can be equipped with various types of tools for a variety of functions such as gripping, cutting, torquing and turning, and connecting hydraulic devices and supply.

All of the subsea components are specially designed to be installed and operated by ROV, as well as contingency intervention in the event of failure, required servicing, and testing.

Figure 6 shows an ROV along with a photo of the surface control room and pilot. An ROV similar to the one shown is capable of working in water depths of about 3000 m and is worth several million US dollars.



Fig.6: A deep-water ROV, which is operated by a pilot from the surface control room, serves as our hands and eyes to install, inspect and maintain the subsea systems

Other Subsea Components

By now, you are getting the point: in ultra-deepwater everything is bigger, slower, more complicated, and more expensive. However, to further enhance that understanding, have a look at few pictures illustrating how some surface components are equivalent to much more complicated subsea equipment for the same functions.



Fig. 7: Land vs deep-water pipeline crossing, a simple surface 16" pipeline tee (or T-crossing) is replaced with a massive subsea Inline Tee (ILT) (Source: gasprocessingnews.com and EAB Engineering)

A land-based production manifold costing a couple of US\$ 100,000, and which is used to direct and control the flow from each of a cluster of few wells, is replaced with a subsea production manifold which could weigh hundreds of tons and cost tens of millions of US dollars.



Fig. 8: Land vs deep-water manifold (Source: oilandgastechology.net and OneSubsea)

Onshore or platform equipment would normally be installed with a platform crane or crawler crane. Subsea components and pipelines are installed by dynamically positioned, specially equipped, deepwater installation vessels similar to the one in the following photo. The vessel in the photo is the Saipem Castorone which is 330 m in length (3 ½ times the length of a soccer field), has accommodations for 347 people, is capable of laying up to 48" pipeline, and is equipped with multiple cranes including 1 x 600-ton crane and 2 x 100-ton cranes. There are less than a dozen of such vessels worldwide, and you need to book them a couple of years in advance to timely avail of their services.



Fig. 9: Land vs deep-water workhorses (Source: Crane Market and Saipem)

Everything In Ultra-Deepwater Is Bigger, Longer, Pricier

We now know for certain that the A-6 Ultra-Deepwater Project equipment will be bigger, the schedule will be longer and the cost will be higher. But what we are also hoping to achieve, at the same time, are big opportunities for learning and development of our Myanmar staff, good returns for our investors, and even larger future opportunities stemming from the successful implementation of the A-6 Project for the benefit of the whole Myanmar nation, including the pride of the Block A-6 Integrated Project in ultra-deepwater being the first of its kind in ASEAN. ■

WAR & TECHNOLOGY

Kaung Myat Thu



Credit : Manipulation Images@21
(Raw Images from Internet)

Technology has been the primary source of military innovation throughout history and it continues to this day. It plays a vital role in any warfare as it shows the foundation of national power. Many examples have proven that the turning point of warfare is due to strategy, tactical application, and technology. One of these examples is the Imjin war, the fiercest battle between Japan and Korea during the 16th century.

The Japanese Invasions of Korea (1592-1598)

In 1592, Japanese navy vessels carrying land forces crossed from Tsushima strait, easily brushed aside two Korean naval squadrons, and landed at the port of Busan in southern Korea. Only two weeks after taking control of Busan port and fort, the Japanese quickly succeeded in occupying large portions of the land of the Korean Peninsula with the advantage of unity of command, fast marching method, and superior weaponry in the form of matchlock firearms.

The climax between Japan and Korea began when the occupying Japanese land forces in the northern part of the peninsula were in dire need of supplies from the rear. The Japanese navy responsible for securing a stable food supply for the occupying land forces was crucial in securing lines of communication back to Japan, making the whole situation more interesting.

The Koreans realized what was happening and so they cut off the Japanese supply chain between the rear and the frontline by blocking the route of the Japanese navy supply to the Pyongyang fortress. The Korean turtle ships played a life-changing role in naval warfare against the heavy attacks from the Japanese that they decided to cut them off from resupplying from Japan. With the help from the navy, the Korean backup land forces in the northern part of the peninsula were able to recapture Pyongyang and Seoul and pushed the Japanese forces southward. The Hwachas, also known as fire chariots, were very effective in land battles, just like the turtle ships. This represents classic warfare in East Asia that broke away from traditional warfare because of its usage of modern weapons and machinery such as matchlock firearms, cannons, turtle ships, and hwachas in the 16th century.



Technology and Warfare

The Imjin war shows the geo-political significance in East Asia as it changed the course of world history and most importantly, it revolutionized the technology of weapons and machinery. The Korean turtle ship was a new type of warship in the 16th century; it is known as the world's first armored warship. Similarly, the Korean hwacha was a new type of firearm in the 16th century and is the world's first multiple rocket system.

We are currently in the 21st century. Technology trends are changing the outcome of warfare which depends largely on information technology and modern weaponry. Today, there are many businesses and organizations known as "data centers" and they house computer rooms inside of large military machines that are set to work on specific data, tasks, and programs. Thus, data centers have become to play an important role in military warfare because of their technological advancements in managing sensitive and large information. Furthermore, with high bandwidth capacity, the availability of the control of equipment, data and information, maps, analytical data, and other important and sensitive data, these data centers contribute to decision-making while improving

operational performance and efficiencies. As a result, many military organizations around the world are now investing in data centers to manage extensive and sensitive data in real-time.

Technological advancements have contributed to the way battles are fought and as new machinery enter the industry, the battlefield continues to expand and evolve. Nevertheless, it is exciting to see how technology has impacted warfare and what the trend would be for the near future. ■

Evolution of the Ancient Korean Battleship



Evolution of the Ancient Korean Missile System



Old Hwacha



Modern Hwacha
(Multiple Rocket System)

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FINDING a Little CALM in the Midst of Chaos

Hnin Wyat Zaw

We are currently living in unprecedented times as if we are in the middle of some crazy movie with a vicious virus rapidly making its way around the globe. And amidst this pandemic, another surprise occurred out of nowhere; the military took over the state administrative duties in the early hours on 1 February 2021. It has been quite an emotional journey for all of us. We feel anxious and concerned about what the future holds. There are times we feel lost and discouraged since everything around us is so gloomy. Media and news outlets show daunting global figures of new coronavirus infections and death rates, which simply frighten us even more. Every aspect of our daily routine has now changed where we wear a mask as soon as we step outside our home and we practice social distancing in public areas. Your office is now your home, your classroom is now your bedroom. How do we stay positive and keep ourselves sane when it is hard to accept the "New Normal" through sudden change and uncertainty? Deep inside, we feel our mental health is taking a toll. These days, you feel more reactive when faced with stress or adversity, at home and work. You found yourself losing patience and temper easily.

It is important to know that you are not alone. And there is no easy or right way to navigate our

current situation. We can only do the best that we can with the resources that we have. To help revive and maintain positivity in our lives, here are three simple ways that will help you find a greater sense of calm as you navigate this "New Normal" in the midst of chaos.

Limit Social Media

We all go on social media to catch up on the latest news and honestly, being on it during this pandemic and coup can be overwhelming. Social media is addictive both physically and psychologically and it affects your life more than you realize it. Unknowingly, it is impacting our overall health especially when it becomes a habitual thing. The best thing about social media is that it is a free platform where you find juicy posts and comments written by various news sources and people that we know or we may not know and yet, we continue to stalk the news thread that we forget to sit back and rethink, how much it has already consumed our time and most importantly, how credible the sources are. Of course, it is important to stay informed but once you are caught up on the latest news, switch it off. Only check-in when you feel like you are mentally ready to do so. It is okay to unplug and take a social media break. Remember to step back to process the information and be wise when consuming information.



Control Your Feelings

It is common to feel negative, especially during difficult times like this. You feel more stressed than before and you notice how your feelings and reactions towards certain scenarios or even people have changed. You find yourself in situations where you are emotionally charged and ready to respond back, verbally perhaps physically. Take a moment right then to ground yourself and breathe. Stop for a moment and think about



what has triggered you. Acknowledge your emotions. Find that stimulus that caused that emotion, that reaction. Then find a better response, a formidable solution which may include accepting what is rather than resisting it. Have a positive mantra. Life is full of surprises and it is important to have a Plan B for the times when things go a little sideways. Most importantly, be gentle with yourself. How you plan out your day is your choice.

Practice Mindfulness

This is something most of us Buddhists are familiar with but unfortunately, we do not practice it enough. Mindfulness simply means having awareness of the present moment; knowing where we are and what we are doing. It is the opposite of multitasking, something we are so used to doing. When practicing mindfulness, you are creating a feeling of calm which can reduce anxiety and stress and help us be less emotionally (and physically) reactive. There are many types of practices or exercises you can do like meditation, yoga, daily self-reflection where you set a morning intention and then do an evening reflection, and so forth. We live in a fast-paced world and we are dealing with crisis fatigue; we are emotionally drained and overwhelmed. Remember to check in with yourself and find ways to recharge and manifest a sense of inner peace throughout your daily life. Here is a quick exercise found on Mindful.org that is easy to remember: ■

“When practicing mindfulness, you are creating a feeling of calm which can reduce anxiety and stress...”



Credit : Manipulation Images
(Raw Images from Internet)

A Mindful S.N.A.C.K.

The next time you're feeling stressed out, overwhelmed, or unsure, reach for a moment of calm awareness: a mindfulness SNACK. Here's how to do it:

S
Stop

Just stop whatever you're doing. (Stopping, by definition, requires us to begin again. We can always begin again.)

N
Notice

What is happening within and around you?

A
Accept

This is a tricky one. Whatever it is you're struggling with (time, kids, sleepiness, frustration) acknowledge it for what it is, without judgment.

C
Curious

Ground yourself with questions about your experience and environment: What am I feeling? What do I need right now?

K
Kindness

Respond to yourself and others (mistakes and all) with kindness and observe how that helps things get back on track.

mindful
mindful.org



22 MAY 2021 BIODIVERSITY DAY

We're part of the solution #ForNature

Looking to understand the importance of biodiversity in light of the recent coronavirus pandemic and IDB 2021

In 2019, the Centers for Disease Control and Prevention (CDC) and US government departments held a workshop on the topic of zoonoses and released the first report which prioritizes eight zoonotic diseases that are of top national concern for the United States: Zoonotic influenza, Salmonellosis, West Nile virus, Plague, Rabies, Brucellosis, Lyme disease and emerging coronaviruses which include SARS and MERS. In relation to this, the report also highlights the need for countries and governments to strengthen their role and capability to take the lead on disease surveillance, outbreak preparedness, response, prevention, and disease control.

What are Zoonoses?

According to the WHO, any disease that is naturally infectious from animals which include birds, mammals, fish, reptiles, and amphibians to humans is called a zoonosis. Zoonotic diseases (zoonoses) can be transmitted from animals to humans via water, food, the environment, or by directly coming in contact.

There are over 200 types of zoonotic diseases known to scientists which are responsible for both new and existing diseases and some of them are now preventable by vaccination. Zoonoses are of major public health concern and the coronavirus in 2020 has shown its tremendous potential to turn into a Hollywood version of contagions at a global scale.

Essentially, the coronavirus pandemic puts a difficult juncture on display: the arrival of zoonotic infectious diseases threaten human and animal health, economic development and the environment. Taking care of and appreciating biodiversity on the planet means safeguarding our civilization, and vice versa, destroying biodiversity means getting rid of a system that supports our very existence.

Understanding Biodiversity

Biological diversity, or biodiversity for short, refers to the enormous variety and web of life in all forms existing on the planet including humans,

plants, and animals. To give you a perspective, one study shows that up to now, approximately 1 million species have been named out of the estimated 8 million species of plants and animals on Earth. Scientists study how many species exist in a single ecosystem, for instance, a river or a forest. Myanmar's Ayeyarwady River is listed as one of the world's top thirty most important rivers due to its great biodiversity and you may be aware that Irrawaddy dolphins, the critically endangered species, live there. Some areas in the world have more biodiversity than others and these areas are known as hotspots.

All the life forms are interconnected and they work together to survive and maintain their ecosystems. This includes providing essential supplies like food, medicines, and clothing to humans as well as services such as purifying the air and absorbing carbon dioxide. In terms of monetary values, which will help us better understand and recognize the benefits humans gain from biodiversity, the World Economic Forum and the World Bank appraise the value of biodiversity and its contributions to the global economy at US\$ 44 trillion a year. That amounts to half of the value of the world economy in 2019 before the pandemic contracted it in 2020.



United Nations

#BiodiversityDay
#ForNature



Biodiversity Day 2021

A growing topic of interest not only to scientists but also to policy-makers around the world, biodiversity was a shorthand first coined in 1985 by Walter G. Rosen. In 1993, the United Nations formally launched the Convention on Biological Diversity (CBD), which continuously works to address threats to biodiversity through conducting scientific research and assisting conservation efforts in an internationally collaborative manner. The International Day for Biological Diversity (IDB) 2021, which is annually celebrated on 22 May for the adoption of CBD, has reinforced that biodiversity was and still is the answer to our sustainable development challenges, including climate change, health issues, food, and water security, and livelihoods. Despite these efforts, the fight for biodiversity is far from over.

A Worrying Trend

There is an increasing supply of evidence that indicates humans have been, ironically, good at degrading the natural environment at an accelerating rate. Over the past decades, we have increased the level of the material standard of living per capita. In this process of getting where we are today, we have damaged the natural environment to the point where Earth cannot fulfill our demand for its goods and services on a sustainable basis any longer.

There have been certain important studies by experts on the current state of affairs of our natural environment. The United Nations Environment Programme (UNEP)'s Global Environment Outlook 6 (GEO 6), the latest and most comprehensive report on the world's environment so far, delivers a key message concerning biodiversity: "Biodiversity loss from land-use change, habitat fragmentation, overexploitation, illegal wildlife trade, invasive species, pollution, and climate change is driving a mass extinction of species, including critical ecosystem service providers, such as pollinators. That mass extinction compromises Earth's ecological integrity and its capacity to meet human needs."

Among the 17 Sustainable Development Goals (SDGs) formulated by the United Nations to tackle our current challenges which include climate change and biological diversity to be achieved by 2030, Goal 15 reads: "Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, halt and reverse land degradation and halt biodiversity loss."

TAKING STOCK OF BIODIVERSITY

Thal Sandy Tun

However, the UN's Sustainable Development Goals Report 2020 said that "The world is falling short on 2020 targets to half biodiversity loss, despite some progress." It further warned: "Just a third of countries are on track to achieve national biodiversity targets while climate change, ocean pollution, land degradation, unsustainable consumption and production patterns throughout the world continue."

Overall, it seems to indicate that the business-as-usual scenario is unlikely to help us achieve the SDGs by 2030 and some studies point out that even if we achieve some of these goals in 2030 or 2050, several important dimensions will be devoid like social equality and environmental sustainability.

UN Vision: A World Living in Harmony with Nature

Scientists have confirmed human actions have disturbed the delicate balance of the natural environment, leading to a loss of biological diversity and the emergence of pests and pathogens which



move from animals to humans causing illnesses. Further, it will be more difficult for these pests and pathogens to take over an ecosystem or spread rapidly when an ecosystem's biodiversity is not meddled.

As GEO 6 has emphasized, a healthy environment is both a prerequisite and foundation for economic prosperity, human health, and wellbeing whilst sustainable development is more likely to be achieved through new modes of governance and adaptive management that give greater priority to the environmental dimensions of the Sustainable Development Goals, simultaneously promoting gender equality and education for sustainable production and consumption.

This coronavirus pandemic is a wake-up call for a world that is nearing a 10-billion population and deals with millions of infectious illnesses of zoonotic origin every year. Let me recall the UN Secretary-General's remark as I end this essay here to emphasize the point: "Everything we do during and after this crisis (COVID-19) must be with a strong focus on building more equal, inclusive, and sustainable economies and societies that are more resilient in the face of pandemics, climate change, and the many other global challenges we face." ■

“The International Day for Biological Diversity (IDB) 2021, which is annually celebrated on 22 May for the adoption of CBD, has reinforced that biodiversity was and still is the answer to our sustainable development challenges, including climate change, health issues, food, and water security, and livelihoods.”

From Page 24



Keep it regular but stay flexible. Making a schedule or exercising at the same time every day are good ways to sustain your routine and make it last. For me, I usually run right after work every day. It does not matter if you run in the morning or at night, what important is to set a consistent schedule that works best for you. Sometimes your schedule might change because of how you feel or have other social or professional meetings and therefore, throw off your normal running routine. Don't give up. Get back into it and slowly build up your stamina and strength and soon enough, you will be back on track.

Sign up for a race. One of the most exciting and motivating things about running is participating in a race. Since you are signing up for a race, whether be a half-marathon or marathon, you are preparing yourself to reach a goal, to get to the finish line, and receive a medal. This is the goal of every runner. To achieve this goal, you need to push harder during training, take good care of your physical being, have rest days, and maintain a healthy diet. That feeling when the finisher medal is in your hands is amazing; the feeling of personal achievement and huge accomplishment because you put in hard work and sweat during training for a long period. Only runners know that the finishers' medals are more than just a medal, it has many stories behind it.

Run while you travel.

One of the reasons I fell in love with running is because I incorporate running as part of my travels. Traveling for work or fun can interrupt your normal running schedule but running while traveling can be one of the most exciting ways to immerse yourself in a new environment. Get up early in the morning, run and check out the scenic part of the new place, try local food and shops;

which make the overall trip even more fun and memorable. When you are planning your travel, find out information about running events or communities in your destination. In Myanmar, running events are usually held from November to February. For example, in early December there is Bagan Temple Run and Kalaw Trail Run, an event that occurs once a year. Traveling is more fun when you make new friends while doing something you enjoy.



Track your running record. Use an activity tracker or online fitness apps like Nike Run, Strava, or MapMyRun to help with your goal setting and progress tracking. These apps give you useful information as they provide a place, distance, pace, calories and also show local routes and roads you may not know. For instance, knowing you only have another 200 meters until the



next kilometer mark can push you to run faster. Thus, seeing progress makes a huge difference in striving for results and reaching your goal.

So, if you are thinking of running as a hobby, do not wait for another day to start. Remember to listen to your body, take it slow and steady and stay consistent in the beginning and before you know it, you will find yourself looking forward to your next run. So, what are you waiting for? Cheers to your running! ■



Make Running as a Fitness Hobby

Saw Eh Hsar Blute Htoo



One of the challenges for me, in the beginning, was finding a physical activity that I enjoy and incorporating into my daily lifestyle. I started running and after a couple of months of being committed to it, I started noticing the progress, both mentally and physically as running became a regular part of my lifestyle and ended up being an easy hobby.

I have been running for about four years now and have gained some knowledge about this sport. Thus, I would like to share my personal experience and tips to start running as a fun hobby. The first simple step is to start running, that easy. It doesn't matter if you run slow, short distance, or long distance; the rewards are still the same. All you need to do is invest in a good pair of running shoes, go outside or hit the treadmill and start

running at a comfortable pace. Here are a few tips that I would like to share with you.

Start today. You don't need any special gear or a place to run. Just grab a pair of good running shoes and start running. Unlike many other sports, running is easy and inexpensive.

Run together. When you run in a group, there's a good chance you will obtain extra motivation. This motivation can help you stay consistent and disciplined and enable you to turn it into a hobby. When I started running, I joined running groups like Yangon Running Society and RUNderful Myanmar. Being part of running groups helps me learn new knowledge, tips, and tricks and most importantly, pushes me to run longer distances and motivates me to try out for a full marathon as a personal challenge.

We know that doing physical activity and exercise is important for everyone as it is one of the best ways to keep our bodies and minds healthy. All ages of children, adolescent, and adult regardless of their body type or Body Mass Index (BMI) needs regular physical activity. This regular physical activity can control our weight, help prevent many health problems, relieve stress, and promote better sleep.

One study indicates that overweight youths may never achieve a healthy weight, and up to 70% of obese teens may become obese adults. In the early years, I was a chubby kid where my BMI results showed I was overweight for my age. I didn't realize obesity was a problem until I discovered how it leads to high blood pressure and other complications. When it comes to losing weight, physical activity plays a critical role. There are many different types of physical activities; it is important to pick the right activity that fits your lifestyle. One of my friends advised me that doing physical activities that you enjoy bring out many benefits especially if you stick to them. So, I decided to take up running as a hobby. It is easy, simple, and versatile because you can go anywhere to run. Also, running can be incredibly social; you make new friends and get more motivated when running with friends.

