Star ESG
ENVIRONMENTAL SOCIAL GOVERNANCE

The Nation's Energy Conundrum

Malaysia navigates WTE's and nuclear energy's role en route to carbon neutrality by 2050. Challenges arise surrounding their potential, yet collaborations signal a greener future path >8-9

Towards a better, more sustainable future
7

Embracing the circular economy and waste-to-energy
12

From trash to cash
15

A roadmap for sustainable material use

By DR PRAVEENA NAIR SIVASANKARAN

In our relentless march of progress, we have adhered to a model of "take, make, dispose."

This linear path has led us to an unsustainable reality where the demand for virgin resources has spiralled out of control and waste piles up around us. But what if there was another way?

Enter the circular economy—a vision of a world where resources are cherished, cycled and used to their fullest potential.

At its heart, the circular economy revolutionises how we think about growth. It is not just about profits and productivity but about creating a system that benefits everyone—businesses, society and the environment.

This model challenges us to eliminate waste and pollution, keep products and materials in use for as long as possible and regenerate our natural systems.

By shifting away from a linear model, we can reduce the extraction of virgin resources, minimise waste generation and create a more resilient ecosystem of materials.

According to the Ellen MacArthur Foundation, adopting a circular economy could cut greenhouse gas (GHG) emissions by 22-44% by 2050, significantly mitigating climate change impacts.

The World Economic Forum (WEF) estimates that transitioning to a circular economy could generate US$4.5 trillion in economic benefits by 2030, highlighting its immense potential for sustainable growth.

Principles and benefits of the circular economy

This transformative approach to material use has profound implications. No longer do we rip resources from the earth only to discard them after a single use. Instead, we prioritise sustainable sourcing, opting for materials with minimal environmental impact.

Products are designed for longevity, easy disassembly and are crafted from recycled or renewable materials. When these products reach the end of their initial life, efficient systems are in place to collect, sort and recycle them, giving materials new life through processes such as remanufacturing.

Embracing the circular economy catalyses both environmental and socio-economic transformation, leading to fewer GHG emissions, less pollution and a lighter touch on our natural resources.

This shift creates new economic opportunities such as recycling plants, repair workshops and remanufacturing facilities.

Moreover, resource security becomes a reality as reliance on finite sources diminishes in favour of a stable supply of recycled and renewable materials, fostering a resilient economy prepared for future challenges.

Collaborative efforts in driving circularity

Adopting the circular economy model necessitates a paradigm shift, where sustainability becomes the cornerstone of innovation and development. Future designers, engineers and innovators must embed sustainability into every facet of their work.

This includes considering the entire lifecycle of products—from design to end-of-life disposal—to ensure materials are chosen not just for performance but also for their environmental impact and recyclability.

Higher education institutions (HEIs) play a pivotal role in this transformation to ensure that the circular economy becomes a tangible reality rather than just an ideal.

HEIs should incorporate sustainability modules into their curricula with interdisciplinary programmes that integrate principles of the circular economy with engineering, design, business and environmental science, and foster a culture of environmental responsibility and innovation.

For example, students should engage in hands-on professional practice projects that challenge them to create solutions for real-world sustainability issues, with exposure to cutting-edge technologies and methodologies that promote critical thinking and problem-solving skills tailored to the circular economy.

We can cultivate a generation of professionals who are both aware of the importance of sustainable practices and equipped with the skills and knowledge to implement them effectively.

Governments are recognising the need for a circular economy shift. In Malaysia, the National Circular Economy Council (NCEC) has agreed to legislative changes for nationwide solid waste management. This legislative push aims to create a comprehensive act covering the product lifecycle from production to post-consumer use.

Once hailed as a miracle material, plastics produced by the linear economy have become one of humanity's biggest blunders. About 91% of plastic wastes were never recycled but ended up polluting oceans and landfills.

This stark reality underscores the need for a shift towards bio-based materials.

Innovative concepts such as biomimicry and cradle-to-cradle (C2C) design are crucial in this transition. Biomimicry draws inspiration from natural systems and organisms to create efficient and resilient sustainable processes and products for human use.

Meanwhile, cradle-to-cradle design considers the entire lifecycle of a product, ensuring it can be fully reclaimed or reused at the end of its life, unlike the traditional cradle-to-grave approach.

Working in tandem

Waste-to-energy (WTE) initiatives are pivotal in advancing sustainable material use by converting non-recyclable waste into usable energy such as heat, electricity and fuel.

This reduces landfill dependency, cuts GHG emissions and aligns with the principles of a circular economy, promoting efficient resource use and minimising waste.

WTE processes embody circular economy principles by transforming waste into energy, closing the material loop.

This ensures waste is repurposed rather than disposed of, reducing the need for virgin materials and promoting a sustainable material lifecycle by enhancing resource efficiency and minimising waste.

WTE solutions effectively address environmental concerns by managing waste and reducing landfill use while producing renewable energy, lessening reliance on fossil fuels.

Economically, WTE can lower waste disposal costs, create jobs and drive innovation within the engineering industry, attracting investments and supporting sustainable development.

Current trends include advancements in gasification, which converts organic material into syngas, a versatile fuel for energy production, pyrolysis that decomposes waste at high temperatures without oxygen to produce fuel and anaerobic digestion, which breaks down organic waste in an oxygen-free environment, generating biogas.

Innovations such as improved energy recovery efficiency, enhanced emissions control and smart grid integration are poised to revolutionise WTE practices.

These developments will enable more effective waste management and renewable energy production, significantly contributing to sustainable material use.

The views expressed here are the writer's own.

Dr Praveena Nair Sivasankaran is a senior lecturer at the School of Engineering, Faculty of Innovation & Technology of Taylor's University.
Her focus is on green and sustainable materials, emphasising eco-friendly solutions in engineering.

ESG in the news

JULY 22

• Malaysia is considered a clear beneficiary as a carbon capture and storage (CCS) hub, not only for its local oil and gas (O&G) fields and industries but also strategic overseas emitters, especially in Japan and South Korea.

"Although carbon dioxide utilisation technologies are not as favoured compared with other CCS components, the CCS value chain is experiencing increasing deployments, stronger collaboration among emitters and governments and diverse CCS technologies preference across emitter sectors (although amine absorbents remain as the primary CO2 capture material," **UOB Kay Hian (UOBKH) Research** said.

JULY 23

• **Eastern Pacific Industrial Corp Bhd (EPIC)** plans to expand its service network through its subsidiary **EPIC Solar Sdn Bhd (ESSB)** in the field of solar energy and green technology in Malaysia.

ESSB chairman Dr Mamad Puteh said the plan is in line with the company's mission and supports the country's aspiration to achieve the use of 40% renewable energy by 2035.

JULY 26

• **Bumi Armada Bhd**'s proposed venture to explore liquid carbon dioxide (CO2) storage and liquid CO2 carriers is seen as a positive development and is expected to incur lower capital expenditure (capex) requirements compared to its liquefied natural gas (LNG) projects.

On July 24, the oil and gas support service provider's joint venture (JV) firm Bluestreak CO2 Ltd partnered with Dusseldorf-based Uniper (UK) Ltd to explore the implementation of jetty-moored floating liquid CO2 storage facilities and liquid CO2 carrier solutions.

The collaboration with Uniper will explore opportunities arising from the United Kingdom government's goal to decarbonise its power sector by 2030 and facilitate CO2 export from Uniper's proposed grain carbon capture project on the Isle of Grain, UK.

JULY 29

• **Petroleum Sarawak Bhd (Petros)**, which recently launched the Sarawak Bid Round 2024, is calling for multinational companies (MNCs) to bid for the development of carbon capture, utilisation and storage (CCUS) industry in the state.

According to **Petros senior vice-president for Sarawak Resource Management Nazrin Banu Shaikh Sajjad**, three carbon storage sites had been identified for this bid round, each with distinct advantages and opportunities for successful CCUS studies.

• The **Malaysian International Chamber of Commerce and Industry (MICCI)** has announced its commitment on driving environmental, social and governance (ESG) adoption among the business community in Malaysia.

According to a statement, the initiative aligns with the National Industrial Master Plan (NIMP) 2030, by promoting industrial revoluion 4.0 technology adoption to enhance productivity and competitiveness, while striving towards net-zero carbon by 2050.

AUG 2

• Asean is witnessing a rise in the sales of electric vehicles (EVs) in Malaysia, Indonesia and Vietnam, whereas Thailand is a mixed bag, says **Maybank Investment Bank (Maybank IB) Research.**

The research house said that favourable regulations, local brands and penetration of Chinese carmakers will drive sales higher.

"Malaysia reported that EV registrations rose 142% year-on-year to 10,663 fully electric cars in the first half of 2024" it said in a note.

AUG 5

• Sarawak may expect an inflow of US$20bil in investments into potential large-scale solar power projects by multinational companies from China and the United Arab Emirates (UAE).

Shanghai Electric and China Three Gorges International Ltd are mulling to invest US$10bil and UAE's state-owned clean energy provider, Abu Dhabi Future Energy Company, widely known as Masdar, may invest US$10bil to produce solar power from hydroelectric dams in Sarawak, via floating solar panels, according to state Premier Tan Sri Abang Johari Tun Openg.

AUG 7

• Carbon offsets remain a crucial tool in facilitating the decarbonisation efforts of corporations, contrary to some critics, says **Bursa Malaysia head of carbon market Dr Chen Wei Nee**.

Chen said there are reports that have revealed that corporations that invest in carbon offsets are twice as likely to decarbonise at a faster pace than those that did not.

"When companies buy carbon offsets, it is an annual commitment. Hence, they are actually incentivised to reduce their carbon emissions. There are certain sectors, such as oil and gas (O&G) for instance, that have very expensive costs when it comes to decarbonising, especially those in the upstream segment."

• **Tenaga Nasional Bhd (TNB)** is expected to expand its renewable energy (RE) assets in the UK and Europe through its wholly owned subsidiary Vantage RE Ltd.

According to Hong Leong Investment Bank (HLIB) Research, the national utility giant's UK unit is fast expanding its RE capacity.

This is being done through acquisitions, brownfield development and greenfield developments in the UK, and potentially into Europe.

AUG 8

• **MN Power Transmission Sdn Bhd (MNPT)**, a full subsidiary of MN Holdings Bhd (MNHB), has inked a memorandum of understanding (MoU) with **China State Construction Engineering (M) Sdn Bhd (CSCEM)** for the collaboration in an unspecified number of future data centres and clean energy projects.

These would include procuring, developing and undertaking any proposed jobs, especially in the power industry which may serve customers in the data centres, solar and independent power plant sectors throughout Malaysia, which may also expand into other Asean countries.

AUG 9

• A well-designed carbon market should offer an available and scalable solution for the world to take immediate action with integrity and impact, says **Bursa Malaysia chairman Tan Sri Abdul Wahid Omar.**

For this very reason, he said the government announced the Voluntary Carbon Market (VCM) initiative during Budget 2022, and subsequently, the Bursa Carbon Exchange was launched by the bourse at end-2022.

AUG 10

• **Solarvest Holdings Bhd** has signed five corporate green power agreements under the Corporate Green Power Programme (CGPP) with a Malaysian multi-asset exchange, two global semiconductor giants, and a leading data centre service provider.

In a statement, the clean-energy specialist said these agreements were made through two joint ventures: one with Savelite Engineering Sdn Bhd and TNB Renewables Sdn Bhd, and another solely with TNB Renewables Sdn Bhd.

AUG 12

• South Korea-based **Lotte Energy Materials Corp** is planning for an initial additional investment of RM1.2bil to further expand its elecfoil manufacturing facilities in Samajaya Free Industrial Park here in Sarawak.

According to Lotte Energy senior vice-president Park Ingoo, there is a possibility for Lotte Energy to put in an additional re-investment of RM2.5bil for the plant, which was acquired from ILIN Materials Co Ltd about five years ago.

AUG 13

• Clean-energy specialist **Solarvest Holdings Bhd** is expected to see more job flows that will boost the group's order book in the near term after recently clinching five Corporate Green Power Agreements (CGPAs) with several corporate parties.

Apex Securities said over the near term, it expects most job flows to come from 800 megawatts (MW) of CGPP. Solarvest is tendering for more than half of this capacity, potentially adding close to RM1bil to its order book, it noted.

AUG 14

• Singapore-based **Trinasolar Energy Development Pte Ltd**, a specialist in smart photovoltaic (PV) and energy storage solutions, is looking to leverage the success of Malaysia's largest hybrid solar project to expand similar initiatives across South-East Asia.

In a statement, the company said it recognises substantial potential in the region.

• **Pekat Group Bhd** is expected to secure Corporate Green Power Programme (CGPP)-related engineering, procurement, construction and commissioning (EPCC) jobs that could boost its order book to RM320mil by the fourth quarter of 2024 (4Q24).

The group's latest win lifts its outstanding order book to about RM206.8mil, the bulk of which is for rooftop solar projects.

AUG 15

• **UEM LESTRA Bhd**, a wholly owned subsidiary and the green arm of UEM Group Bhd, has allocated RM1.5bil, which it aims to deploy in the next 24 months, to invest in decarbonising Malaysia's industrial parks.

UEM Group managing director and UEM Lestra chairman Datuk Amran Hafiz Affifudin said that the move is part of UEM Group's agenda to spur domestic direct investment (DDI), which will lead to job creation and attract foreign direct investment (FDI) to Malaysia.

AUG 16

• **Ranhill Utilities Bhd** may see better quarters ahead, supported by its water and renewable energy (RE) businesses, say analysts. MIDF Research analyst Royce Tan said the group's subsidiary, Ranhill SAJ Sdn Bhd, will continue to contribute strongly to Ranhill's earnings in the coming quarters due to domestic water tariff hike.

AUG 19

• **Sarawak Energy Bhd (SEB)** has increased the sales of renewable energy certificates (RECs) to more than five million – a big jump from 15,000 sold in 2020 and from when the state-owned power utility first launched its RECs in 2019.

SEB aims to continue growing the numbers by expanding REC sales and exploring new renewable energy projects, according to its strategy and corporate development senior vice-president Dr Chen Shiun.

• **Affin Hwang Investment Bank** is optimistic about the prospects of **Malakoff Corp Bhd,** as it believes that Malaysia may need to boost its power generation capacity by 2030 to meet demand growth, replace retiring capacity and maintain an adequate reserve margin.

In a note to clients, it said the country would require an additional 10 gigawatts (GW) to 11GW of generation capacity in another five to six years, and possible short-term measures to meet this need are extending expired and expiring Power Purchase Agreements (PPAs) for existing gas plants for approximately 1.5GW to 2.0GW capacity.

AUG 20

• The **Investment, Trade and Industry Ministry (Miti)** aims to attract RM300bil worth of green investments by 2030 to achieve Malaysia's net zero commitments. Miti Minister Tengku Datuk Seri Zafrul Abdul Aziz said Malaysia achieved a realised green investment of about RM40bil between 2017 and 2023.

ESG Opportunities

ESG project manager, Taylor's Education Group - Subang, Selangor

THIS role focuses on developing and implementing a comprehensive sustainability strategy, leading ESG reporting and disclosure, engaging with stakeholders and managing ESG-related events and projects. Candidates should have a bachelor's degree, five years or more relevant experience, strong ESG knowledge, be analytical and have project management skills, coupled with a passion for sustainability and a commitment to ethical practices.

ESG liaison officer, Sabah Mineral Management Sdn Bhd - Kota Kinabalu, Sabah

Candidates are expected to support ESG strategy and initiatives, ensure environmental compliance, collect and analyse data, engage with communities and assist on sustainability projects. This role requires a relevant bachelor's degree, two or more years of experience, proficiency in data tools, familiarity with local regulations and multilingual skills to address environmental issues in Sabah.

BEYOND ZERO | TOYOTA

A GREATER MALAYSIA, FUELLED BY HYBRID

Corolla Cross
Hybrid Electric Vehicle
(HEV)

Innova Zenix
Hybrid Electric Vehicle
(HEV)

2009-NOW*
43.3k
TOYOTA HEV SALES IN MALAYSIA

=

500k TREES
150,000** TONS OF CO_2 ABSORPTION

=

Source: GoKelah

*As of June 2024
**Proportionally calculated for Malaysia, based on estimated contribution made in Thailand

TOYOTA MOVES TOWARDS A BETTER, MORE SUSTAINABLE FUTURE

In April and July 2024, the Malaysian Meteorological Department issued Level 1 hot weather status updates for several areas in the country.

A Level 1 warning is issued when temperatures at a location are between 35 and 37 degrees Celsius for three consecutive days.

Increasing incidences of high temperatures and sweltering heat, even at night, also led to discussions among lawmakers in Parliament in July, who were told that records showed average temperatures in the peninsula were at 28.8 degrees Celsius in May this year while the average temperature in May 1974 was 26.6 degrees Celsius.

"Increased greenhouse gasses in global atmospheres also cause climate change which impacts global temperatures. Its impact can also be felt in the peninsula," Natural Resources and Environmental Sustainability (NRES) Minister Nik Nazmi Nik Ahmad had said in a written Parliamentary reply.

Now, we live in perhaps the most significant of times, where climate change has reached an apex.

To prevent severe climate change, we need to rapidly reduce global greenhouse gas emissions.

Road transportation is one of the biggest contributors to greenhouse gas emissions, at 11.9%.

As a mobility company present in over 170 countries, Toyota is shaping not just our future transportation needs, but also how we live, work, play and learn in the future.

One of the biggest challenges to limit climate change comes from the energy we use to fuel our mobility.

Multi-pathway approach for powertrains

For some clean-energy nations, like Norway and Iceland, where the entire energy supply comes from renewable sources, and charging networks are fully developed, having battery electric vehicles (BEVs) makes perfect sense.

For countries that still rely on fossil fuel supply like coal and fuel, access to electrified hybrid vehicles makes more sense. Hybrid vehicles help reduce fossil fuel consumption, whilst still enabling cars to run on existing fuelling network infrastructure (and eliminating any range concerns of a BEV).

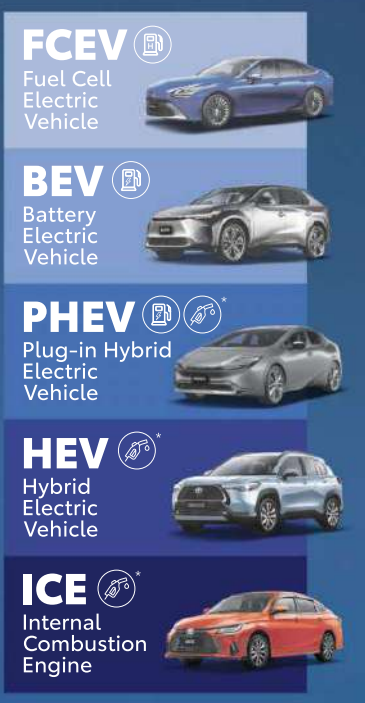
Most of Asia would fall into this category.

Through the comprehensive life cycle emissions analysis, Hybrid Electric Vehicles (HEVs) have emerged as a pragmatic and cost-effective choice for Malaysians today.

It is no longer about reducing emissions on a grand scale but the tangible and meaningful contributions each HEV owner makes toward a cleaner, greener world.

For Toyota, the focus and goal are firmly on achieving net zero carbon emissions.

Toyota believes that to achieve this, one single path (commonly thought to be BEVs) is less than ideal.



*Fuel Alternatives

For example, while BEVs have some of the lowest carbon emissions, the same amount of battery resources used to produce one BEV can produce 90 HEVs.

As such, Toyota continues to pursue a multi-pathway approach to achieve carbon neutrality by offering different powertrains that can include hydrogen internal combustion engine vehicles (HICEVs), hydrogen-powered vehicles or FCEVs (fuel cell electric vehicles), plug-in hybrid electric vehicles (PHEVs), HEVs and even conventional internal combustion engines (ICE) powered by alternative fuels.

With a proven track record worldwide, Toyota has sold over 20 million hybrid cars worldwide, making it the leader in sustainable mobility.

In Malaysia, UMW Toyota Motor (UMWT) presently offers two HEV models, namely the 1.8-litre petrol Corolla Cross Hybrid and the 2.0-litre Toyota Innova Zenix Hybrid.

Priced at RM143,000 on the road without insurance, the Corolla Cross Hybrid pairs a highly efficient petrol engine with an electric motor.

It is also the first Toyota hybrid based on the Toyota New Global Architecture platform to be locally assembled.

Fuel consumption is rated at 23.3km per litre or 4.3 litres per 100km.

Meanwhile, the 7-seater Innova Zenix Hybrid is priced at RM202,000 on the road without insurance.

A hybrid differs from a plug-in hybrid in that onboard charging happens during normal driving and braking.

Hybrid cars also have a silent, zero-emission EV (electric vehicle) mode for short distances.

What comes after zero

Whilst Net Zero Carbon Emission (NZCE) is a tangible, close-by target, Toyota already has its sights set on the future beyond.

The automaker's Beyond Zero programme explores how net zero carbon emissions can evolve into carbon-positive outcomes, so that the planet is left in better condition for future generations.

Whether Toyota is decreasing its plastic waste, supporting water conservation efforts or expanding programs that protect critical species, the automaker is committed to reducing its environmental footprint and creating a positive impact on society.

Toyota's global impact so far:

Electrified vehicles sold by Toyota globally in 2023: **3.67** *million*	Toyota models with an electrified option: **78** %
Total renewable electricity purchased in 2023: **380,688** *MWH*	Water saved every year by just one of our assembly plants: **23** *million gallons*

Moving forward towards a better, more sustainable yet thriving future isn't just a hope but a promise.

Toyota, alongside its consumers, is actively taking steps towards this with the belief that not only a mobile and connected, but also greener, safer and happier world can be achieved together.

Malaysia's path to carbon neutrality and the energy conundrum

A waste management solution or energy solution?

By CHOW ZHI EN
ESGeditorial@thestar.com.my

The nation aims to achieve 40% renewable energy by 2035 to reduce CO2 emissions by 10 million tonnes annually, as part of a broader strategy to ensure energy security by diversifying and creating affordable energy sources.

EARLIER this year, Deputy Prime Minister Datuk Seri Fadillah Yusof said that the government aims to ensure that 40% of Malaysia's primary energy mix comes from renewable energy sources by 2035.

Speaking at the launch of the Malakoff Corporation Bhd Biomass Co-Firing Project at the Tanjung Bin energy plant on May 26, he mentioned that the move would reduce carbon dioxide (CO2) emissions by 10 million tonnes annually, and the Energy Transition and Water Transformation Ministry (Petra) aims to raise the percentage of renewable energy to 100% in 2050.

"The country's energy sector represents 29% of the gross domestic product (GDP) and employs a quarter of the country's workforce. Therefore, changes in the energy system will not only impact income and economic development, but also the livelihood of the people who depend on affordable energy," he said then.

In an effort to decarbonise our energy systems, nuclear energy has been brought up as a potential pathway to diversify Malaysia's energy mix and ensure long-term energy security despite its omission from the National Energy Transition Roadmap (NETR).

The Malaysian Nuclear Agency (Nuklear Malaysia) had also stated earlier in January that with the latest developments, it is crucial that the country considers generating power using nuclear energy.

Nuklear Malaysia director-general Dr Rosli Darmawan had acknowledged the potential of nuclear energy despite its omission from the National Nuclear Technology Policy 2030.

Dr Rosli said most industries have begun to seriously consider the use of nuclear energy as fossil fuels such as coal are the biggest contributors to carbon emissions today.

As discussions unfold regarding the country's energy transition and public utilities landscape, the consideration of nuclear energy becomes increasingly pertinent.

This is being explored in tandem with the incorporation of other forms of renewable energy sources, such as waste-to-energy (WTE) plants, of which the government has identified 18 possible sites for the plants to serve the needs of every state in Peninsula Malaysia.

WTE plants offer a potential solution by converting waste into electricity and heat.

However, they are not without challenges, including emissions and lower energy yields compared to other renewable sources.

Meeting energy demands

Nuclear power stands at a critical juncture in the global energy landscape, where its economic competitiveness is being scrutinised in comparison to other energy sources. Understanding the economic aspects of nuclear power is essential for evaluating its role in the transition to a sustainable energy future.

Hamizah said that while nuclear power itself may have lower direct emissions during electricity production, the upstream and downstream processes involved in the nuclear fuel cycle still contribute to overall CO2 emissions, even if the power plant operation is relatively low-carbon. —Filepic

The primary criticisms of nuclear power stem from its high initial capital costs and public safety concerns. Building a nuclear power plant requires substantial investment in construction, safety systems and regulatory compliance.

Nuklear Malaysia told *StarESG* that [the energy's] ability to generate large quantities of electricity with minimal carbon emissions positions it as a key player in the transition to a low-carbon future.

"Unlike renewable sources such as solar, which are subject to weather conditions and variability, nuclear power provides a steady and reliable supply of energy. This consistency is crucial for industries with high and continuous energy demands, which require uninterrupted power to operate efficiently," says Nuklear Malaysia.

In the context of Malaysia, where the energy sector still heavily relies on fossil fuels, the adoption of nuclear power could be a game-changer.

According to Nuklear Malaysia, it has a lower carbon footprint compared to fossil fuels which offers a viable path to significantly reducing greenhouse gas (GHG) emissions, thereby aligning with national and global climate goals.

"Moreover, nuclear energy's efficiency—generating vast amounts of electricity from relatively small amounts of fuel—makes it an attractive option for supporting economic growth while preserving natural resources," Nuklear Malaysia explains.

The predictability of long-term costs associated with nuclear power, due to its relatively stable fuel prices, further strengthens its appeal.

Nuklear Malaysia also says that the availability of uranium, coupled with advancements in nuclear technology, ensures that nuclear power can serve as a long-term, sustainable energy source.

Why the worry?

Nuclear waste management and assuaging public fears have emerged as critical hurdles on the road to a sustainable energy future.

Greenpeace Malaysia (Greenpeace) told *StarESG* that nuclear and WTE plants do not have significant impacts on achieving net zero emissions by 2050, as both technologies still emit carbon, with additional concerns on high cost and safety issues.

"Despite nuclear being a low carbon technology in terms of power generation, the entire lifecycle of a power plant itself from uranium mining, transportation, fuel processing, construction of the plant, fuel processing and waste disposal, emits CO2," says Greenpeace climate and energy campaigner Hamizah Shamsudeen.

These often overlooked processes tend to diminish the overall environmental benefits of nuclear power.

The high costs of building, maintaining and decommissioning nuclear facilities further complicate its role in sustainable energy in the future.

There is also the worry of adopting a 'wait-and-see' approach in regards to radioactive waste management which poses concerns for the public.

"Even though nuclear waste remains radioactive for thousands of years, no proven solution exists for dealing with radioactive waste aside from storing if for future generations to deal with; which raises the risks associated with nuclear energy, including potential accidents, high risks associated with natural disasters such as floods—of which Malaysia is prone —the challenges of long-term radioactive waste storage and management, present serious concerns," Hamizah adds.

This procrastination strategy has left numerous nations grappling with the issue for decades without reaching a satisfactory resolution. Noteworthy examples include the Netherlands deferring decisions on waste management until 2100 and the Czech Republic planning to initiate disposal efforts in 2065.

Understanding this, Nuklear Malaysia says that for a new embarking country like Malaysia, managing nuclear energy waste responsibly is crucial, especially in the context of its energy transition goals.

The nation can leverage its existing experience in handling radioactive waste, particularly through the expertise of Nuklear Malaysia, which has a track record in managing various forms of radioactive materials.

"A comprehensive waste management strategy must be developed, adhering to international standards such as those set by the International Atomic Energy Agency (IAEA). This includes establishing a robust regulatory framework, ensuring that waste is stored safely, and eventually disposed of in secure facilities," the agency says.

The agency also acknowledges that developing secure interim storage facilities is a critical step.

"These facilities would safely contain waste until a permanent solution, such as deep geological repositories, can be implemented. Collaboration with international partners can enhance Malaysia's capability to manage nuclear waste, learning from countries with established nuclear programmes," Nuklear Malaysia explains.

They add that research and development should be encouraged to explore advanced waste management technologies, such as recycling and reprocessing spent fuel, to minimise the volume of waste that requires long-term storage.

"By aligning its waste management practices with global best practices and leveraging the agency's expertise, Malaysia can ensure that its nuclear energy programme supports the country's energy transition while safeguarding environmental and public health."

Last year, Worldwide Holdings Bhd—in collaboration with Shanghai Electric Power Generation (M) Sdn Bhd—the EPCC Contractor, announced the construction of WTE facilities at the Jeram WTE Project Site. Pictured here is Selangor Mentri Besar Amirudin Shari (front, second from left) looking at a model of the 12.14ha WTE facility in Jeram. —filepic

Net zero, zero waste

In parallel, a statement by Malaysian Investment Development Authority (Mida) said that WTE facilities can substantially contribute toward Malaysia becoming a zero waste nation due to its hygienisation process of waste.

"This process prevents the waste recycling process from the risk of contamination by polluted waste and diverts non-recyclable waste from landfills, dumpsites and open fires. Moreover, the energy generated creates spillover benefits by supplying electricity to neighbouring residential, commercial and industrial establishments," it read.

"This energy generation is more sustainable and less dependent on fossil fuel. The material recovery through WTE facilities is especially beneficial to the metal industry, as great amounts of materials can be recovered from the bottom ashes, including minerals and other precious metals."

Malaysia is banking on WTE solutions with the Housing and Local Government Ministry (KPKT) establishing six WTE plants across the country by next year.

However, WTE processes are not entirely carbon-neutral.

"WTE is primarily a waste management solution rather than a clean energy solution. It tends to perpetuate a wasteful lifestyle and the burning of valuable, and limited resources that could be repurposed by encouraging the continuous production of waste rather than promoting reduction, reuse and circular recycling," explains Hamizah.

She describes how the transportation of waste to these incinerator plants produces CO2 and the burning process of the waste releases harmful pollutants like dioxins, which pose health and environmental risks.

While WTE plants can reduce our reliance on landfills and help address methane emissions, it may consume more energy than it produces, making it an inefficient and unsustainable option for addressing climate change.

"Therefore, its contribution to reducing overall carbon emissions is limited, not to mention the high costs of establishing and operating WTE facilities make them less viable as a long-term sustainable solution.

"Incineration should be the very last option as it also consumes valuable resources that could be put to other use, while at the same time encouraging the production of waste and the current throwaway culture," Hamizah emphasises.

A mixed bag

Energy security encompasses availability, reliability and affordability.

Diversifying energy sources, building resilience to disruptions and ensuring economic accessibility while being environmentally sustainable are crucial. Focusing on renewable energy, energy efficiency and hybrid technologies can provide a better solution for energy security.

Greenpeace emphasises that escalating costs further complicate the economic feasibility of nuclear power which takes a minimum of eight years to construct, with prospective delays that could increase its already high investment costs.

This underscores the need for investments in research to enhance existing sustainable approaches to energy generation such as solar panels, of which Malaysia is already a major producer.

Instead, Hamizah says that taking advantage of the abundant amount of sunlight Malaysia gets as well as the maturity of the solar energy facilities and incentives programme the government has introduced in Malaysia will best work towards increasing solar utilisation in the energy mix.

That said, advancements in nuclear technology have led to improved safety standards and reduced environmental impacts, making nuclear power a cleaner alternative.

Other than that, government subsidies and incentives play a role in shaping the economic landscape of energy production. Policies that support nuclear energy development, research and decommissioning can influence its economic competitiveness relative to other energy sources.

Instead of viewing nuclear energy as a choice between other renewable alternatives, it can be seen as a complementary ally to renewable sources such as solar and wind power.

Nuklear Malaysia is actively implementing many initiatives to educate Malaysians about the benefits and safety measures associated with nuclear science and technology.

These efforts are focused on raising awareness, dispelling myths and providing accurate, up-to-date information on the role of nuclear technology in society.

US-based Lazard's Power, Energy & Infrastructure Group vice chairman and global head George Bilicic emphasised that to significantly reduce emissions, a diverse set of clean energy technologies is essential.

He stated that the shift away from fossil fuels will not be driven by a single energy solution, but rather by a comprehensive strategy that incorporates multiple options, known as a new "all-of-the-above"

Making wastes-to-hydrogen conversion a reality

By ERIC QUAH
ESGeditorial@thestar.com.my

AS HYDROGEN continues to fuel Malaysia's ambitions of being among the world's leading hydrogen economies by 2050, the idea of producing that resource comes in the form of using Sarawak's many hydroelectric projects.

However hydrogen, although an abundant element in our world, remains bound to other elements and extracting that has been a major focus for world economies eager to pivot towards cleaner energy sources.

At the current moment, though, the production cost of green hydrogen is higher than fossil fuels, which makes it expensive, especially for developing countries that are rich in oil and gas.

Even building the facility to produce, store and distribute hydrogen will require significant investment.

However, with advances in technology, more ways of extracting hydrogen would inevitably be available.

One of these methods may even help solve the ongoing issue of the world's ever-increasing accumulation of waste, and that is the extraction of hydrogen from waste products.

Rising challenges

When it comes to waste accumulation, Malaysia faces a mounting issue: according to an article in *The Star* early this year, Malaysians dispose about 39,000 tonnes of solid waste each day.

That's the same as roughly 1.17kg per person, quoting the Solid Waste Management and Public Cleansing Corporation (SWCorp).

SWCorp also mentioned that food makes up the biggest component of domestic waste at 30.6%, followed by plastic (21.9%), paper (15.3%), disposable diapers (8.2%) and hazardous household waste (4.2%).

The United States International Trade Administration also pointed out that Malaysia could potentially run out of land for landfills come 2050.

Greenpeace Malaysia also noted that there have been uncounted illegal dumping grounds for domestic waste and hazardous scheduled waste, like e-waste and chemical wastes.

One solution is to convert waste into energy.

The hydrogen equation

There have been technologies that aim to convert waste into hydrogen; a myriad of methods that a colour spectrum has been used to assign to how clean the gas was produced.

Although initially limited to just three colours—grey (using fossil fuels), brown (like grey but carbon is captured) and green (using renewable sources)—there is now a whole gamut that runs from yellow (using solar) to turquoise (using heat without combustion).

To convert waste into hydrogen, experts can consider several waste sources.

With the discussion of food waste, converting this looks to be the most obvious, as this is a form of organic waste.

Organically produced

But organic waste is more than just food; it also includes municipal solid waste, agricultural residues and other organic materials.

These can be decomposed through anaerobic digestion to produce biogas rich in methane, which then is steamed to produce either grey or blue hydrogen, as the process also disperses a small amount of carbon monoxide and dioxide.

Advancements at the Pacific Northwest National Laboratory in the US in 2021 have shown ways of even producing green hydrogen from methane.

Furthermore, the American Chemical Society published a story on how a chemical engineer at the Council of Scientific and Industrial Research-Indian Institute of Chemical Technology converted food waste from the institute's cafeteria using microbes that produced a gas rich in hydrogen.

For Malaysia especially, the palm oil industry produces a large amount of waste that includes empty fruit bunches, palm oil mill effluent and palm kernel shells, more of which will be explored further below.

Rehabilitating plastics

In terms of wastes, plastics itself presents quite a conundrum: you can't live without it and yet, it is one of the world's major forms of pollution, due to its non-biodegradable nature.

However, plastics can be broken down to yield carbon monoxide, hydrogen and carbon dioxide via a method called gasification, whereby steam or oxygen is heated to about 700°C, without combustion.

This produces a form of grey hydrogen, after which the carbon can be captured and sequestered.

A new method is to run plastics under electricity for a short burst, which heats them up to about 2,800°C, a process that apparently converted up to 93% of the hydrogen atoms present in the polymer into hydrogen gas with a purity of 87%, according to a research at at Rice University in Houston, Texas.

The process produces not only hydrogen but a form of graphene, a strong yet flexible material that is also light and highly resistant that is highly valued by car manufacturers.

Industrial revolution

With regards to wastes running from industrial activities, one could look at Malaysia's palm oil industry, simply because as one of the world's largest palm oil producers, the amount of waste it generates has to be addressed.

The Malaysian Investment Development Authority (Mida) reported that over 99% of the emissions from industrial waste water treatment and discharge originate from palm oil mill effluent.

Much of these can be repurposed as raw materials for conversion to energy.

According to the Science, Technology and Innovation Ministry (Mosti), Malaysia produces more than 90 million tonnes of biomass from palm waste that can potentially be processed using pyrolysis to produce turquoise hydrogen, with solid carbon as a byproduct.

The ministry aims to conduct further research with NanoMalaysia Bhd on ways to produce turquoise hydrogen through advanced microwave plasma technology.

The pulp and paper mill industry also represents another opportunity to convert waste to hydrogen.

Scientific research has revealed that hydrogen-methane can be produced from pulp and paper sludge, as well as food waste, using "mesophilic-thermophilic anaerobic co-digestion".

That basically means the wastes are broken down by bacteria under specific temperature conditions and that releases hydrogen as well as methane.

Furthermore, a byproduct of the pulp and paper industry, called black liquor can be gasified to produce hydrogen-rich syngas.

Another form of waste is wastewater treatment sludge, which can also be processed via anaerobic digestion or pyrolysis to produce hydrogen.

Although most of these methods are still in their nascent stages, some countries have already started, one being TheGreenBillions Ltd in Pune, India and the Project Hyield in Europe.

Malaysia could pave the way for South-East Asia in reforming hydrogen from wastes, as this is potentially a way for the country to increase its hydrogen production while pursuing a circular economy.

Promoting bamboo in modern construction

ASIA ESG POSITIVE IMPACT CONSORTIUM

Sustainable: Kawayan Collective produces at least 200 treated poles and 20 panels each week. It also supplies bamboo for the social housing projects of non-governmental organisations like Base Bahay Foundation and Habitat for Humanity. —PHOTOS FROM KAWAYAN COLLECTIVE FACEBOOK PAGE

The cooperative also provides treated bamboo to non-governmental organisations such as the Base Bahay Foundation and Habitat for Humanity for use in social housing projects.

By IRMA FAITH PAL

DUMAGUETE CITY: A social enterprise in the southern town of Dauin, Negros Oriental has been awarded a presidential recognition for promoting the use of bamboo as a construction material.

Kawayan Collective Agricultural Cooperative, headed by production manager Marbert Tinguha, was awarded by President Marcos, after besting several other micro, small and medium enterprises (MSME) in the small business category during the celebration of the MSME Development Week led by the Department of Trade and Industry (DTI) at Malacañang on July 10.

"The recognition of Negros Oriental's Kawayan Collective by the DTI highlighted its significant contributions to sustainable construction and community development," says Maribel Villaflores-Sumanoy, senior trade and industry development specialist, who spearheaded the search for the best MSME candidate in the province.

She says the recognition of Kawayan Collective underscores the potential of bamboo as a game-changer in the building industry through the efforts of the cooperative's founder Ray Villanueva and his wife Amy.

Kawayan Collective is in the business of aggregating, processing and distributing treated bamboo poles, transforming them into resources that comply with construction-grade standards as an alternative to traditional building materials like cement blocks and steel.

The cooperative produces at least 200 treated poles and 20 panels each week. It also supplies treated bamboo for the social housing projects of non-governmental organisations like Base Bahay Foundation and Habitat for Humanity.

Several housing projects are currently underway to provide shelter for families identified under the End Local Communist Armed Conflict (Elcac) programme. These initiatives involve collaboration with the Department of Agrarian Reform and the Philippine Army.

In the southernmost town of Basay alone, over 100 houses are being built as part of the Negros Oriental Elcac Housing Project.

In Bayawan City, efforts include the construction of 10 duplexes and school buildings.

Badge of honour: Kawayan Collective Agricultural Cooperative chair Marbert Tinguha (fifth from left) receives the Presidential Award for Outstanding MSME (small business category) from President Marcos. Also in the photo are (from left): MSME Development Council vice chair and Go Negosyo founder Joey Concepcion, Trade Secretary Alfredo Pascual and executive secretary Lucas Bersamin. —PHOTO FROM GO NEGOSYO

Where the artisans are

DTI helped establish in 2022 the Philippine Bamboo Industry Development Council to prepare a road map that aims to revolutionise the industry in the country, and find strategies to elevate its competitiveness and sustainability, Sumanoy says.

Kawayan Collective's Villanueva says their decision to establish operations in the municipality of Dauin, about 16 kilometres south of Dumaguete, was influenced by various factors, notably the presence of skilled bamboo crafts artisans who have long upheld the tradition of bamboo craftsmanship in the area.

"Collaborating closely with these artisans in Dauin solidified our choice, acknowledging their expertise and invaluable contribution to the enterprise," he says.

Records at the Department of Environment and Natural Resources show that Negros Oriental has around 900 hectares of bamboo thickets.

Villanueva recalls that the pandemic, which had happened during their second year of operation, prompted a "strategic shift" toward innovative solutions.

"With a renewed emphasis on waste utilisation, we ventured into new product lines, including engineered panels, pre-fabrication models and bamboo starter house kits," he says.

Collaborating with DTI and the Department of Science and Technology (DOST)–Forest Products Research and Development Institute, Kawayan Collective adheres to rigorous standards for grading procedure and test methods for bamboo structures, ensuring compliance with international quality benchmarks.

Villanueva notes how DOST-Negros Oriental helped provide a grant of P2.3mil (RM177,000) for the construction of an eco-dryer.

"The project aimed to facilitate efficient and sustainable local production of engineered bamboo products, while enhancing the capacity and skill level of local suppliers to process, treat and distribute durable bamboo as a sustainable construction material," Villanueva says.

He says using a kiln to process bamboo gives it a mold-resistant finish, useful in humid countries like the Philippines.

"Our investment in the bamboo industry encompasses the entire value chain of the community—from farmers to builders," Villanueva says.

***This story and photo(s) first appeared on July 14, 2024, in the Philippine Daily Inquirer on Inquirer.net, the Philippine publication that is part of the Asia ESG Positive Impact Consortium (AEPIC), which includes Star Media Group, the Philippine Daily Inquirer and Kompas Gramedia of Indonesia as founding members.**

Follow our mission at sustainabilityimpactconsortium.asia

Malaysia's roadmap to sustainability

Embracing the circular economy and waste-to-energy

By TINA THOMAS

AS Malaysia's population reaches 35.6 million, the nation grapples with escalating solid waste issues. In 2021, daily waste production hit an astonishing 38,427 metric tonnes—enough to fill the iconic Petronas Twin Towers every week.

By 2022, the volume of municipal solid waste soared to 14 million metric tonnes annually.

This increase aligns with Malaysia's rapid urbanisation and economic growth, introducing significant sustainability hurdles.

Forecasts predict waste generation could climb to 19 million tonnes by 2050.

The complexity of waste management in Malaysia is exacerbated by its significant role as an importer of plastic waste, particularly after China's 2018 ban on such imports.

In 2022, Malaysia imported over 350,000 metric tonnes of plastic waste, mainly from the United States, complicating its waste management efforts.

Last year, Malaysia was the fifth-largest global importer of plastic waste at approximately 403,453 tonnes, leading Asian countries in this regard, with Chinese Taipei and Thailand following.

Moreover, Malaysia ranks highest among 109 countries in microplastic consumption, with particles smaller than 5mm.

It is also among the top ten nations for microplastic inhalation, with an estimated exposure of 494,000 particles per person per day.

A study from June, published in the Environmental Science and Technology Journal, revealed that each Malaysian ingests an average of 502.3mg of microplastics daily.

Companies like AEON and Kloth Cares are instrumental in promoting sustainable waste management practices. Pictured here is IPC Recycling and Buy-Back Centre which is also contributing to this cause. —filepic

Tina Thomas is head of ESG at Boardroom Group.

Waste management and renewable energy

Currently, Malaysia predominantly uses landfills to manage waste, with 82% of waste disposed of in this manner.

Landfills are still the primary method of managing solid wastes in Malaysia, and according to the National Solid Waste Department, Malaysia currently has 165 landfills, eight sanitary landfills and three inert landfills for materials such as sand and concrete.

This reliance on landfills is unsustainable, with projections indicating potential exhaustion of landfill space by 2050.

In an innovative push towards sustainable development, Malaysia is turning to waste-to-energy (WTE) technologies, aiming to transform everyday refuse into valuable energy resources.

Termed as 'trash to treasure,' this process involves burning residual waste—material that would typically end up in landfills—to generate steam, electricity, or hot water.

This energy conversion is facilitated through a variety of methods such as combustion, gasification, pyrolysis, anaerobic digestion and landfill gas recovery, making it a versatile solution to waste management.

The produced electricity is channeled into the national grid, serving households and businesses alike, while the generated steam and hot water are supplied to industries, aiding in their production processes and building climate control.

This approach is integral to fostering a circular economy, where resources are utilised to their fullest extent, sharply contrasting with the traditional linear economy's 'make, use, dispose' model.

The circular economy not only minimises the environmental footprint of energy production but also positions Malaysia to better tackle future resource scarcity.

As part of this strategic shift, the government has announced plans to establish six WTE plants by 2025.

These facilities are expected to significantly cut down waste volumes while supplementing the country's energy matrix.

However, the deployment of these technologies is not without its challenges.

They demand considerable investments and necessitate thorough considerations of their environmental and health impacts.

The success of such initiatives will depend on careful planning and sustained commitment to both economic viability and environmental stewardship

Corporate and community engagement

Corporate organisations such as AEON and Kloth Cares play pivotal roles in advancing sustainable waste management practices.

AEON has established extensive waste management policies across its retail locations, while Kloth Cares has significantly contributed to fabric recycling and bolstering the circular economy.

Businesses can enhance their waste management strategies by conducting thorough waste audits, initiating recycling programmes and adopting principles of the circular economy.

Investing in technologies that convert waste into resources, educating employees about sustainability and fostering collaborations with suppliers and local communities are crucial actions.

Moreover, ensuring regulatory compliance and fostering transparency through consistent monitoring and reporting can boost operational efficiency, cut costs and enhance corporate reputation.

These measures not only support environmental sustainability but also lead to improved business performance overall.

Moving towards a circular economy

Malaysia is working to address its escalating waste crisis by transitioning from a linear to a circular economy, as outlined in the 12th Malaysia Plan.

This strategy sets ambitious recycling targets and integrates waste prevention, reuse, recycling, recovery and disposal into the national framework.

To further promote sustainable practices, the government is considering financial incentives for businesses and consumers who actively participate in waste reduction.

The government is actively considering financial incentives to encourage businesses and consumers to reduce waste.

Potential incentives include subsidies for recycling technologies, tax benefits for businesses that meet waste reduction benchmarks and support for innovative projects that promote the circular economy.

Alongside these financial measures, educational initiatives and public advocacy play a crucial role in shifting societal attitudes and behaviours regarding waste management.

The government is ramping up its efforts to educate the public about the 3R principles—reduce, reuse, recycle—through extensive educational campaigns and community engagement programmes.

These initiatives aim to foster a proactive approach to waste reduction among citizens.

Challenges and the path forwards

Despite comprehensive strategies, challenges remain, including lax enforcement of waste separation laws and the need for stronger single-use plastics and e-waste policies.

Concerns about the health impacts of new WTE facilities, due to non-compliance with World Health Organization (WHO) air quality standards, highlight the need for effective enforcement and transparent governance.

Overcoming these challenges requires ensuring that policies are reinforced by effective enforcement and characterised by transparent and accountable governance.

As Malaysia stands at a pivotal juncture in its waste management practices, leveraging advanced technologies and adopting a holistic approach are essential.

By transforming its current waste management crisis into an opportunity for sustainable growth and innovation, Malaysia can preserve its natural beauty and ensure a healthier environment for future generations.

This strategic pivot is crucial for Malaysia's journey toward becoming a regional leader in environmental stewardship.

Tina Thomas specialises in strategic planning and sustainable growth, with areas of interest in innovation and transformation.

With over 15 years of experience in the energy industry, she has a global track record in crafting and implementing corporate strategies focused on sustainability.

The views expressed here are the writer's own.

Forward faster now: A call to action for companies driving the 2030 agenda

Launch of the Forward Faster Louder Programme at UN Global Compact Forward Faster Now: Asia & Oceania

By CHOW ZHI EN
ESGeditorial@thestar.com.my

THE latest SDG Stocktake Report (2024) revealed that over 97% of business leaders in the Asia and Oceania regions understand how their business impacts the sustainable development goals (SDGs).

Leveraging this insight, the United Nations Global Compact Forward Faster Now hosted its first regional flagship event in Asia and Oceania through the Forward Faster Initiative from Aug 5-6.

Forward Faster Now urged companies to take ambitious and credible action towards specific, measurable sustainability targets.

This initiative aims to accelerate progress across all 17 SDGs, focusing on areas where companies can collectively make the biggest, fastest impact by 2030.

The event also served as a platform for discussing strategies and scalable solutions tailored to the region's unique context.

With the theme "Accelerating Sustainable Business in Asia & Oceania", the event drew over 300 high-level executives, sustainability practitioners and business leaders from across Asia and Oceania to the Asia School of Business for two days, fostering a dynamic environment for thought-provoking discussion and collaboration.

Organised by the UN Global Compact in collaboration with 15 Global Compact Country Networks and hosted by the UN Global Compact Network Malaysia and Brunei (UNGCMYB), the event featured nearly 70 high-profile speakers.

The panel session 'Beyond Borders: How the evolving regulatory landscape around Sustainability Regulations is heralding change in the Asia & Oceania Region' discussed how global sustainability regulations are reshaping policies, fostering alignment for competitiveness and driving fundamental changes in sustainability, ESG practices and local disclosures.

Going forwards together

The inauguration on Aug 5 was led by Energy Transition and Water Transformation minister Akmal Nasrullah Mohd Nasir and UN Global Compact secretary-general and chief executive officer (CEO) Sanda Ojiambo.

"We must challenge Malaysian companies to move 'Forward Faster Now', aligning with the government's agenda to accelerate sustainable development.

"This event serves as a crucial platform for businesses to set ambitious targets in key areas like gender equality, climate action, sustainable finance, living wage, and water resilience, all vital for our country's future," he said.

"By participating, companies not only contribute to achieving the global goals, but this will also strengthen Malaysia's position in leading sustainable business practices".

Akmal Nasrullah alongside UNGCMYB executive director Faroze Nadar and Astro Malaysia Holding Berhad (Astro) group CEO Euan Smith launched Forward Faster Louder Programme, signifying a collaborative effort towards amplifying sustainability impact stories.

The "Forward Faster Louder" programme is about amplifying impactful and credible ESG narratives for Malaysia.

Through Astro's Voice For Good platform they will showcase real, true and inspiring sustainability conversations, including stories from all walks of life that will inspire and drive positive action.

The intent is to exhibit how Malaysia is paving the way, told by Malaysian individuals, corporates and small businesses.

The event then proceeded with its first discussion, featuring a high-level CEO panel. Business leaders shared their experiences and insights on driving sustainable development, managing crises and responding to sustainability challenges.

The panellists included EDOTCO Group CEO Mohamed Adlan Tajudin; Astro group CEO Euan Smith; TotalEnergies Corbion Thailand director Olivier de Linares; Green Delta Insurance Company Ltd managing director and CEO Farzanah Chowdury; and Kokusai Kogyo chairperson and CEO Sandra Wu, who is also a board member of Global Compact Network Japan.

The first day concluded with a closing plenary delivered by Kanako Fukuda from Sumitomo Chemical Co Ltd; Charles Brewer from Pos Malaysia Berhad; Nadar; and Frank Wang from Tingyi (Cayman Islands) Holding Corp.

They summarised the outcomes and outlined the next steps, while celebrating the Forward Faster signatories from the region.

Select companies were also invited to share their current journeys and future plans.

Helping smaller players

One panel session on Aug 6 titled, "Forward Faster SMEs: Small Businesses, Big Impact" explored the crucial role of small and medium enterprises (SMEs) in achieving sustainable economic growth and development in the region.

According to UN Global Compact Network Singapore executive director Esther Chang, "SMEs are the backbone of local economies, accounting for 98% of businesses and 50% of formal employment in Asia-Pacific and worldwide.

"With large corporations often dominating the sustainability discussion, it is important to remember, though, that two-thirds of the environmental, social and governance footprint lies with the SMEs and their supply chains."

The panel consisted of Hatch Works CEO Mevan Peiris, TORAJAMELO CEO Aparna Saxena, DTC World Corporation (DTC) director Cheng Yee Chin and Forest Interactive CEO and founder Johary Mustapha.

Cheng shared her experiences saying, "When we embarked on our sustainability journey in 2016, the very first challenge that we faced was the lack of knowledge and experience in that area.

"During 2016, there weren't a lot of talks about sustainability in Singapore. So, we had to invest significant time and resources to understand sustainability concepts and also implement relevant practices."

For DTC, a marketing services company that specialises in premiums and point-of-sales merchandise solutions, Cheng said that their first audit was equal value certifications.

This covered various areas like labour and human rights, business ethics, sustainable procurement and environment.

The panel noted that the steep learning curve can be due to another major challenge; changing employees' mindset and integrating sustainability into a company's culture.

"When we first talked to our employees about sustainability, many saw that sustainability efforts are just additional work without any immediate benefits," Cheng added.

"To address this, we invested in a lot of training and workshops to educate our employees about the importance of sustainability and how it will align with our business goal.

"We went ahead to set up a sustainability working group involving all the heads of departments to help us to manage and also drive our sustainability efforts," she explained.

Over the two days, other key topics included an overview of how global companies integrate SDGs into their strategies and operations, discussions on promoting gender equality through increased women's representation in senior management and showcasing innovative solutions by young executives from the SDG Innovation Accelerator Programme.

Additionally, the event addressed the transformation of food systems and the private sector's role in ensuring future food security.

Besides providing valuable insights on the practical application of sustainability principles, the event also featured the launch of impact stories.

These stories showcased the region's commitment to driving progress and offered an in-depth look at how businesses are employing innovative and effective strategies to advance sustainable development.

As of now, over 300 companies in the region have committed to Forward Faster and the UNGCMYB urges companies in Asia and Oceania to commit to the Forward Faster initiative.

Breathing new life into rubber waste

A sharp eye, starting small and moving fast led to the creation of a strong homegrown eco-brand

ALWAYS one to keep a keen eye on sustainability and environmental matters, Steven Ng Yong Beng discovered that rejected nitrile rubber gloves heading for the landfills, could be given a new lease on life.

Without hesitation, Ng launched himself into researching and developing attainable methods and recycling options in reducing the amount of nitrile rubber gloves that could be environmentally hazardous when incinerated. The process of incineration will lead to the release of carbon dioxide (CO_2), non-toxic oxide and nitrogen oxide.

With over 20 years of experience in the rubber industry, it didn't take long for Ng to come up with a brilliant idea and the technology for it - recycle the rubber waste (gloves) into durable, eco-friendly, slip-resistant safety shoes under a brand called Solewell.

"We realised lots of footwear in Malaysia do not utilise eco (friendly) material. Thus, through market research and competitor analysis, we launched Eco Fosser Safety Shoes last year. Not only are the safety shoes eco-friendly, but they are also designed to be slip-resistant and twice as durable," he shares.

Ng's project landed him the accreditation of Malaysia's first SIRIM Eco Label and MyHijau mark, as well as industry recognition such as Star Media Group's ESG Positive Impact Awards (ESG PIA).

Noting that success did not come easily, Ng says numerous attempts have been made and there were countless moments of doubt about the business' sustainability and success.

"From securing initial funding to setting up a factory, we encountered hurdles that tested us. Yet, our determination and teamwork saw us through. Every risk we took, every difficult decision we made, ultimately shaped the resilient and thriving company which we are proud of today.

"We carefully plan and seek diverse perspectives. We also believe that collaboration and partnership play a crucial role in navigating challenges. By supporting each other and sharing knowledge, we created a strong foundation that empowers us to tackle obstacles with confidence."

Ng adds that the right market positioning was determined by clearly defining their product's unique selling points (USPs) and how they are able to address the specific needs of the target market while working on a tight budget.

"We were self-funded in the beginning, using our own savings and later on, investments from our co-founders. My advice for other businesses is to start where you are, do what you can with what you have – start small but move fast.

He notes that a business' success depends on its ability and agility to relentlessly innovate according to the 3P's - process, performance and profit.

"Focus on things which we can control, seek a mentor for guidance and most importantly continuously learn by reading a lot of books.

(Above) Solewell Nature Eco Sandals' soles are made of recycled nitrile rubber gloves.

(Left) Geomax Rubber Innovative Products founder and director Steven Ng Yong Beng says collaboration and partnership play a crucial role in navigating challenges when building a business.

"Our long-term goal is to create a sustainable future for all our stakeholders. We aim to achieve this by leveraging innovative technologies, fostering a culture of continuous improvement and committing to ethical practices in every aspect of our business.

"By prioritising environmental stewardship, social responsibility and economic viability, we can make a meaningful impact on the world.

"Our vision includes not only financial growth but also the empowerment of our employees, the wellbeing of our communities and the protection of mother earth," says Ng.

Tastefully crafted, thoughtfully curated

A batik artist's journey of self-discovery and sustainability

For those starting with limited funds, Ummi shares that passion is the ultimate driver for long-term personal and business growth as it forms the foundation for truly understanding and valuing the work. —DuniaMotif

SHE could not ignore it any longer - her inner compass was telling her it was time for a purposeful switch in careers. This was when Ummi Khaltum Junid decided to quit a steady job in a multinational company to begin her journey of self-exploration.

"For the past ten years, I worked in a 9am to 5pm environment, leaving me feeling trapped in a fast-paced lifestyle, disconnected from nature and our surroundings.

DuniaMotif, a homegrown batik canting (hand-drawn) label using natural dyes, focusses on transforming everyday waste into opportunities. —DuniaMotif

"We seem to be constantly viewing the world through screens, and I realised that this was no longer my passion," says the Malaysian-born batik artist.

The life-changing move ultimately resulted in the establishment of DuniaMotif, a homegrown batik *canting* (hand-drawn) label using natural dyes. Driven by a desire to learn more about batik and natural dye-making from around the world, Ummi began working with natural materials and subsequently, kitchen waste - helping her discover a sense of calm and purpose, while reducing environmental footprint.

"My work had evolved—not just from natural dye-making, but to recognising the potential of creating colours (for batik motifs) from everyday waste.

"This journey led me to work closely with communities, aiming to minimise our environmental impact. I feel a responsibility to learn about the materials I use and how to incorporate them sustainably into my crafts," she shares.

She soon discovered her niche, which was highlighting the art of slow craftsmanship and its deeper meaning.

For those starting with limited funds, Ummi shares that passion is the ultimate driver for long-term personal and business growth as it forms the foundation for truly understanding and valuing the work.

Noting the importance of balancing core values with adapting to changing trends, Ummi says one should view moments of uncertainty as opportunities for growth.

"It can be difficult to remain authentic while trying to stay relevant in a competitive market. I maintain sustainability in my business by keeping expenditures minimal and using waste materials as my primary resource. Instead of consuming new materials. I focus on transforming waste into opportunities."

Recognising that this is still a niche market in Malaysia, Ummi has incorporated education into her business model by hosting workshops and collaborating on community projects to raise awareness about the importance of reducing waste.

"This approach not only sustains my business but also encourages others to see value in sustainability. For other start-ups, combining resourcefulness with community engagement can be a powerful way to create lasting impact."

Hoping that her work in crafting could raise awareness among Malaysians about the importance of sustainability, Ummi notes that DuniaMotif aims to inspire other businesses to adopt holistic, sustainable practices.

"Partnering with like-minded individuals or businesses not only strengthens your mission but also helps expand your network and reach. By staying committed to sustainable practices and fostering collaboration, you can create a business that is both meaningful and impactful.

"The long-term goal is to lead the natural dye movement in Malaysia while continuing to innovate within the realm of traditional craft-making.

"Ultimately, our vision is to set a new standard in the industry, showing that environmental responsibility and artistic excellence can go hand in hand," Ummi emphasises.

Besides Malaysians' lack of concern for the environment and low awareness on recycling as a high-value practice, population growth is one of the biggest factors in the increasing generation of solid waste. – Photo courtesy of Kain Movement

From trash to cash

Malaysia is set to house 18 waste-to-energy plants, but will the nation be able to cope with this initiative?

By LEE CHONGHUI
ESGeditorial@thestar.com.my

MALAYSIA is losing hundreds of millions of ringgit every year simply because recycling habits are not keenly practised. According to a report, it is estimated that RM291mil went to waste in 2023 when high value recyclable resources were neglected. The national recycling rate is a mere 33.17% – still shy of the 40% target set for 2025.

Waste Management Association of Malaysia (WMAM) executive committee technical chairman Zamri Abdul Rahman says one of the biggest problems Malaysia is encountering in waste management is the lack of separation at source – especially for municipal waste.

"This has resulted in a low recycling rate for household waste. Thus, the amount of waste is growing at faster rates.

"Meanwhile, dumpsites (sites without proper treatment or environmental protection system) are still used as final disposal—leading to environmental pollution such as leachate contamination of surface and groundwater, odour problems, fire breakouts and greenhouse gas (GHG) emission.

"Furthermore, facilities are scarce for recycling and sorting of wastes especially for the public who want to recycle their waste," says Zamri.

He says the exact amount of waste generated by Malaysia is unclear since the data is constantly increasing. Thus, one can safely assume that the total amount of garbage is substantial.

The Star reported in January that on a daily basis, Malaysians discard about 39,000 tonnes of solid waste, equivalent to about 1.17kg per person. The figures were revealed by Solid Waste Management and Public Cleansing Corporation (SWCorp).

On average, food makes up the biggest component of domestic waste at 30.6%, followed by plastic (21.9%), paper (15.3%), disposable diapers (8.2%) and hazardous household waste (4.2%).

Other waste includes commingled waste (3.6%), yard/garden refuse (2.9%), glass (2.7%), metal (2.4%), textiles (2.3%), beverage cartons (1.7%), rubber (1.1%), wood (1%) and face masks (0.7%).

On a daily basis, Malaysians discard about 39,000 tonnes of solid waste, equivalent to about 1.17kg per person. – FAIHAN GHANI/The Star

A trashy situation

Population growth is one of the biggest factors in the increasing generation of solid waste, besides Malaysians' lack of concern for the environment and low awareness on recycling as a high-value practice.

Given the lack of recycling, more often than not, garbage would end up getting dumped in the landfills which are filling to capacity.

It is reported that the 137 landfills in the country are running out of space for the disposal of solid waste by 2050.

Data from SWCorp reveals that the amount of waste sent to disposal sites under the seven states that adopt the Solid Waste and Public Cleansing Management Act 2007, also known as Act 672, stood at 2.67 million tonnes from January to October 2023. The corresponding figures for 2022 and 2021 were 3.1 million tonnes and three million tonnes respectively.

Environment and waste management specialist Dr Theng Lee Chong points out that out of the 137 landfills, only 21 of them are sanitary landfills, which are more sophisticated in storing, processing and treating waste safely and effectively.

This means over 85% of landfills in Malaysia are just open dumps that accumulate exposed waste there.

"Here, waste degradation takes place. Highly flammable methane gas and carbon dioxide - which are GHG - are generated and emitted into the atmosphere. After degradation, leachate (the wastewater) will seep into the ground.

"If there is an underground water body, surface river or lake nearby, all kinds of contamination will happen," Theng explains in a radio podcast.

He adds that these "open dumps" would be of better use if they were sanitary landfills.

He says: "Sanitary landfills involve a lot of engineering design in terms of the operation, maintenance and so on.

"These proper landfills have a layer of liner at the bottom of the site where all the leachate (wastewater) is contained to be channelled to wastewater treatment facilities. This will ensure that it will not seep into the underground water.

"Also, there are designs for the release of the gas capture from the waste body and drainage surrounding the landfill," says Theng.

Raking in bucks from dumps

Pointing out that an alternative to landfills are waste-to-energy (WTE) plants, Zamri commends the government's move in launching the first-ever Circular Economy Blueprint for Solid Waste in Malaysia (2025-2035) and for planning of 18 possible sites for proposed WTE plants.

The blueprint, announced by the Housing and Local Government minister Nga Kor Ming earlier this month, highlighted several long-term plans and initiatives in the works that would encourage the adoption of a circular economy by both the public and local industries.

The blueprint will focus on five strategic pillars which include governance and legislation; guidelines and procedures; digitisation and technology; as well as infrastructure and facilities. It also focuses on market creation, to promote the national growth of the recycling and solid waste-based industries.

To address concerns about harmful pollutants created by WTE plants—especially those that harness energy through combustion—Zamri shares that the Malaysia Clean Air regulation is on par with European emission standards.

"The main pollution from WTE plants is flue gas from the combustion of waste. The flue gas is treated prior to release through the chimney of the plant. Among the treatment systems are the dosing of lime, the spraying of activated carbon, bag filters to capture fine particulates. The final emission through the chimney will have to comply with European emission standards."

Zamri adds that hazardous waste is under the purview of the Department of Environment (DoE), which has implemented measures and licensed facilities where hazardous waste is recycled or recovered and for final disposals.

Meanwhile, Theng points out that there needs to be a mindset shift from the grassroots for any type of measures and efforts to work. He says people need to change their attitude to become more responsible in waste management.

"Education is one thing that we should do and continue doing. Waste segregation is supposed to be the basic and crucial step to ease the whole process of waste management.

"With proper segregation, valuable items can be recycled, composted, repurposed and more," he says after highlighting that it is impossible to have a fully circular economy model without the discharging of any waste.

In summary, tremendous measures and efforts are being implemented by the government as sustainable solutions to handle the burgeoning problem.

However, these grand plans would only be successful if the public also took up the responsibility in reducing the amount of waste that ends up in landfills through the simple practice of reducing, reusing and recycling.

Bin there, done that

Ease separation anxiety, fight recycling contamination by mastering trash separation

Compiled by ONG HUEY ERN
ESGeditorial@thestar.com.my

Human activities are bound to generate waste, yet the way of waste disposal can have profound environmental consequences.

An increasing population translates to escalated waste generation, posing a significant challenge of sustainable management.

According to an article in *The Star* reported earlier this year, the Solid Waste Management and Public Cleansing Corporation (SWCorp) said that Malaysians discard approximately 39,000 tonnes of waste daily, which equates to around 1.17kg per person.

As landfills reach capacity and environmental concerns rise, the urgency to manage waste sustainably becomes evident.

While there are guidelines and local efforts to achieve a national recycling rate of 40% by 2025, a swifter response in implementing more recycling infrastructure and improved management as well as integrating recycling practices into everyday behaviour would also help elevate the nation's environmental standards.

This involves not just policies but also a cultural shift towards more mindful consumption and disposal practices. Noting that, the act of separating waste at the source plays a crucial role in this narrative, which can bolster the country's efforts in environmental resilience.

Importance of separation

'Separation at source' and 'waste separation' refer to the systematic segregation of different types of solid waste at their location of generation, such as households or businesses.

It is the first step in the broader recycling process, laying the groundwork for efficient waste management and ensuring that recyclables are not contaminated.

This seemingly simple act is pivotal to a circular economy, allowing materials to be repurposed rather than discarded, upholding the environmental aspect of ESG principles by mitigating resource depletion and reducing pollution.

By ensuring that recyclables are uncontaminated, their value is preserved, propelling us towards a comprehensive waste management system.

Impact of separation

Garbage separation is not only a foundation for responsible waste management but also key in environmental impact reduction.

Recycling contamination occurs when non-recyclables are mixed with recyclables, or when recyclables are not cleaned appropriately.

This contamination can lead to entire batches of recyclables being sent to landfills instead of recycling plants.

In Malaysia, a staggering amount of potential recyclables end up in landfills due to contamination.

The rest, unfortunately, heads for already brimming landfills and mismanagement can result in a loss of valuable materials, increased pollution, and heightened greenhouse gas emissions. Or worse, it may end up in completely unsuitable locations like our oceans and rivers.

Here are some ways in which proper separation makes a difference:

- **Reducing landfill waste**
- **Lowering greenhouse gas emissions**
- **Preserving natural resources**
- **Protecting wildlife**
- **Economic and community benefits**

Source separation 101

1. Know your recyclables:
Paper, cardboard, glass, metals, and plastics are the primary categories. It's essential to familiarise oneself with the local recycling rules, as different municipalities or areas may accept different items.

2. Clean matters:
Ensure that recyclables are free from food residues and other contaminants. Rinse out containers and remove labels if required.

3. Separate bins:
Utilise separate bins for each category to prevent cross-contamination. Label these bins clearly and place them in a convenient location to encourage their use.

4. E-waste attention:
Avoid throwing these in your bins and opt to find specialised recycling programmes for your old batteries and appliances such as ERTH: Electronic Recycling Through Heroes, UrbanR Recycle+ or even IPC Recycling and Buy Back Centre to name a few.

5. Organic waste:
Composting organic waste at home can significantly reduce the amount of waste heading to landfills, while also providing nutrient-rich soil for gardens.

The journey is not without challenges. A major obstacle is the lack of awareness and motivation among citizens. Local community programmes and nationwide campaigns can help bridge this gap, along with incentives for households that practise diligent waste separation.

As Malaysia strides forward with its environmental goals, the role of each individual in source separation becomes pivotal.

Small actions can lead to big changes. Every act of separation counts—think before you bin it.

Stay tuned to the next issue to find out how you can make a difference to a better future.

Infographic by SMG Brand Studio