



TECHIES

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Malaysia's Race towards Net Zero

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Climate Change Imperative

The urgency of climate action is no longer a distant echo but a blaring siren. Extreme weather events, rising sea levels, and ecosystem disruptions are stark reminders of the consequences of our inaction. Climate change brings about frequent and unfavourable meteorological phenomena, such as heavy precipitation and flooding, which can impede the smooth functioning of supply networks, cause damage to physical structures, and incur massive financial losses for businesses. For Malaysia, the stakes are particularly high. Our susceptibility arises from the combination of low-lying coastal areas, abundant biodiversity, and reliance on resource-intensive industries. Therefore, climate change is a well-recognised phenomenon that has garnered significant attention in the country and comes with significant and far-reaching effects on multiple sectors, including business, livelihood, health, and the economy.

The imperative of decarbonisation transcends beyond environmental considerations; rather, it can catalyse a paradigm shift in economic landscapes. The pursuit of

decarbonisation aligns closely with the ethos of responsible governance and corporate stewardship, which are expected from businesses and nations alike by their stakeholders. This confluence of environmental responsibility and economic viability will ensure the establishment of resilient, forward-looking economies. In turn, this facilitates the creation of a more secure and stable green infrastructure, contributing to enhanced sustainable-focused security (food, energy, etc.) on a national and, by extension, global scale. By embracing sustainable practices, nations can spur the emergence of novel industries, thereby diversifying their economic portfolios. This will foster an environment conducive to continuous innovation and technological advancement which is highly needed for Malaysia to transition.

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*Chief editor's note***Embracing Sustainability:
Responsibilities in Public and Private Sectors**

Hello!

At the present moment, the issue of sustainability is facing a significant challenge. Each day we have to deal with environmental matters such as the reduction of natural resources, pollution, deforestation, e-waste generation, poor air and water quality, ozone layer depletion, and more. We urgently need effective solutions to these problems.

Sustainable technology is increasingly important for cost optimisation, energy performance and asset utilisation. It also drives environmental, social and governance (ESG) outcomes like improving wellness and providing the traceability needed to ensure responsible business practices. To add, sustainable technology facilitates new business models and tech-enabled products to better serve

customers. In order to encourage and achieve sustainable development in Malaysia, the Malaysian government and numerous finance organisations now provide green technology incentives and funding to SMEs in the form of climate financing and technology transfer. It is good to see that businesses and individuals have started to employ changes through the use of sustainable technology.

Indeed, sustainability is the job and responsibility of every stakeholder in both public and private sectors. All members of every community in this country should be engaged to develop creative and innovative solutions. Being green should not be perceived as a voluntary or an elitist game. In essence, we really do not have a choice in the matter. Our survival depends on it. As someone once said,  BUMI KITA, KITALAH JAGA.

Zuraidah Mohd. Zain

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The White Knight of Decarbonisation

The current trajectory of decarbonisation efforts underscores the pivotal role that technology plays in this transformative journey, and its significance is poised to intensify further as we confront the challenges of achieving a net-zero future. Technological advancements represent linchpins in steering nations towards sustainable, low-carbon pathways. Additionally, rapid technology advancement can monitor environmental sustainability, improve food security, eradicate poverty, and encourage resource efficiency—all of which contribute to the 2030 Agenda. This paradigm is particularly relevant in the Malaysian context, where the efficacy of our transition hinges on our ability to innovate and judiciously leverage on greener technologies.

The rapid pace of technological innovation has already translated into tangible contributions that significantly advance the decarbonisation agenda in Malaysia. Notably, the integration of renewable energy sources, the implementation of energy-efficient

systems, and the introduction of carbon-capture technologies have collectively initiated a transformative shift in the country's energy landscape. However, the intricate terrain of achieving net-zero emissions is navigated, the centrality of technology becomes increasingly pronounced.

The evolution and widespread implementation of cutting-edge solutions represent a linchpin in realising the ambitious targets outlined in Malaysia's comprehensive decarbonisation agenda. This imperative extends across diverse sectors, including transportation, industry, and energy production.



Innovations in these domains will play instrumental roles in affecting meaningful reductions in greenhouse gas emissions. A prime illustration of this commitment is exemplified by the Kasawari carbon capture and storage (CCS) project, spearheaded by PETRONAS. Positioned as a game-changer, this offshore CCS initiative aims to capture substantial volumes of CO₂ from a sour gas field, securely storing it beneath the seabed in Sarawak. If successfully executed, the project could emerge as the largest of its kind globally, contributing significantly to Malaysia's carbon mitigation efforts.

There is a diverse array of technologies poised to play pivotal roles in Malaysia's decarbonisation journey. Apart from CCS, other technologies include renewables, batteries and storage, circular economy practices, building technologies, industrial-process innovation, hydrogen applications, sustainable fuels, nature-based solutions, and advancements in agriculture and food systems. Each of these technologies addresses specific facets of the complex challenge of decarbonisation, reflecting the multidimensional approach required for comprehensive success.

TECHNOLOGY	EXAMPLES
Renewables	Solar, Wind (onshore & offshore), Grid Innovation.
Batteries and storage	Electric-vehicle batteries, long-duration energy storage.
Circular economy	Battery recycling, heat recovery, plastic recycling.
Building technologies	Geothermal heating, heat pumps, energy-efficient equipment.
Industrial-process innovation	Electrification of heat source, green steelmaking, green cement.
Hydrogen	Electrolysers, fuel cells, methane pyrolysis
Sustainable fuels	Biofuels, SAF (Sustainable Aviation Fuels)
Nature-based solutions	Monitoring and verification of forests, peatlands, and mangrove.
Carbon removal, capture & storage	Point source carbon capture, direct air capture
Agriculture and food	Precision agriculture, crop preservation, regenerative technology, alternative protein.

Equipping Malaysia for Climate Technologies

Positioning Malaysia as a frontrunner in climate technologies demands a meticulous and all-encompassing strategy for innovation. The imperative lies not only in viewing greener technologies as a choice but as an indispensable necessity to ensure the nation's prominence in sustainable development. By intricately aligning innovation with sustainable practices, Malaysia can significantly enhance its global standing in the realm of climate action as the international community increasingly values nations that exhibit unwavering commitment to green technologies.

Integral to steering Malaysia's decarbonisation agenda are comprehensive policies and strategic roadmaps, such as the National Industrial Master Plan (NIMP), the National Industrial Revolution 4.0 (IR4.0), the National Energy Transition Roadmap (NETR), and the Hydrogen Economy and Technology Roadmap (HETR). These frameworks are instrumental in driving and aligning the nation's trajectory towards sustainable practices. The systematic integration of these plans ensures a synergistic approach, harmonising national efforts toward a common goal of decarbonisation. The success of such initiatives will lie in their ability to guide and regulate the nation's transition through well-defined and targeted strategies.

Moreover, cultivating an ecosystem conducive to research and development in clean technologies is paramount. Incentivising private sector participation

becomes pivotal, encouraging investments in sustainable innovation. Simultaneously, the nurturing of a skilled workforce proficient in integrating and deploying these innovations is essential. A skilled workforce ensures that Malaysia possesses the human capital required to harness the full potential of emerging technologies, thereby reinforcing its position as a leader in the climate technology landscape.

The swift pace of energy innovation underscores the need to elevate the standards for low-carbon technologies. This necessitates a concerted effort to support well-managed research initiatives, fostering an environment conducive to groundbreaking discoveries. In certain scenarios, providing support for the early adoption of innovative technology becomes imperative. Therefore, decarbonisation serves not only as a means to mitigate environmental impact but also as a catalyst for innovation as it opens avenues for the creation of clean-tech products and facilitates expansion into new green markets.

Integrating decarbonisation with cutting-edge technology represents a synergistic approach that extends far beyond its economic implications, profoundly impacting societal well-being. The transition towards cleaner and greener technologies carries the potential for substantial improvements in public and planetary health, primarily through the reduction of air and water pollution. The adoption of renewable energy sources and the implementation of energy-efficient technologies serve as pivotal mechanisms in mitigating greenhouse gas emissions, thereby contributing to enhanced health outcomes.

By embracing such technologies, societies can experience a dual benefit: a tangible reduction in environmental pollutants and a concurrent improvement in public health. This nexus between technological advancements and health outcomes underscores the interdependence of ecological and societal imperatives. As such, the synergy of decarbonisation and technological innovation positions this transition not only as an ecological imperative but also as a societal commitment to the well-being of current and future generations. Technological advancements play a pivotal role in realising these objectives, facilitating the transition towards cleaner, more sustainable practices. This intricate interplay between technological innovations and societal well-being establishes a compelling argument for the necessity of coupling decarbonisation with cutting-edge technologies, reflecting a holistic approach to addressing the complex challenges of environmental sustainability and public health.

Malaysian SMEs- Comply or Lose Out!

Malaysian small and medium-sized enterprises (SMEs) risk losing RM292 billion in revenue if they do not comply to environmental, social and governance (ESG) principles, according to reports by the Sustainable Finance Institute Asia 2022. By not incorporating ESG principles in their business operations, SMEs are losing out in the eyes of investors, customers, and financing bodies. They also make themselves exempt from certain governmental tax incentives.

Research by Xiamen University Malaysia and Universiti Teknologi Brunei shows that investors prefer companies that share information about their ESG practices. Not providing enough ESG information is seen as a sign that the business has some issues that can negatively affect its image and ultimately decrease its brand value. In other words, small businesses that do not follow ESG rules are considered as having bad management and not caring about long-term sustainability.

The Malaysian government supports the implementation of ESG via numerous tax incentives so that firms engage in ESG disclosures that benefit their business value-chain as well as their shareholders.

Tax deduction on ESG related expenditure

The government proposed in Budget 2024 for a tax deduction of up to RM50,000 for each year of assessment, from 2024 to 2027, to be given to companies for ESG-related expenditures as follows:

ESG Related Expenditure	Description
Enhance Sustainability Reporting Framework	ESG reporting by companies listed on the Bursa Malaysia stock exchange
Climate Risk Management and Scenario Analysis	ESG reporting by financial institutions regulated by the Bank Negara Malaysia
Tax Corporate Governance Framework (TCGF) of Lembaga Hasil Dalam Negeri Malaysia (LHDNM)	Preparation of reports related to TCGF by companies
Transfer Pricing Documentation	Preparation of transfer pricing documentation by companies
E-Invoicing implementation	Consultation fee for implementing e-invoicing incurred by Micro, Small and Medium Enterprises (MSME)
Any reporting requirement related to ESG	ESG reporting by companies to approved regulator by the Minister of Finance

Further tax deduction for development of carbon projects

Further tax deduction of up to RM300,000 will be given for costs incurred by companies for development, measurement, reporting and verification (MRV) tasks in relation to carbon projects. It is deductible against income earned from carbon credits traded on Bursa Carbon Exchange (BCX). This applies to applications received by the Malaysia Green Technology and Climate Change Corporation (MGTC) from January 1, 2024, until December 31, 2026.

Green Technology Tax Incentive

Malaysia offers tax incentives to support SMEs that adopt green technology, foster eco-friendly practices, and promote a shift towards a sustainable, low-carbon economy. For example, the **Green Investment Tax Allowance (GITA)** and **Green Income Tax Exemption (GITE)** allow businesses to claim tax deductions for investments in approved green technology projects, as highlighted by the Malaysian Investment Development Authority (MIDA).

Bank Negara Malaysia's Low-Carbon Transition Facility (LCTF)

BNM launched a RM2 billion **Low-Carbon Transition Facility (LCTF)** in February 2022, which provides affordable financing for SMEs to acquire working capital or capital expenditures related to low-carbon practices.

Companies that do not take ESG rules into account in their operations will run into a myriad of risks, including:

Trading risk

According to MIDA, ESG is very important in Malaysia's investment policies. SMEs are crucial for attracting foreign investments. If SMEs do not follow ESG practices, it could hurt Malaysia's ability to compete globally. Our country does a lot of trading with other countries, so it is vital for small businesses to follow ESG rules because they are a part of the worldwide supply chain. Large companies that are ESG-compliant now want their suppliers (including small businesses) to also meet these standards. This will no doubt affect SMEs.

The world is moving towards being more environmentally-friendly. This means there are good opportunities for businesses to grow by adhering to ESG principles and creating eco-friendly products and services.

Financing risk

Deputy Investment, Trade & Industry Minister, Liew Chin Tong said that the trend of requiring businesses to adhere to ESG principles is not limited to a single region but rather, it constitutes a global phenomenon. Banks should comply with their customer's (SMEs') customers (listed companies). Many listed companies now audit their supply chains to make sure the firms they buy from follow ESG rulings.

The more ESG-adaptable one becomes, the easier it is to secure funding. Without ESG, obtaining loans will become harder, for, banks are now transitioning towards ESG-centric lending practices.

Risk of losing support from large investors

As ESG grows in importance, large investors pay more attention to companies that demonstrate their commitment to comply with it. Without support from large investors, smaller companies might struggle to recover from adverse incidents such as natural disasters, economic downturns, legal issues, accidents, or any other circumstances that could disrupt the normal business operations and financial health of the company.

In short, ESG risk is material risk, and failing to address it promptly and appropriately can lead to a range of consequences.

How an SME can start the ESG journey

Embracing ESG practices is of paramount importance to SMEs. It opens doors to enter the supply chains of large corporations and multinational companies (MNCs) that require their vendors and suppliers to adopt ESG practices. As an SME, adopting such practices can help improve productivity, achieve cost savings, and enhance brand reputation. However, starting out on the ESG or sustainability journey may be a big challenge.

Understanding this challenge, the UN Global Compact Network Malaysia & Brunei has developed the SME ESG Hub to provide SMEs with fundamental understanding and practical tools to kickstart their ESG journey. The hub is a free, one-stop online ESG resource platform for Malaysian SMEs, and is available in English and Bahasa Malaysia.

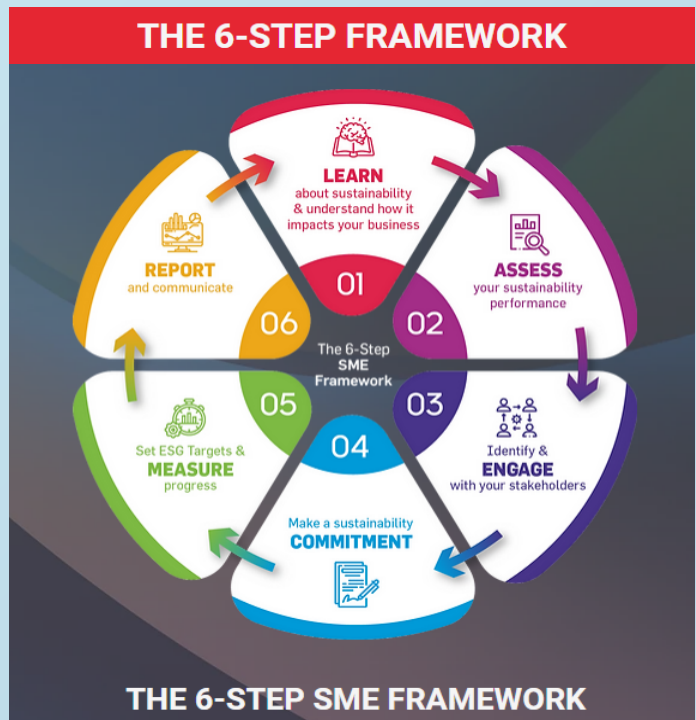
The Hub consist of four gateways in which various resources can be accessed:

Inspire - A collection of inspirational case studies of SMEs that have implemented ESG actions that have delivered positive impact to the organisation.

Plan - Resources to help in the planning of the ESG journey. The resources here will help assess and plan the user's ESG initiatives and actions. The resources include:

- Sustainability Business Purpose Matrix
- ESG Readiness Assessment Tool
- E-Learning Course: Future- Proofing Your Small and Medium-Sized Enterprise
- PEST (political, economic, social and technological) Analysis
- Materiality Matrix
- Stakeholder Engagement Matrix

Act – Resources to develop and implement ESG, based on the SME Sustainability Action Guide's 6-step framework:



The 6-Step SME framework was developed to systematically guide SMEs in implementing sustainability & ESG actions within their organisations.

1] LEARN

Resources to get you familiar with the overarching concept and intent of sustainability, and understand how sustainability matters to your organisation and industry.

2] ASSESS

Resources to help you assess your current sustainability performance and to know where your business stands and how far you have to go - measuring your performance against ESG criteria.

3] ENGAGE

Resources to help you engage with your various stakeholders. SMEs need to know who their stakeholders are and talk with them to find out what matters to them.

4] COMMITMENT

Resources to assist your organisation to take a formal and public statement to express your SME's position and alignment with international frameworks on ESG. This statement communicates to internal and external stakeholders that your company is committed to positive action.

5] MEASURE

Resources to help you to define realistic targets, collect relevant and meaningful ESG data and monitor your organisation's progress. Credible data is important to substantiate ESG claims and helps to identify any issues that may occur.

6] REPORT

Resources to help your organisation to report and communicate your targets and achievements to your stakeholders. Transparent and regular disclosures are integral to building stakeholder trust in your business.

Communicate - Resources to help communicate the user's sustainability plans, actions and initiatives to various stakeholders – both internally and externally. The resources here include:

Sustainability Customer Management Matrix
Sustainability Communications Plan
Sustainability Reporting Guide
Scope 1 and 2 Carbon Calculation

More information can be acquired from esghub.my.

Strengthening Internationalisation and Enabling TVET POLYCC Ecosystem

AN INTERVIEW WITH
Dr. Haji Mohd Zahari Ismail
*Director General, Polytechnic Education
 & Community Colleges Department*



How do you plan to keep TVET institutions relevant and responsive to evolving industry needs and technological advancements?

Polytechnics and community colleges in Malaysia offer TVET programs at certificate, diploma and bachelor levels. To ensure that the programs are in line with industry needs and concurrent with technological developments, there are several initiatives developed by the Department, including:

Polytechnic Industry Advisory Council (PIAC)

The Department of Polytechnics and Community College Education (DPCCE) engages with the industry through a selection of 20 prominent captains of industries via a platform known as the Polytechnic Industry Advisory Council (PIAC). The members of this council are appointed by the Minister of Higher Education in November 2023, with an effective term of three years (2023-2026).

PIAC is responsible for:

- i. sharing information and gathering feedback from major industry entities, government agencies, statutory authorities, and professional bodies and organisations on strategic issues, and to form smart industry collaborations and partnership networks.
- ii. providing input and feedback on strategic planning and long-term direction as well as strengthening collaborations between polytechnics and the industry.
- iii. increasing visibility and branding of the polytechnics to become major leaders in TVET education.

- iv. strengthening the synergy of industry-academia collaboration in order to open up opportunities to produce holistic and balanced graduates while also increasing the marketability of the graduates.

CEO@POLYCC

Another initiative is the CEO@POLYCC, comprising outstanding members appointed by the Ministry of Higher Education. This initiative involves sharing industrial knowledge and expertise for at least 10 hours of lecture per year. The CEO's role is to improve the quality of industry-academia knowledge- and skills-sharing, and to help expand collaboration networks between the two via curriculum, teaching & learning, training, evaluation, and research.

Industry Advisory Committee (Jawatankuasa Penasihat Industri-JPI)

This committee comprises industry experts on degree, diploma and certificate programs offered at all polytechnics and community colleges in the country. They are appointed by me, and are tasked to ensure that the curricula offered at polytechnics and community colleges truly reflect the needs of the industry.

How does TVET institutions address socio-economic challenges within the community, such as issues relating to unemployment and skills gaps?

We have established the Graduates Employability Intervention Program to address unemployment



Our Department implements various holistic student development activities/programs, including aspects of leadership, volunteering, skills, psychology, sports and numerous others in improving the personality of our students.

Transition Roadmap (NETR) serve as our primary reference in our improvement initiatives. We also use Agenda 1, which aims to align our programs with the POLYCC Polytechnic Transformation Plan that is currently being developed.

The restructuring and streamlining of the TVET diploma and degree programs aim to expand access and pathways in the field. The diversification of program offerings intends to boost student enrolment and serve as a catalyst for economic development for the country. Additionally, it seeks to enhance the brand and image of TVET. These efforts align with the Ministry of Higher Education's aspirations with the goal of the National TVET Ecosystem, empowering future talent and supporting the development of available talent.

and skills gap issues, whereby, more than 5,000 students enhance their skills, which in turn will reduce the skills gap within the industry. Our Structured Internship Program (SIP) ropes in industry strategic partners to provide industrial training and offer job placements to students who undergo industrial training in dedicated industries. The students are likely to be employed at the places they are trained upon graduation.

We have our lifelong learning (LLL) program (Pembelajaran Sepanjang Hayat, PSH) that has more than 259,000 participants from the community who seek to elevate their household income and socioeconomic status. To add, twenty-two community colleges offer short-term courses in 22 skill areas such as Catering & Serving, Computer & Information Technology, Business & Entrepreneurship, Self-Development/ Motivation, and Graphics & Multimedia. These short-term programs are open to all Malaysians, and are targeted to the youth, the elderly, the B40 (bottom 40% of the socioeconomic band) group, the disabled (OKU), Orang Asli (indigenous people), single mothers, or any other vulnerable clusters/groups. Thus, vulnerable groups can improve their existing skills and acquire new ones, which will help them generate income,

improve the community's standard of living, and overcome socio-economic barriers.

How do you plan to lead TVET institutions to adapt to changes in the education and industry landscapes?

We undertake improvements on a regular basis by restructuring our TVET diploma and degree systems to align with the needs of the industry. Proposals for new research and educational programs are consistently reviewed and implemented, in line with the industry's current needs.

Analysis of national policies such as the MADANI Economy, Malaysia Plan, New Industrial Master Plan 2030 (NIMP 2030), and the National Energy



What measures would you implement to ensure the success and well-being of students throughout their education journey?

Our Department implements various holistic student development activities/programs, including aspects of leadership, volunteering, skills, psychology, sports and numerous others in improving the personality of our students. This is in line with the Higher Education Development Plan 2015-2025 Shift 1, that addresses the need to develop holistic, entrepreneurial and balanced graduates.

Can you provide insights into upcoming initiatives aimed at elevating the impact of TVET in 2024?

In 2024, we are focusing on five areas, namely, 'Empowering Industry-based Competencies', 'Exploring Translational Research', 'Intensifying Lifelong Learning', 'Strengthening Internationalisation', and 'Enabling TVET POLYCC Ecosystem'. There are several priorities that are emphasised such as work-based learning (WBL), structured internship programs (SIP), reskilling & upskilling centres (RUC), professional certification of lecturers, and student program attributes.

Work-Based Learning (WBL):

This year, DPCCE will plan to inspire four new WBL study programs to enhance industry relationships with POLYCC based on industry needs and expectations. The WBL programs will be aligned with the requirements of the recent New Industrial Master Plan (NIMP) 2030 and the New Energy Transition Roadmap (NETR).

RUCs at 16 Malaysians Polytechnics:

1. Politeknik Ungku Omar (PUO)
2. Politeknik Sultan Salahuddin Abdul Aziz Shah (PSA)
3. Politeknik Ibrahim Sultan (PIS)
4. Politeknik Sultan Azlan Shah (PSAS)
5. Politeknik Sultan Haji Ahmad Shah (POLISAS)
6. Politeknik Sultan Abdul Halim Mu'adzam Shah (POLIMAS)
7. Politeknik Port Dickson (PPD)
8. Politeknik Tuanku Sultanah Bahiyah (PTSB)
9. Politeknik Merlimau Melaka (PMM)
10. Politeknik Sultan Idris Shah (PSIS)
11. Politeknik Sultan Mizan Zainal Abidin (PSMZA)
12. Politeknik METRo Kuala Lumpur (PMKL)
13. Politeknik METRo Kuantan (PMKu)
14. Politeknik METRo Johor Bahru (PMJB)
15. Politeknik METRo Betong (PMBS)



Structured Internship Programs (SIP)

As for the Structured Internship Program (SIP), the Department aims to engage with multinational companies to maintain the achievement of graduate employability (GE) of at least 95% every year.

Reskilling and Upskilling Centres (RUC)

The next priority is the establishment of the Reskilling and Upskilling Centre (RUC). This is a new initiative that aims to further strengthen synergy with the industry. RUC is a training centre that provides opportunities for industrial workers to improve their skills and competencies. Sixteen RUCs will operate, involving several polytechnics, including Polytechnic Ungku Omar, Polytechnic Sultan Salahuddin Abdul Aziz Shah, and Polytechnic Ibrahim Sultan. A total of 3,000 industrial workers will be trained using the Time Sector Privatisation (TSP) approach.

Lecturer Industrial Skills (professional certification)

In order to ensure that POLYCC is well suited to train industry and community workers, teaching staff are given skills and mastery of the field. With an allocation of RM6 million this year, the number of industry-oriented professional training and certification programs will be increased appropriately.

Student Program Attributes

POLYCC not only produces graduates with skills that meet market demand but also have good soft skills and positive student attributes so that they can work through any challenges that come their way. Our entrepreneurial programs, volunteering programs, and skill-based programs will be further expanded in synergy with the industry and community. A 5% increase in the program will be implemented this year to develop student attributes so that they are more self-sufficient in their future jobs.

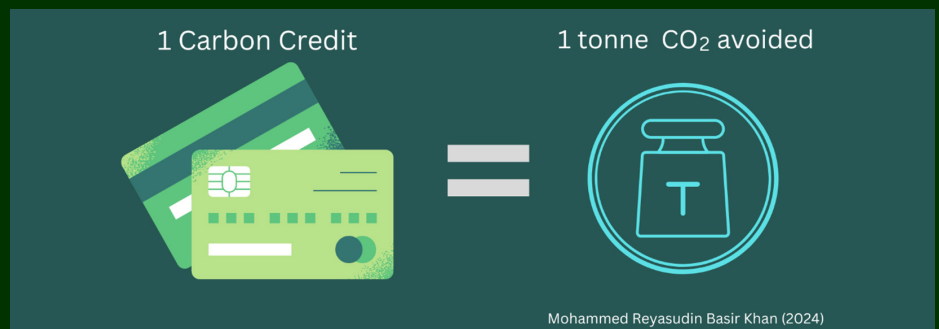
Blockchain Unchained: Pioneering a Greener Tomorrow through Carbon Credits

In the face of escalating climate change, sustainability has become a pressing global concern. As nations and corporations recognise the need to curb carbon emission, carbon credits have emerged as a potential solution. Individuals and organisations are incentivised to reduce greenhouse gas (GHG) emissions by trading and investing in carbon reduction initiatives. While the concept of carbon credits is not new, its adoption has faced challenges due to transparency, accountability, and credibility issues. However, with the advent of blockchain technology, the process of carbon credit trading is undergoing a revolutionary transformation.

The Carbon Credit Market: An Overview

Carbon credits are a market-based mechanism aimed at mitigating climate change. They operate on the premise that each ton of carbon dioxide (CO₂) emission has a social cost, and companies or nations that manage to reduce their emission below a certain threshold can earn carbon credits. The credits can then be sold to entities that exceed their emission limits, enabling them to offset their environmental impact. The funds generated from these transactions are reinvested in eco-friendly projects that further reduce GHG emissions.

Despite this noble intention, there are many hiccups, including lack of transparency, double-counting, and



fraud. These issues have hindered the efficacy of carbon credit initiatives, leading to scepticism among potential investors and participants.

Blockchain Technology: Transforming Carbon Credits

Blockchain technology, best known as the underlying framework for cryptocurrencies like Bitcoin, has the

potential to revolutionise the carbon credit market by addressing its inherent problems. At its core, blockchain is a decentralised, immutable, and transparent ledger that records transactions in a secure and tamper-proof manner. The technology's unique attributes lend themselves perfectly in the carbon credit market, offering solutions to long-standing challenges.



1. Transparency and Traceability

One of the most significant advantages of using blockchain is the transparency it provides. Every transaction related to the creation, issuance, and trading of carbon credits is recorded on the blockchain, accessible to all authorised participants. This transparency ensures that all parties involved have access to real-time data, eliminating doubts about the legitimacy of carbon credits.

Moreover, blockchain can facilitate traceability, whereby, stakeholders trace the entire lifecycle of a carbon credit from its creation to the funding of projects and the ultimate offset of emissions. This level of traceability instils trust in the system, making it more appealing to potential investors.

2. Prevention of Double-Counting and Fraud

Double-counting has been a pervasive issue in the carbon credit market. It occurs when a carbon credit is sold to multiple buyers, leading to inflated emission reduction claims. Blockchain's decentralised nature ensures that each

carbon credit has a unique and unalterable digital signature. This makes the credit impossible to duplicate or reuse, effectively preventing double-counting and fraud.

To add, smart contracts and self-executing contracts with their terms directly written into codes, play a crucial role in mitigating fraud. The contracts automate the verification process, releasing carbon credits only when specific conditions are met. This eliminates the need for intermediaries and significantly reduces the risk of fraudulent activities.

3. Incentivising Sustainable Practices

Blockchain technology has the potential to incentivise sustainable practices on an individual level. For instance, individuals can be rewarded with carbon credits for adopting eco-friendly habits, such as reducing energy consumption or using public transportation. The credits can then be traded or redeemed for various benefits, fostering a culture of sustainability among members of the general public.

WHAT IS A CARBON CREDIT?

1 Carbon Credit

A carbon credit is a permit equivalent to the reduction or avoidance of one metric tonne of carbon dioxide emissions.

2 Who can offer?

Carbon credits are typically offered by organizations or projects that undertake activities to reduce or offset carbon dioxide emissions such as renewable energy projects (e.g solar and wind).

3 Auditor

Third-party auditors, in accordance with international protocols, verify and validate carbon offset projects to ensure their adherence to established standards and environmental integrity.



Issue

Certification bodies or standard-setting organizations issue carbon credits once they confirm that a project aligns with international standards and has effectively reduced or removed the specified amount of greenhouse gas emissions.

Certification

Carbon credits are issued by registries when projects successfully avoid or reduce greenhouse gas emissions

Allocation

The avoided carbon emissions can be assigned to businesses and individuals through the purchase of carbon credits.

Mohammed Reyasudin Basir Khan (2024)

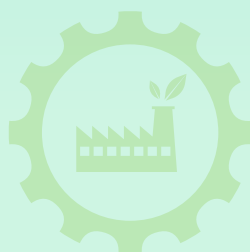
Furthermore, blockchain can be integrated with the Internet of Things (IoT) devices to monitor and verify sustainable actions. IoT devices can collect real-time data on energy usage, waste management, and other environmental metrics, which can then be recorded on the blockchain to validate and reward sustainable behaviours.

4. Enhancing Global Collaboration

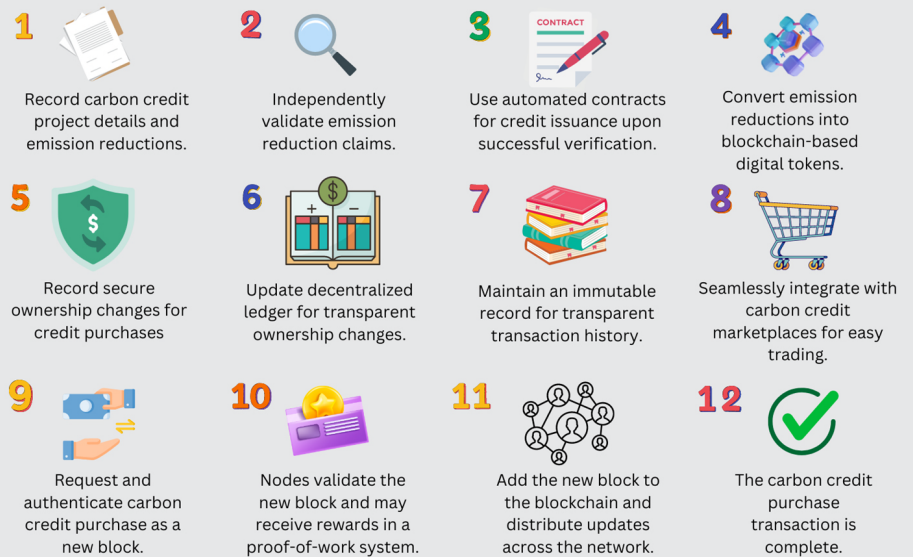
The decentralised nature of blockchain fosters collaboration and cooperation between nations and organisations. Through a shared and secure ledger, countries can track their progress collectively in achieving emission-reduction targets. Blockchain can facilitate international carbon credit trading, enabling countries with excess credits to assist those struggling to meet their targets. This interconnectedness encourages a more coordinated global effort in combatting climate change. In addition, blockchain's ability to provide secure and transparent communication between different stakeholders allows for greater international cooperation in funding and implementing large-scale



The synergy between blockchain, carbon credits and sustainability is propelling the world towards a greener and more sustainable future.”



Carbon Credit Acquisition via Blockchain



Mohammed Reyasudin Basir Khan (2024)

sustainability projects. Governments, NGOs, and private enterprises can collaborate seamlessly, pooling their resources and expertise to tackle environmental challenges collectively.

5. Facilitating Carbon Offset Projects

Blockchain technology streamlines the funding and execution of carbon offset projects, further promoting sustainability. Traditionally, the process of funding and monitoring such projects involve complex bureaucratic procedures, resulting in delays and inefficiencies. By using blockchain, project funding can be streamlined through tokenisation, wherein investors can purchase digital tokens that represent a share in the project.

The transparent nature of blockchain also ensures that the funds allocated to these projects are utilised appropriately. As transactions are recorded and visible on the blockchain, stakeholders can track the flow of funds, ensuring that they are directed towards legitimate carbon-offset initiatives.

Conclusion

Blockchain technology is ushering in a new era of transparency, accountability,

and credibility in the carbon credit market. By addressing the challenges that have plagued traditional carbon credit initiatives, blockchain is enabling more effective and efficient emission-reduction strategies. The synergy between blockchain, carbon credits and sustainability is propelling the world towards a greener and more sustainable future.

As this transformative technology continues to evolve, it holds the promise of becoming a cornerstone in the fight against climate change. With concerted efforts from all stakeholders, the integration of blockchain in carbon credit markets could mark a crucial step towards achieving a cleaner and more sustainable planet for generations to come. Embracing blockchain technology as a tool for promoting sustainability is necessary. It is a responsibility we must all undertake to secure a thriving future for our planet. The decentralised power of blockchain empowers individuals, organisations, and nations to unite in their pursuit of a more sustainable world, making carbon credits more credible, transparent, and effective in combating climate change.



MBOT TUNE SUMMIT 2023: Igniting Minds, Inspiring Innovation

20 DECEMBER 2023 - The Malaysia Board of Technologists (MBOT) has organised the MBOT TUNE SUMMIT 2023 which aims to encourage the sharing of knowledge on technology and careers as well as the opportunity to interact with professionals through exposure to the nature of work.

The ceremony began with a welcome speech from Prof. Dato' Ts. Dr. Mohd Zamri Yusoff, Deputy Vice-Chancellor (Research & Innovation) of Universiti Tenaga Nasional (UNITEN), followed by the opening speech delivered by Dr. Md Fauzi Md Ismail, Registrar of MBOT.

The speakers of the program consisted of Ts. Dr. Lim Zhen Wen, Chief Of Staff, Payments Network Malaysia, Tc. Mas Muhammad Haziq bin Saifuddin, Engine Repair Technician, GE Aerospace Malaysia who is also a board member of MBOT, Ts. Cempaka Lim, Technical Sales Engineer of SLB and Ar. Idr Ts. Ahmad Ridha Abd Razak, Director, Seetizens Lab Sdn Bhd.

The program also features an interactive component with the presence of ten representatives of



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industry players, namely, HeiTech Solid, Power IT, Fortinet, INTEL, Trainocate, Media Lab, Oppstar, Acasia Communication, Plytec and Socso

The main objective of the exhibition from the industry is to provide students with hands-on guidance before venturing into the professional world. Representatives from various companies have shared insights and

tips on potential career paths, internship opportunities and helpful advice to succeed in the industry.

A total of 200 students from various public and private institutions of Higher Learning and 20 industry representatives attended the program.



/mbot
registration

47,412

Graduate Technologists

9,960

Qualified Technicians

21,947

Professional Technologists

2,867

Certified Technicians

82,186

Total MBOT Registrants
(As of February 2024)

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