



Supercharge ESG with technology



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Foreword

By **Datuk Johan Idris** | Managing Partner, KPMG in Malaysia

A black swan event to the scale of the COVID-19 pandemic has caused worldwide disruptions that are still felt two years on. For a time, survival was questioned and businesses' ability to sustain was no longer a certainty. Unsurprisingly, this experience has resulted in a heightened focus on environmental, social and governance (ESG) ambitions, which is set to drive business decisions over the next decades.

KPMG's survey found that 81 percent of business leaders accept ESG initiatives as a strategic priority for business growth. Concurrently, CEOs are investing in technology to strengthen business resilience. As companies across all industries were forced to pivot their operational strategies to withstand the ongoing shocks, what became obvious was the role technology plays in enabling sustainability in business.

ESG mandates for transparency will propel the need for radical digital transformation. At the same time, new emerging technologies have the potential to shift the ESG needle from ambition to action. This publication explores technologies such as big data, Artificial Intelligence (AI), Internet of Things (IoT), metaverse and 5G connectivity that can help manage organisations' net zero and sustainability ambitions. We also dive into the broad uptake of ESG-purposed technologies across the financial services, telecommunications and manufacturing sectors in Malaysia.

I hope this publication will provide thought-provoking insights that can help you understand how to better leverage technology to develop effective ESG strategies and supercharge your progress in achieving your ESG targets.

Foreword

By **Novie Bin Tajuddin** | CEO of MICPA

Digital transformation has registered the minds of business leaders over the past decade. I have not seen before in the history that humans have intersected with digital technology so closely with every aspect of our lives. It has also accelerated in the recent years due to the COVID19 pandemic, the world has swiftly adapted with changes caused by the introduction of Movement Control Order, remote work arrangement, supply chain disruption, climate change and social justice movement. The world is leveraging on technology to address another accelerating movement 'Environmental, Social and Governance (ESG)' to achieve a sustainable future.

Organisations today are facing pressure to improve transparency across their value chains. The execution of the ESG agenda requires close collaboration with technologies to overcome data quality issues. By leveraging on technological solutions, organisations enable data analysis to produce a meaningful information that help business leader make informed decisions on ESG.

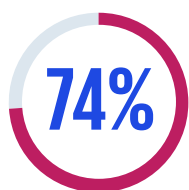
As part of The Malaysian Institute of Certified Public Accountants' efforts to prepare future-fit professional accountants, I hope this publication will assist you in solving ESG challenges by leveraging on technology, aimed at achieving your ESG milestones speedily in an ever-increasingly digital world.

Setting the context

The environmental, social, and governance agenda

Environmental, social, and governance (ESG) have become widely accepted pillars along which organisations structure their commitment to build positive and sustainable business practices. Implementing ESG initiatives can help to ensure the sustainability of the environment, reduce greenhouse emissions through energy efficiency, manage the well-being of employees and ensure proper governance.

KPMG's 2022 CEO Outlook survey observed that ESG concerns continue to be top of mind for leaders worldwide, with 69 percent of CEOs reported significant demand from stakeholders (including investors) for increased reporting and transparency on ESG issues.



of CEOs agree their organization's digital and ESG strategic investments are inextricably linked.

Source: KPMG 2022 CEO Outlook

However, 38 percent of CEOs are struggling to articulate a compelling ESG story while 16 percent struggle to meet the ESG reporting needs of different investors when communicating their ESG performance to stakeholders.

In Malaysia, Public Listed Companies (PLC) were mandated to disclose narrative statements on their management of material economic, environmental and social risks and opportunities in annual

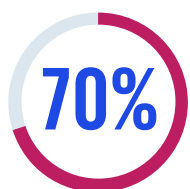
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reports. Bursa Malaysia issued a Sustainability Reporting Guide in 2015 and a second edition in 2018 to help PLCs embed sustainability in reporting. However, compliance with the guide is voluntary and no one consistent ESG framework has been introduced by the regulator since.

In March 2022, Bursa Malaysia released a consultation paper to discuss key proposals that will require the main market-listed companies to disclose climate change-related information, aligned with the Task Force on Climate-related Financial Disclosure (TCFD) recommendations. This shall set forth the standard for Malaysian public companies to comply with in the future.

Role of technology in ESG

While the role of technology and its presence in the ESG landscape has always been influential, the pandemic reinforced the importance of driving enterprise transformation enabled by technology. Many CEOs are betting on digital transformation to make their companies more resilient, agile, and customer-focused.



of CEOs agree that they need to be quicker to shift investment to digital opportunities and divest businesses that face digital obsolescence.

Source: KPMG 2022 CEO Outlook

In the ESG space, different technologies are being utilised to help save the environment and manage climate change, cultivating a firm belief that technology can play a key role in ESG – from reducing carbon emissions to measuring ESG impacts and reporting.

Government and market regulators can play key enabler roles in encouraging the adoption of technology to accelerate ESG practices, not just for public companies, but also for small-medium enterprises (SME) pursuing ESG initiatives.



Closer to home

The Malaysian government remains committed to prioritise technology advancement and ESG-focused development programmes and projects, as outlined in the Finance Minister's Budget 2023 Speech. Committed to achieving carbon neutrality by 2050, the Malaysian government had announced various initiatives in support of this vision. Amongst others are the introduction of carbon tax, as well as extensions to tax incentives and financing schemes to continue incentivising and encouraging businesses to accelerate the use of ESG-focused technology and embark on green projects ¹.

Policymakers across sectors are also doing their part to move the ESG agenda forward. This includes introducing frameworks that can improve ESG strategy formulation and sustainability reporting. In September 2021, the Securities Commission Malaysia (SC) launched the Capital Market Masterplan 3 (CMP3) as a strategic framework for the capital market to continue to support the economy and transition towards greater inclusivity and sustainability.

Additionally, Bank Negara Malaysia (BNM) in January 2022 released the Financial Sector Blueprint 2022-2026 which outlines the central

1. [Ucapan Bajet 2023](#), Ministry of Finance, 7 October 2022

bank's development priorities for the financial sector over the next five years. The blueprints highlight efforts to foster market dynamism, encourage sustainable development objectives, facilitate an orderly transition to a greener economy, and a more climate-resilient economy and financial sector. These initiatives play a part in supporting the Twelfth Malaysia Plan's ambition to transform Malaysia into "a prosperous, inclusive and sustainable country".

■

In July 2021, the Malaysian government launched the National Low Carbon Cities Master Plan to provide guidelines for state governments and local authorities in developing low carbon cities.

According to the World Economic Forum, the manufacturing sector is often regarded as a major contributor to environmental pollution. In July 2021, the Malaysian government launched the National Low Carbon Cities Master Plan to provide guidelines for state governments and local authorities in developing low carbon cities. This aligns with the nation's Green Technology Master Plan 2017-2025 released by the Ministry of Energy, Green Technology and Water to provide actionable strategies in support of the National Green Technology Policy. The policy focuses on four strategic pillars namely Energy, Environment, Economy and Social to accelerate the national economy and promote sustainable development.

Even with supportive policies and frameworks in place, a successful equation calls for companies to be effective in measuring their organisation's ESG impacts and managing their progress. Unfortunately, this is the portion most companies struggle with. But there are organisations that have proactively leveraged on technology to set good examples to follow.



Key technology trends

It is time to rethink technology's role in ESG to drive positive and measurable change within an organisation.

Today's business efforts around ESG are not purely regulatory driven. Driving the ESG agenda also requires having the right data. Based on KPMG's industry insights and conversations, here are key technology trends that may impact ESG related ambitions:

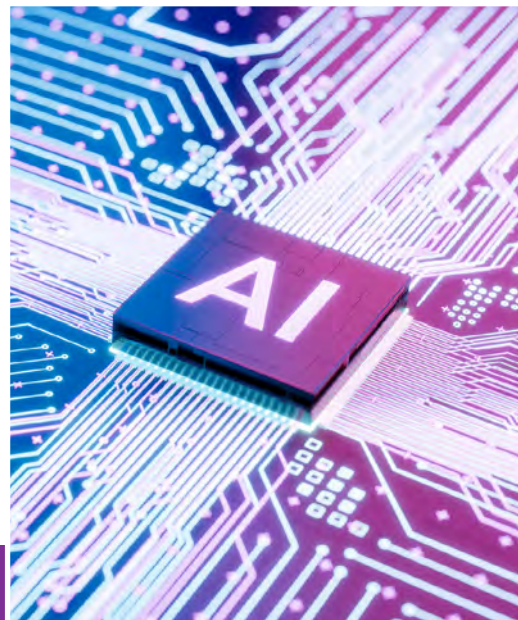
Artificial Intelligence (AI) at the heart of ESG decision-making

Customers are now demanding insight into the sustainability of an organisation's business model. Meeting this expectation requires evaluating and assessing entire operations including the supply chain. If successful, this can help businesses tap into new markets and avoid market share erosion.

For business leaders to move forward confidently with their ESG decisions, they need to know that the data, algorithms and analytics can be trusted. Hence, it becomes crucial to identify ESG relevant data, bring structure to its collection, as well as cleanse and curate the data so as to evaluate the organisation's status quo, model future scenarios and track progress. Analytics has the power to expedite ESG initiatives and programmes, and minimise risk throughout the business.



Artificial Intelligence (AI) can help companies make better decisions by filtering unstructured data. AI can offer support ethically through automating complex business processes, insights through data analysis, and engagement with customers and employees. More reliable mechanisms are emerging that can help organisations validate, test and create transparency, and use AI more confidently. Getting this right can increase AI adoption, scale, speed and outcomes to truly push the ESG agenda forward.



Big problems call for big data solutions

Accessing, analysing and understanding ESG related data involves making sense of high-volume, multi-format, inconsistent and often self-reported data. This is often a complex and time-consuming task, requiring advanced analytics, technologies, statistical modelling and capabilities.

To address these needs raised by financial services companies, KPMG collaborated with Google Cloud to make new advances in ESG data science, ESG scoring, reporting and assurance.

The result: ESG IQ – a big-data analytics platform powered by AI and machine learning. It has a suite of advanced analytical tools to assess ESG standing, risk scenarios, hypotheses and regulatory eligibility and alignment across multiple frameworks (UN SDG, SASB, GRI and WEF).

ESG IQ was used by one of the biggest US-based Asset Managers to help their treasury team unravel their asset-backed portfolio with structured bonds, sovereigns, agencies, municipals, and government bonds. The tool also enabled the company to unravel the score, providing the root-cause-analysis of what factors and issues have led to the rating. The client could then determine for themselves the materiality of the findings — recognising that different factors may have a greater or lesser weight depending on the client's guiding ESG strategy.

ESG and cyber security as two sides of the same coin



Taking an ESG approach to cyber security reporting can promote digital trust in organisations, as it will give stakeholders a complete picture of the organisation's capabilities and resiliency in facing future adverse cyber events.

The sharing of data, which has grown exponentially with the advancement of technology, has increased the risks of data breaches and privacy issues. Customers and stakeholders want to know that their information is protected and that individual privacy rights are top of mind for organisations with robust disaster recovery protocols embedded in the event of a breach.

In driving customer confidence, it is imperative for organisations to ensure access to sensitive customer data is carefully calibrated based on roles and responsibilities within the organisation.

Further, organisations should consider putting in place relevant cyber security controls, programs, and reporting to ensure that they be well-positioned to safeguard ecosystems and connections.

Internet of Things (IoT) enables a new ESG reality

The Internet of Things (IoT) is the future of digital connectivity, data accumulation and system efficiencies. Connecting the physical to the digital world provides better visibility of what is happening in our environments. It can help organisations make better and faster decisions, automate processes and enable prediction of future events.

With IoT technology, companies can realise huge opportunities and potentials in 'connecting' the entire business chain. This includes developing smart objects such as sensors to automate the production line and collect big data to optimise operation efficiency, monitor waste and emissions, and report on ESG metrics.

Metaverse is here

The metaverse is a convergence of the physical and virtual worlds to create a 'phygital' experience. It may sound futuristic, but it is all relative. The metaverse is not a product but rather a conduit for a new ecosystem and frontier of existence where people, such as your customers and employees, can interact with one another. This immersive environment can bring people together in remarkable new ways. In fact, younger generations are already spending hours in various metaverses daily through digital avatars and identities that are transforming activities such as socialising, shopping, gaming, fitness, education, work, training, and entertainment.

Although the metaverse has yet to be refined and properly regulated, diving into the metaverse

provides countless virtual opportunities for interactions and experiences. In theory, this may lower the overall environmental and carbon footprint as utilising the metaverse can save on CO2 emissions and lower environmental footprints. It can also allow for more easily accessible and cost-efficient meetings and events for companies as well. Accounting the reviewed information, it is safe to believe that the metaverse could very well be the next big step that companies can take towards ESG solutions.





Smart city transformation in a post-COVID world

COVID-19 resulted in a shared experience of isolation and a lack of connectedness on different levels. There is a unique opportunity to improve connection by embedding digital infrastructure and smart city initiatives as part of a business-as-usual design, development, operation and maintenance of cities.

According to the United Nations, cities produce more than 60 percent of all greenhouse gas emissions². Closer relationships among global cities and their leaders – as well as between cities and the private industry – will be crucial to providing responsive customer-centric services and a new era of healthy, sustainable living for all.

Betting on the future of automobiles

The 2021 United Nations Climate Change Conference (COP26)'s commitment to secure global net zero by mid-century and keep 1.5c degrees within reach rests on several factors, one of which includes speeding up the switch to electric vehicles (EV). EV could be a solution to address the all-time high CO2 emission challenge. According to a study conducted by Consumer Reports in 2020, EV drivers spend around 60 percent less on fuel than gas-burning vehicle drivers⁴. At a glance, this may have a bigger impact once more car owners switch to EVs.

In Malaysia, there is already a call to bring in the drive of EVs. The Malay Vehicle Importers and Traders Association of Malaysia (PEKEMA) is working to sell Tesla EVs via grey imports to increase the number of EVs in Malaysia by selling a target number of 500 units with a tax exemption break for two years⁵. Toyota plans to use their local Malaysian distributor, UMW Toyota Motor Sdn Bhd, to introduce Hybrid EVs to the domestic market of Malaysia⁶. Budget 2023 tabled on 7 October 2022 also introduced several key initiatives to support the EV industry in Malaysia. In addition to the extension of tax exemptions for EVs, the government announced the expansion of scope for the green technology fund scheme (GTFS) to include the EV sector – a move observed to be beneficial for the EV ecosystem as a whole. As for Malaysians, the incentives present an attractive opportunity for those who wish to own an EV whilst also providing opportunities for the industry to expand on, such as installing new charging stations across the nation.

How can smart cities help?

A smart city, as defined by the Malaysia's Smart City Project (MSCF), should comprise of 7 major components: smart economy, smart living, smart environment, smart people, smart government, smart mobility, and smart digital infrastructure. While smart cities may sound far off, they are already a reality. Major cities like Kuala Lumpur and Johor have already become smart cities.

Kuala Lumpur is sporting elevated electric bus transportation and free Wi-Fi, with an array of sustainability features leveraging on the most sought after 5G wireless connectivity that have earned it numerous certifications and awards. Further, the Kuala Lumpur Smart City Master Plan 2021-2025 is a cornerstone for advancing Kuala Lumpur's global reputation as a thriving, liveable, and sustainable city³.

Smart City Iskandar Malaysia in Johor was established as a one of the pioneering smart city projects in Malaysia. In addition, the Johor state government aims to produce 20 to 25 megawatts of energy per hour via a SMART (solid waste modular advanced recovery and treatment) WTE plant with green energy supplier Cypark Resources.

2. United Nations, [Generating power](#)

3. DBKL, [Kuala Lumpur Smart City Blueprint 2021 - 2025](#)

4. Consumer Reports, [Electric Vehicle Ownership Costs: Today's Electric Vehicles Offer Big Savings for Consumers](#)

5. Paul Tan, [2022 Tesla Model 3 in Malaysia, priced from RM289k tax free – PEKEMA aims to sell 500 Tesla EVs per year](#)

6. Toyota, [An 'electrifying' Future Ahead: UMW Toyota To Advance Carbon Neutrality Initiative With Local Mass Manufacturing Of Hybrid Electric Vehicles](#)

Key takeaways

New technologies will continue to be introduced and it becomes a question of proactiveness – mixed with a dose of courage – for business leaders to explore the ones that can effectively move the needle from ambition to action for their organisation’s ESG targets. KPMG’s survey among 500 CEOs globally reveals that the fear of failure to create value from ESG investments is one of the biggest challenges they face in delivering their ESG strategy in 2022⁷.

In that same survey, 82 percent of CEOs agree that they need to be quicker to shift investment to digital opportunities and divest businesses that face digital obsolescence. 59 percent reported new partnerships as critical to continuing their pace of digital transformation.

It’s time to move from a state of awareness to bravely explore the realm of possibilities where technology can be a catalyst to new solutions, enhanced business operations and expansion into new markets.

7. KPMG 2022 CEO Outlook

Sector insights

The Financial Time Stock Exchange (FTSE) Russell released a publication in 2021 highlighting the ESG Ratings of Malaysian Public Listed Companies (PLC). Based on the publication, 249 public companies were assessed, which resulted in 54 companies given a rating of 4 out of 5 stars. Top performing sectors in driving ESG agenda include Consumer Products & Services, Financial Services, Telecommunication and Media. These industries arguably have a large impact on the lives of Malaysians in providing banking services, telecommunication services and manufacturing consumer goods.

At surface level, it appears that sectors and industries address ESG differently. For instance, banks focus more on social aspects such as providing banking services to the unbanked population. Telecommunications continue to set sustainable goals and initiatives that impact the environment. The subsequent sections provide a deeper look at the Financial Services, Telecommunication and Manufacturing sectors, citing use cases of technology applications and their corresponding ESG implications.

Financial Services (FS)

Sustainability has been brought into sharper focus with ESG concerns incorporated into the notion of sustainable development and funding. At the policy level, several ESG-related frameworks have also been established. The 2019-formed Joint Committee on Climate Change (JC3), which focuses on enhancing climate resilience within the Malaysian financial industry, is co-chaired by representatives from BNM, SC, Bursa Malaysia, and 19 other financial institutions. Accelerating the financial sector's response to climate risk, a BNM and SC study published in April 2022 found that 24 respondents in the Banking, Financial Services and Insurance Solutions (BFSI) sector have strong commitments to sustainability and climate issues. An increasing number of financial institutions have also embraced technology as the way forward.

In our view, digital technologies will be crucial in accelerating financial institutions' efforts to achieve and support their ESG objectives. We explore some of these overleaf.



Artificial Intelligence (AI)

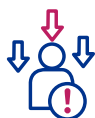
AI has real transformative potential in the FS sector. It can revolutionise financial services and change how services are provided to customers in line with the aim to serve the unbanked. It might enable more customisable goods and services, effective internal operations, improve cyber security, and decrease risks. The implementation of mass personalisation and helping customers overcome inadequate financial literacy will make this most obvious. Development and adoption are growing fast and are likely to accelerate as firms intensify post-COVID investments. Banks can look forward to the following potential benefits:



Enhanced efficiency: Reduce costs and enhance productivity by using AI to perform core processes in areas like finance, compliance, risk management and administrative tasks.



Generate revenue: Using AI to improve segmentation, anticipate customer needs or the creation of new products and services.



Reduce risk: Applying AI to risk analysis in areas such as credit decisions, market risk or insurance underwriting to enhance institutional strength and systemic stability.

Examples of current banking use cases for AI can be grouped into five areas which are already generating specific applications for individual institutions:



New value propositions: Leveraging analytics to generate new insights and innovations, for example in lending applications, financial advice or investment research.



Risk management: Enhancing fraud detection, trading surveillance and evaluations of liquidity or counterparty risk.



Operations: Process re-engineering of administrative tasks, reporting or compliance activities.



Customer acquisition and management: Accelerating onboarding or improving customer understanding and personalisation.



Customer experiences: Automating interactions via chatbots or virtual assistants, and enhancing existing channels by allowing human advisors to focus on value-added tasks.

Digital banking – The rise of fintech

Hong Leong Bank has been praised for being among the industry's leaders in ESG standards. A 2021 CGS-CIMB Equities Research paper recognised Hong Leong Bank for its efforts in promoting ESG practises across its operations, working with borrowers to improve standards, incorporating ESG evaluation into its loan approval process, and practising disclosure of ESG-related information.

In addition, new financial services enabled by AI/ Machine Learning (ML) – such as aggregator services, personal financial management, and robo-advisory platforms – are already finding success in the market. There are also numerous robo-advisors in Malaysia that use big data technology and their own proprietary investment strategies to respond to economic factors including StashAway, BEST Invest, and Wahed Invest to provide ESG-driven portfolios.

Source: The Star, Hong Leong Bank leads the way in ESG

CIMB's AI platform

CIMB's successful adoption of an automated AI platform earned them recognition as the Best Financial AI Project in Malaysia at The Asset's Triple A Digital Awards 2022. The AI platform allowed CIMB to create ML credit models for its consumer portfolio, improving the bank's ability to estimate credit risk and underwrite consumer loans and enhancing the quality of loan screening and decreased credit loss. The platform also enabled CIMB to create ML credit models for the bank's retail portfolio using traditional and alternative data that CIMB has access to. The bank can lower credit loss by enhancing the default risk

estimation for retail loan applications using the sharper models.

CIMB and the platform provider had worked on structuring the use case and connecting historical and real-time data since middle of 2020. Following the creation of AI models based on these use cases and data, the solution was put into production by the end of 2020. Within six months after the implementation, CIMB saw several improvements, including fewer anticipated losses and improved returns on capital in its retail loans division.

Source: Business News, CIMB Bank Recognised For The Best Financial AI Project

S&P Global ESG Data Management

Most AI uses in ESG applications are driven by views of investments and reporting. As more investors become interested in sustainable investments, they are also increasingly curious about the plans of businesses that launch ESG initiatives and programmes related to their operations.

According to a 2020 S&P Global article, AI enables investors to gather and analyse more data than ever before when taking ESG opportunities into account. AI can assist sustainable investors in processing vast amounts of data that contain crucial ESG information. This initiative is being incorporated into S&P Global's offerings. AI technology will be incorporated into the Dow Jones Sustainability Index, the original index of sustainable investments from S&P Dow Jones Indices, to speed up assessments and supplement conventional research.

Source: SP Global, How can AI help ESG investing?



Cloud



Businesses in the FS sector are realising the need to increase business agility, creativity, and resilience considering current unstable market conditions, using digitalisation as a tool to fend against disruption. According to the Nutanix Enterprise Cloud Index (2022) report, 78 percent of FS respondents are looking to build and scale IT more strategically because of the pandemic, with increased control over IT resources and increased speed and flexibility to meet business requirements being the top priorities.

The expectation remains that this sector will need to capitalise on emerging technologies to drive agility, resilience across their operations, and innovative new products and services that address consumer demands. Consequently, many leading financial institutions have defined a cloud strategy and some are already implementing data-center exit approaches.

Moving forward

The Financial Sector Blueprint 2022–2026 by BNM outlines the central bank's goals for the financial sector's growth. These goals include promoting market dynamism, advancing sustainable development goals, and facilitating a smooth transition to a greener, more climate-resilient economy and financial sector. The financial sector is recognised as having a significant impact on the population's financial inclusion and literacy. The unserved and underserved communities' contribution to expanding the Malaysian economy will increase as they get more financially stable and literate. The implementation and use of emerging technologies such as AI and Cloud will act as a key enabler to drive ESG performance on top of enabling business to stay resilient sustainably.

Emerging technologies would also have a role to play in pushing the ESG agenda forward as they are evolving at a fast pace across the asset management, insurance, banking and private and public finance globally. FS providers should continue to put in place ESG-related initiatives and programs equipped with technological implementation to sustain their internal governance, empower customers' social welfare and, most importantly, to preserve the environment for many more future generations.

Did you know?

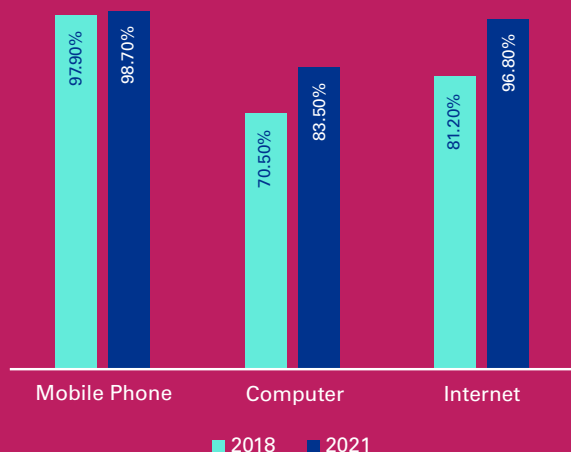
The Exposure Draft on Cloud Technological Risk Assessment Guideline (CTRAG) released by BNM on 3 June 2022 stipulates that applicants must construct their technology stack in the cloud. Financial institutions in the payments, credit, and remittance categories can use the cloud for innovation and gain a competitive and financial edge over disruptive fintech companies, in addition to potential digibank applicants. As organisations are not required to own their own servers, this much awaited guideline is well aligned to promote ESG, particularly the Environmental pillar, to decrease carbon footprint.

Financial institutions in Malaysia are undoubtedly prepared to transition to a more immersive hybrid multi-cloud environment. According to research by the Cloud Security Alliance (CSA), 64.7 percent of the nation's financial services organisations are putting together a cloud strategy. With hybrid multi-cloud at their core, this, along with efforts by BNM to create a regulatory framework that covers the use of cloud and data centres by financial institutions, will put our financial institutions in a great position to lead the way in the region and become the banks of the future.

Telecommunications

The use of telecommunication devices has become second nature to Malaysians. In 2021, there was a 0.8 percent increase (98.7 percent) in the usage of mobile devices as compared to 97.9 percent in 2018. The Internet became the dominant factor for those working from home (WFH) as internet usage grew to 96.8 percent in 2021 compared to pre-pandemic numbers⁸.

Use of ICT by Individuals, 2018-2021



Connectivity plays an important part in the lives of Malaysians. As users are connecting to both virtual and physical worlds through different mediums and channels, one must consider the role telecommunication companies (telcos) play when it comes to supporting this heavy interaction and how it affects the community and environment.

In 'The Enablement Effect' published by Global System for Mobile Communications (GSMA) and the Carbon trust, the report stated that "by increasing connectivity, improving efficiency and impacting behaviour change, mobile network technologies are helping avoid wasteful emissions."

Telcos need to realise the environmental impacts they are facing in their line of business and determine how to overcome this. In 2018, it was discovered that the enabling impact of mobile communication technologies globally was estimated to be around 2,135 million tonnes CO₂e as similarly reported to the total Greenhouse Gas (GHG) emissions emitted by the Russian Federation back in 2017 by the Organisation for Economic Co-operation and Development (OECD).

To fulfil rising demands of consumers and investors alike, telco companies have embarked on ESG initiatives – with emphasis on the Environment and Social aspects – to improve their standings on sustainability, morality, and ethics in serving their customers and the environment. We discuss selected use cases highlighting application of technologies telcos can leverage on.

5G connectivity – Just the start?

Licensed by the Communications and Multimedia Act 1998 to provide wholesale 5G coverage and capacity to other licensees under the act, Digital Nasional Berhad (DNB) was mandated by the Malaysian Government to act as a single neutral party to undertake the deployment of 5G infrastructure and network nationwide.

As 5G connectivity is still relatively new to Malaysia, a few telcos are leveraging on it to create use cases that could benefit the population. The main concern would be the sustainability of the technology in terms of energy efficiency in the long run. There's a need for significant work to

8. Department of Statistics Malaysia (DOSM), [ICT Use and Access by Individuals and Households Survey Report, Malaysia, 2021](#)

be done, such as setting up and manufacturing infrastructures to support 5G in addition to the 4G and 3G networks that are currently utilised in the market.

According to the Cisco Annual Internet Report (2018–2023) White Paper, 5G devices and connections will be over 10 percent of global mobile devices and connections by 2023. In addition, the number of global mobile devices is projected to increase to 13.1 billion by 2023 with an estimated 1.4 billion of those devices being 5G capable.

Case studies

01

Spearheading 5G development

Telekom Malaysia (TM) has been spearheading the current 5G development across Malaysia, where they have utilised the technology to provide impact to the Environment and Social pillars of ESG. Working alongside the Langkawi state government, TM implemented several prototypes in fulfilling the Environmental pillar, specifically 5G products and solutions to improve productivity and minimise environmental footprints. Examples of these solutions are the Smart Water Management System, which uses advanced analytics for centralised control, monitoring and billing and Smart Vehicle (Fleet) Management System which conducts vehicular tracking and performance management through IoT fitted devices. The idea behind these solutions would be to improve the overall liveability of the island state to its inhabitants, while having full control of its assets through monitoring and tracking.

Source: TM, TM supports 5G deployment in Langkawi with its integrated operations command centre; IR.40

02

Deployment through partnership

Maxis has taken the approach of leveraging 5G alongside IoT by partnering with MIMOS, Huawei and Malaysia's automaker Proton. They deployed the technology within the manufacturing plant to better understand the operability of the plants and increase efficiency by having a better overview access. Additionally, in 2021, Maxis and Malaysia Airports formed a strategic partnership under the Airport's 4.0 Digitalisation Initiative for the co-creation of Malaysia's first 5G Digital Smart Airport catered towards providing a better travel experience for departers and transits alike. Other than implementing 5G Wi-Fi connectivity, the development of Smart Retail, Smart Travel and Tourism solutions are aimed towards providing an "unmatched personal experience for passengers".

Source: Maxis, Malaysia airports and Maxis form strategic partnership for co-creation of Malaysia's first 5G digital airport

Big data analytics and AI

AI is growing to become one of the more versatile technologies in terms of applicability and implementation. Companies will eventually leverage on AI to better know and serve customers, automate repetitive operations, make informed strategic decisions, and drive continuous innovation. A study noted that the Telco and Multimedia and Entertainment industries are the most mature when it comes to adopting big data analytics and AI ⁹.

9. BIGIT, [Malaysia AI Blueprint Annual Report 2021](#)

Case studies

01

Smart infrastructure energy management

Digi has incorporated AI into their Radio Access Network (RAN) sites. In 2021, Digi partnered with ZTE through the Centralised Self-Organising Network (CSON) AI pilot initiative, deploying tools to automatically analyse and implement power-saving modes at 102 of their RAN sites. The result saw 3.77 percent in energy reductions per site and has led the company to plan and equip more than 50 percent of these sites with this capability in 2022. Additionally, Digi has also deployed an AI initiative to automatically monitor and record usage of backup batteries at the network sites to provide information for timely sites restoration and battery replacements planning to ensure minimal service disruption.

Source: Digi.com Berhad, Integrated Annual Report 2021

02

Smart customer profiling

Axiata leveraged on an AI management software to identify anomalies in energy intensive and energy inefficiencies to be remedied with zero-touch provisioning. In addition, Axiata was reported to have leveraged on AI for customer profiling to enable efficient and effective data processing for informed decision making. The AI initiative provided the organisation with collected customer profiles, customer segmentations as well as tracking customer sentiments through the Web to allow the group to use the information for performance representation and action plans.

Source: Axiata, Sustainability & National Contribution Report 2021

Moving forward

There are approximately 30 million Malaysians using telco operator services¹⁰. This sector is seen as the driving force of socioeconomic growth as it enables connectivity, communication, and helps drive the economy of the country and livelihood of its consumers. With such a large customer base, telcos need to innovate and invest in energy-saving, environmental-friendly technology solutions and products to reduce their carbon footprint whilst keeping in line with servicing their customers by providing the required coverage, connectivity and satisfaction.

In theory, 5G is likely to reach speeds that are 100 times faster than 4G and is not limited to mobile phones¹¹. A 5G network contains so much processing power that it can effectively act as a distributed data centre that performs processing tasks or even contain the responsiveness of edge computing done close to the user. Lower latency also delivers immediate response due to data transmission rates that would be consistently high, thus enabling real-time monitoring and analysis. 5G will also play a major role when it comes to reducing emissions – it is thought to be able to address each of the 16 UN Sustainability Development Goals (SDG), as it will essentially cut off existing emissions released by the current infrastructure, and allow for wider inclusivity and closing the digital divide, for instance¹².

With low-latency and fast response, companies can monitor and track their devices, machines and even infrastructures in real-time. This limits the need to conduct on-site physical assessments or even at times examination and diagnosing. By pairing together with smart software such as AI that will automatically track and pin-point issues, companies will find it better to maintain their assets at a glance, and distance.

10. Climate Governance Malaysia, [RoundTable Telecommunications Sector held on 8 September 2021](#)

11. Malaysian Communications and Multimedia Commission, [5G Drives Malaysia's Digitalization](#), as reported in The Star on 26 January 2022

12. World Economic Forum, [How 5G can advance the SDGs](#)

Manufacturing

The pandemic has had a large impact on the global supply chain, resulting in a disruption of operational efficiency for all manufacturers. CEOs in manufacturing have observed two important lessons: the vital importance of a resilient supply chain and the need to invest in new technologies to strengthen resilience. Industrial manufacturers should consider investing in new technologies that could decrease vulnerabilities in the supply chain and accelerate the recovery of business from a massively disruptive event. In KPMG's CEO Outlook survey conducted in mid-2021, 24 percent of CEOs in manufacturing agreed that advancing the digitalisation and connectivity of all functional areas is one of the top operational priorities to achieve their organisation's growth objectives in the next three years.

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Being one of the key manufacturing hubs in ASEAN, ESG is an important area of focus for manufacturing companies in Malaysia.

Recent trends such as climate change, geopolitical instability and the disruptions from emerging technologies have put ESG issues under the spotlight of executives, investors and policymakers. Research by KPMG International revealed that industrial manufacturing is the sector with the highest degree of variability by country in terms of decarbonisation progress and government action on the Net Zero Readiness Index¹³.

Being one of the key manufacturing hubs in ASEAN, ESG is an important area of focus for manufacturing companies in Malaysia. According to the Green Technology Master Plan Malaysia 2017–2030, the manufacturing sector in Malaysia is dominated by small and medium enterprises (SMEs). However, the adoption of green manufacturing practices is still relatively low in the manufacturing sector.

Manufacturers can focus on three areas of green practices, namely **Green Energy**, **Green Products** and **Green Process** in business operations to achieve the government's aspiration of doubling the numbers of green manufacturing SMEs by 2030. In addressing the ESG issues and goals, companies in the manufacturing sector should embark on the transition into a technology and data-driven supply chain, connecting the functional areas of the organisation while making ESG decisions with real-time analytical capability.

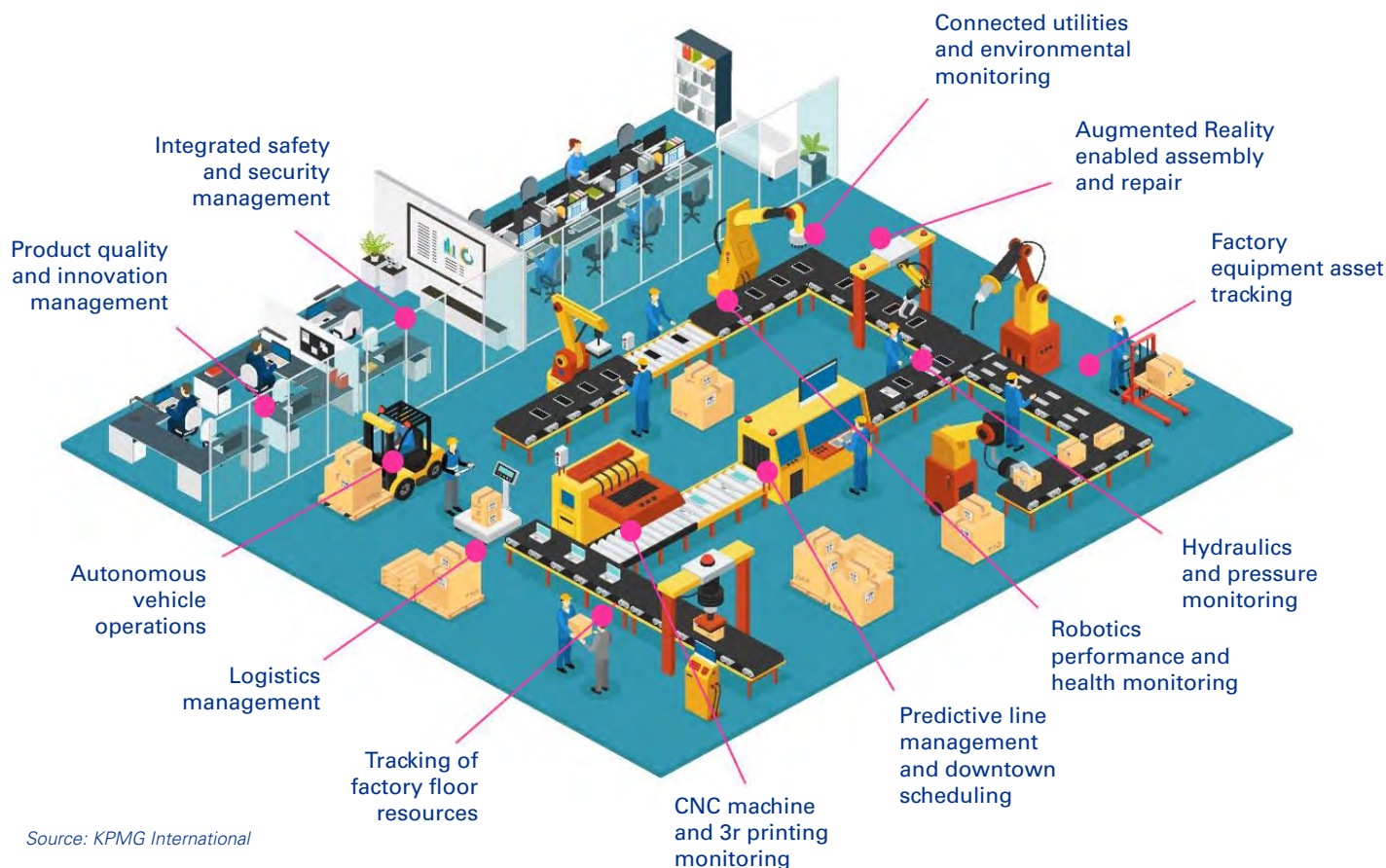


13. KPMG International, [Net Zero Readiness Index](#)

Smart factories

Companies that invest more in sustainable operations will likely have better opportunities for growth and innovation as they leverage on modern technologies to address business issues and keep track of their sustainability impact. In creating an operational resilient supply chain, technologies such as intelligent automation, IoT and 5G connectivity can be adopted by manufacturers to 'connect' different functional areas while reporting ESG metrics to stakeholders.

5G enabled smart factory



Source: KPMG International

The concept of the smart factory was observed across many industrial manufacturers' operations and applies a combination of emerging technologies to create a flexible, self-adapting manufacturing facility through connected devices or machinery.

Sensors play a vital role in operating a smart factory, as it can help in detecting and responding to real-time changes in the environment to achieve optimal efficiency for the production line. Further, without much human intervention, IoT sensors allow manufacturers to monitor equipment usage and health remotely, not only accessing machine performance but also preventing failures and predicting maintenance schedules. This helps manufacturers operate their production plants in alignment with targeted ESG goals and reduce energy consumptions and carbon emissions emitted from their operations.

With different type of sensors – such as temperature sensors, humidity sensors, level sensors and pressure sensors – equipped around the production floor, manufacturers can regulate and control carbon emissions, heat, ventilation, and air conditioning (HVAC) systems, electricity consumptions, usage of water and waste points to achieve their commitments to the environment.

Digital twins are also gaining popularity among manufacturers as they can create digital copies of physical objects, which then can be applied for simulation, discovering issues, and achieve needed results without risking or damaging physical assets. This helps manufacturers conduct exploration, troubleshooting and planning without adversely affecting the environment as they can be used remotely. Further, the entire supply chain can benefit from IoT and digital twins to be able to collect, plan and forecast data in enhancing operational efficiency and sustainability. For example, by reducing “deadhead” miles when the trucks travel without any cargo, which results in lesser fuel consumed and lesser pollution is released into the environment.



Next-gen factory

Smart manufacturing will not be complete without the presence of 5G connectivity. Haier, in collaboration with China Mobile and Huawei launched the world’s first smart 5G connected factory in China. The organizations worked together to deploy the first cloud machine vision system that integrates 5G and edge computing for industrial manufacturing environments.

Powered by 5G network which has key capabilities of providing large bandwidth and low latency, Haier was able to incorporate multiple technologies

including smart devices, machine vision, AR, remote control, and cloud automated guided vehicles (AGVs) within the factory compounds¹⁴. This had enabled the organisation to become more flexible, achieve efficient mass-customised production and provide managers with real-time, high-precision insights into production processes and operating status. Overall, a connected factory can reduce production bottlenecks, provide better quality control on products, eliminate unnecessary waste points and provide a safer working environment for the employees.

14. Huawei, [First Global Intelligence 5G Interconnected Factory](#)

Case studies

Western Digital’s factory

The World Economic Forum (WEF) recognised and awarded Western Digital’s factory at Batu Kawan, Penang, as Asia’s first Sustainability Lighthouse. This recognition is a testimony to the ESG initiatives that Western Digital have implemented.

By leveraging its vertically integrated smart factory model and implementing 4IR technologies such as IoT sensors, digital twin modelling, analytics powered plant management system and lights-out automation with machine learning, the site achieved a normalised (per unit) reduction in energy by 41 percent, water consumption by 45 percent and material waste by 16 percent, while growing 43 percent (CAGR) in the last four years.

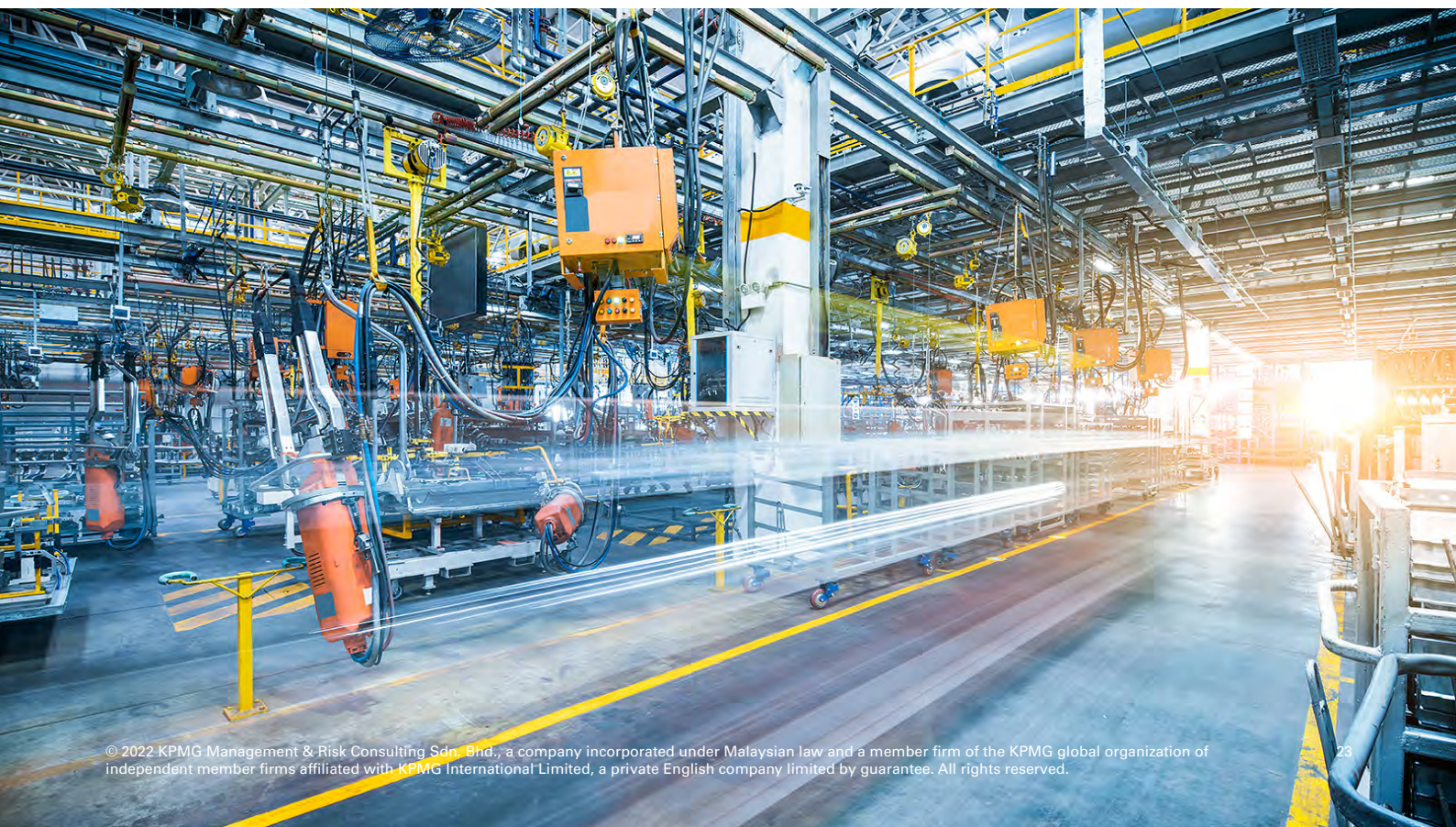
Source: Western Digital press release, 27 September 2021

Moving forward

Innovation in manufacturing technologies and solutions are creating new opportunities to measure and report ESG metrics accurately and consistently, whilst enabling both profitability and sustainability at the same time. Technology has also enabled manufacturers to address common issues such as environmental pollution, energy consumption, carbon emissions and more. Technological advances enable carbon-neutral manufacturing by putting energy efficiency front and centre, minimising greenhouse gas emissions substantially and promoting green electricity, which then goes down to zero emissions. Additionally, workers are empowered with new tools and solutions, fostering a safer and healthier tech-enabled manufacturing environment.

The combination of a pandemic and climate change is accelerating digital transformation, as companies search for tools to mitigate new risks and maximise new opportunities. An evergreen theme is more urgent than ever and companies shift attention away from their supply chains at their peril. Operational effectiveness cannot be achieved without a resilient supply chain.

Many companies are aligning their goals of digital transformation and ESG. Digitisation can mitigate supply chain risk and enhance sustainability, but leaders need to see ESG as a strategic imperative not simply a means to an end. A healthy supply chain would not be possible without a focus on ESG, and without a healthy supply chain, there is potential for increased struggles to meet long-term goals.



Moving the needle

Business leaders are under pressure from their customers, investors, regulators and other stakeholders to demonstrate that their organisations are acting responsibly and sustainably. Now, more than ever, it is important to embed ESG in the business strategy to build a resilient business set to thrive in the new reality.



On the technology front, we have witnessed massive digital advancements in response to COVID-19. The pandemic accelerated our understanding that technology can and must be a force for good. This has also been the case where technologies have been applied in one way or another to expedite the ESG agenda across all industries. From developing and distributing life-saving vaccines, to throwing businesses a lifeline by helping them pivot to online operations, to tackling climate change, to bringing about greater social equality through the power of online learning, technology's critical role in our world now and in the future has never been clearer. Regulators across sectors are putting in frameworks and targets in pushing the ESG agenda.

In the Budget 2023 proposals, we can see the government's continued commitment to encourage green investments. For instance, the provision of RM1 billion financing by BNM under the high technology and green segments to support the transition to low carbon and helping SMEs to implement low carbon practices, as well as the provision of RM150 million by Khazanah Nasional Bhd under the Impact Fund to boost the development of environmentally-friendly projects.

We believe this will only increase the adoption of ESG-related technologies. Companies should either begin to or already embark on an organisation-wide digital transformation that could drive positive outcomes in ESG reporting, measuring sustainability impacts and harnessing data for better decision making. This is also an approach to attain competitive edge in the eyes of your stakeholders, which eventually could be converted into positive intangible assets. This in turn also means companies require a tech-capable workforce that is fit for the future. Soon, emerging technologies such as metaverse will achieve greater maturity, autonomous driving, factories with net zero emissions, and smart farming will eventually be widely adopted in the future.

Business leaders need to inculcate an organisational culture of innovation and exploration when it comes to technology. Industry pioneers have shown how leveraging on technology can supercharge progress in ESG strategies. Whilst we cannot gauge what the future holds, one thing is certain as we move into the latter part of 2022 and into 2023 – technology will continue to transform the way we fulfil ESG ambitions, and the pace will only quicken.

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Note: At the time of writing, this report makes reference to the Budget 2023 proposals that were introduced on 7 October 2022.

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