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AUSSEN WIRTSCHAFT BRANCHENREPORT MALAYSIA

DIGITALIZATION AND CIRCULAR SOLUTIONS FOR CONSTRUCTION

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1.1. EXECUTIVE SUMMARY

The construction sector is one of the key economic drivers in Malaysia, contributing RM 143 billion (EUR 1 = RM 4.79 in 12/2025) in project value as of September 2025. RM 109 billion (76 %) involved 8,022 private sector projects, while RM 34 billion (24 %) comprised 4,011 government projects. The sector continues to grow robustly in Malaysia, with a recorded value of RM 45 bn in Q3 2025, representing a 10.6 % year-on-year increase. Digital infrastructure, particularly data centre construction, is a key driver, with 143 projects valued at RM 144 bn since 2021. This expansion is expected to triple the sector's value by 2030, further supporting the adoption of digitally enabled construction technologies.

As of November 2025, Malaysia's construction sector is undergoing notable transformation driven by digitalisation and emerging circular economy considerations. The government has actively promoted the adoption of digital tools across the industry, with strategic frameworks such as myDigital Kontraktor, the Construction 4.0 (CR 4.0) roadmap, and the National Construction Information & Analytic Platform (NCIP) aimed at enhancing productivity, transparency, and data-driven decision-making across project lifecycles. Building Information Modelling (BIM), cloud-based collaboration, AI-enhanced safety systems, and other advanced technologies are increasingly integrated into project workflows, a trend supported by Malaysia's high ranking in digital technology adoption among Asia-Pacific construction markets. However, digital adoption still faces challenges, particularly related to workforce digital skills and SME readiness, prompting stronger industry-academia collaborations to upskill personnel and build competencies in areas such as AI, immersive visualisation, and project management systems.

A recent key development in digital construction governance has been the introduction of the Construction Digital Maturity Index (CDMI), jointly developed by the Construction Industry Development Board (CIDB) and the Master Builders Association Malaysia (MBAM). The CDMI is designed to serve as a benchmarking framework that enables contractors and developers to assess and benchmark their level of digital integration and readiness against defined industry standards.

Parallel to digital advancement, circular economy principles are gaining traction within the construction sector, though adoption remains at an early stage. National frameworks such as the Circular Economy Policy Framework and the Circular Economy Blueprint for Solid Waste (2025–2035) support reuse, recycling, and resource efficiency, yet practical implementation within construction is constrained by regulatory gaps, economic considerations, and awareness barriers. Strategies emphasizing reversible construction components and enhanced waste management complement initiatives like green building certification systems that encourage environmentally responsible design. Construction and demolition waste remains a major challenge, underscoring the need for stronger integration of circular principles into regulatory standards and industry practice.

Overall, that continued focus on integrating digital maturity measurements, sustainable practices, and workforce capability development will be crucial for achieving long-term competitiveness and sustainability in line with national goals, while Malaysia's construction industry continues to grow robustly with significant contributions from digital infrastructure projects such as data centres.

1.2. OVERVIEW OF THE MALAYSIAN CONSTRUCTION INDUSTRY

In 2025, the construction sector in Malaysia continues to be a key driver of economic growth and employment, playing a vital role in supporting national development and infrastructure expansion. Official statistics show the sector has maintained robust activity throughout the year, with the value of construction work done reaching RM 45.4 billion in Q3 2025, representing a 10.6 % year-on-year increase (see fig. 1) following strong performances in the residential, non-residential and special trade sub-sectors. Over the first three quarters, total construction output reached approximately RM 132 billion, reflecting a 13.3 % increase compared to the same period in 2024, with notable contributions from civil engineering, building construction and specialised trades.

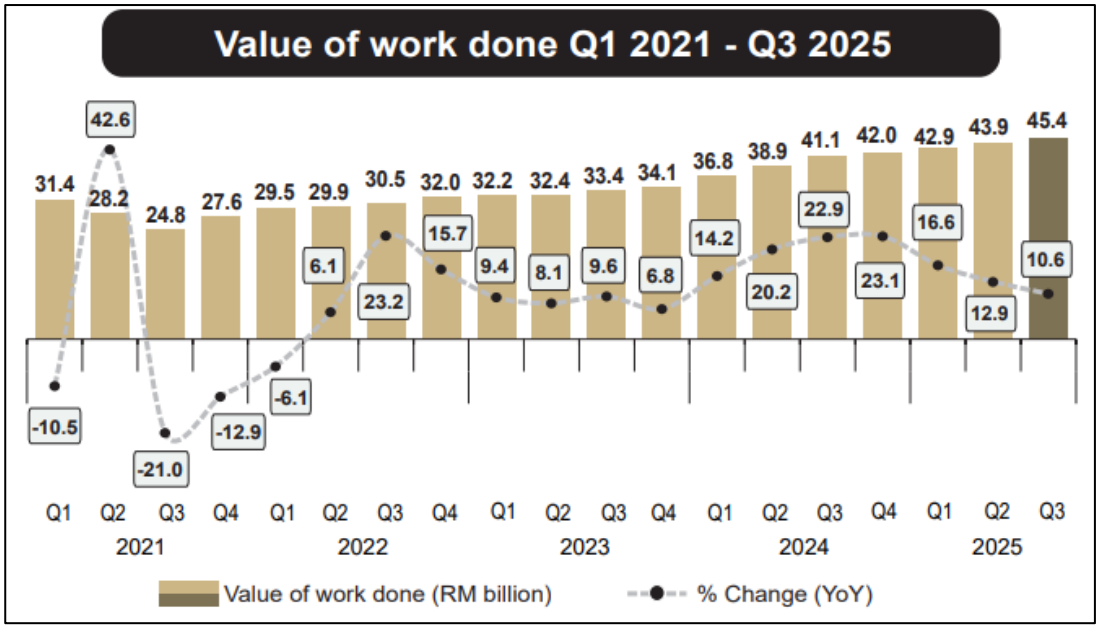

Fig. 1: Value of work done Q1 2021 – Q3 2025 in Malaysia

From RM 45.4 billion value of work done recorded in the Q3 2025, a total of RM 16.5 billion or 36.4 % was attributed to the civil engineering sub-sector, primarily in the activity of construction of utility projects at RM 8.9 billion and roads and railways at RM 5.7 billion. Meanwhile, the value of work done for non-residential buildings and residential buildings sub-sectors accounted for RM 12.9 billion or 28.5 % and RM 10.5 billion or 23 %, respectively. The special trade activities contributed RM 5.5 bn or 12.1 %, largely in site preparation for RM 1.6 bn, electrical installation at RM 1.4 bn, as well as plumbing, heat and air-conditioning installation at RM 1.0 bn.

The private sector remained as the main impetus to the growth in this quarter, contributing RM 29.5 billion or 65 % of the total value (see fig. 2). The private sector sustained its double-digit momentum with a 13.1 % growth compared with Q2 2025 at 19.3 %, propelled by strong performance in the sub-sectors of non-residential buildings at 14.3 % and residential buildings at 13.4 %. Meanwhile, the value of work done by the public sector, with a 35 % share valued at RM 15.9 billion, recorded a more moderate increase of 6.1 % compared with Q2 2025 at 3.1 %. The growth was primarily fuelled by the special trade activities sub-sector at 23.9 % increase.

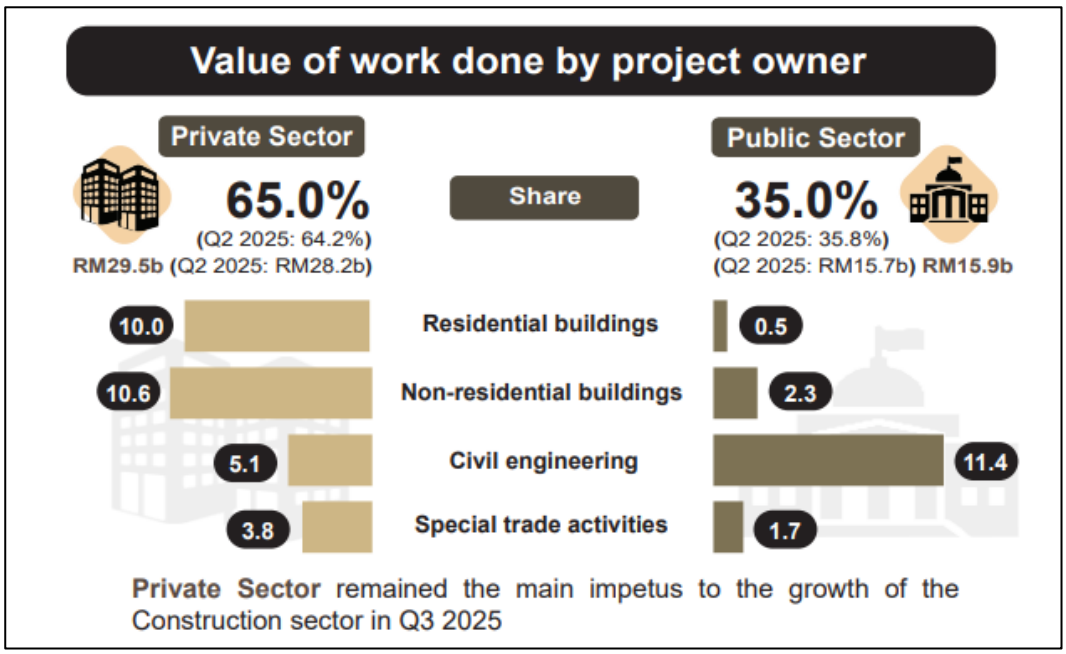

Fig. 2: Value of work done by project owner in Q3 2025 in Malaysia

Nearly 62.1 % of the total value of work done was concentrated in Selangor, Johor, Sarawak and Federal Territories Kuala Lumpur, Putrajaya and Labuan (see fig. 3). The construction value in Selangor amounted to RM 10.5 billion or 23.1 %, contributed by the subsectors non-residential buildings at RM 3.7 billion, followed by residential buildings at RM 3.1 billion and civil engineering at RM 2.5 billion. Meanwhile, Johor ranked second with a value of RM 8.2 billion or 18 %, primarily from the non-residential buildings' subsector at RM 3.1 billion. The value of work done in Sarawak was RM 4.9 bn (10.7 %), while Federal Territory recorded RM 4.7 bn (10.3 %).

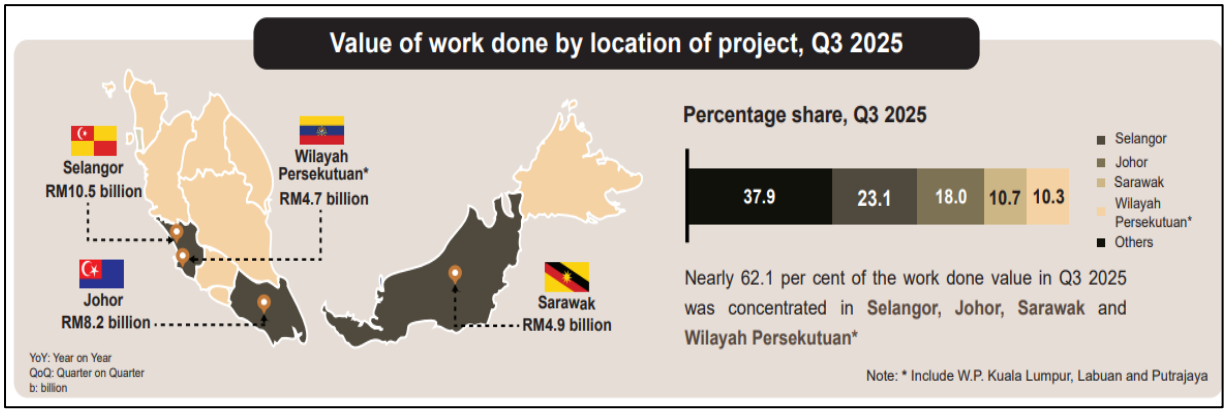

Fig. 3: Value of work done by location of project in Q3 2025 in Malaysia

On a broader scale, construction's contribution to Malaysia's Gross Domestic Product (GDP) remains significant. Although sectoral GDP share figures for 2025 are published with some reporting lag, historical and official data indicate that construction typically contributes around 4 % of total national GDP, with sustained double-digit growth rates in output over recent quarters underlining its importance to overall economic performance. For instance, sector rise supported by infrastructure projects and private developments contributed to construction-related GDP expansion in the first half of 2025 at a rate above the national average.

The sector also features prominently in Malaysia's broader economic structure, often ranking as one of the top contributors among secondary and tertiary economic activities by value of output and investment linkages with other industries such as manufacturing, transport and services. Construction increase helps drive gross fixed capital formation, which has been a major component of GDP growth through investment in roads, utilities, housing and commercial developments.

In terms of employment, construction remains a major source of jobs in Malaysia. According to labour statistics from 2025, the sector accounted for approximately 14 % of total employed, making it one of the largest employers behind services and manufacturing. This reflects construction's role as a significant employer, especially in semi-skilled and skilled trades, project management and technical engineering roles that support residential, commercial, and infrastructure projects nationwide.

The workforce dynamics in construction also highlight the labour-intensive nature of the sector, with substantial workforce demand to meet ongoing project pipelines, particularly in areas such as transport infrastructure, data centres and urban development. Analysts note that data centre and transport project investments, worth potentially tens of billions of ringgits, are driving further workforce demand, including specialised technical and engineering staff, though labour shortages and skills gaps remain challenges.

Geographically, construction activity and employment are also concentrated in major economic hubs such as Selangor, Johor, Kuala Lumpur, Putrajaya and Sarawak, which together account for a majority share of nationwide construction activity. This distribution underscores how regional development priorities and investment flows influence labour needs and economic impact across states.

Overall, the construction sector in Malaysia in 2025 continues to be a strategic economic pillar, contributing notable GDP value, driving substantial employment, and stimulating broader investment and productivity within the economy. Its performance reflects continued public and private sector commitment to infrastructure development, urbanisation, and strategic industrial projects, positioning the sector as both an engine of growth and a core component of Malaysia's socio-economic landscape.

1.3. Notable Construction Projects in Malaysia

As of late 2025, Malaysia's construction sector is marked by a series of high-profile infrastructure, urban development, and industrial projects that collectively reflect the country's ambitions for enhanced connectivity, urban modernisation, and digital economy growth.

Among the most significant transport initiatives is the East Coast Rail Link (ECRL), a 665 km electrified double-track railway connecting Port Klang to Kota Bharu, which is nearing major completion and is expected to enhance both freight and passenger mobility across the peninsula. Complementing this, the Johor Bahru–Singapore Rapid Transit System (RTS) Link, slated for opening in December 2026, and the Penang Transport Master Plan light rail expansion are poised to improve regional and urban transit. Further details: **Sector Report Rail Malaysia**

Large-scale highway projects, such as the Pan-Borneo Highway in Sabah and Sarawak, the East Klang Valley Expressway (EKVE), and the Western Coastal Expressway (WCE), continue to expand road connectivity while alleviating congestion along key corridors.

Urban and mixed-use developments are also transforming cityscapes. Projects such as Merdeka 118 in Kuala Lumpur, the Oxley Towers, and Ombak KLCC add high-density commercial, residential, and retail spaces, while township initiatives like Madani City in Putrajaya and the Bukit Chagar Integrated Mixed-Use Development in Johor Bahru integrate smart infrastructure, residential, commercial, and educational facilities. In Melaka, the Melaka Gateway maritime development, featuring artificial islands, commercial zones, and a cruise terminal, highlights Malaysia's focus on revitalising strategic ports and tourism assets.

The industrial and digital infrastructure sectors are likewise seeing rapid expansion. Hyperscale and AI-ready data centres, including campuses in Cyberjaya and Iskandar Puteri, are being developed to support Malaysia's growing digital economy, while strategic industrial facilities such as the Pengerang

biorefinery for sustainable aviation fuel and the Penang Technology Park lithium battery plant strengthen the nation's clean energy and manufacturing capabilities.

Airport upgrades across Penang, Kota Kinabalu, Tawau, and Miri aim to increase capacity and modernise passenger experiences, while the Johor–Singapore Special Economic Zone (SEZ) represents a key bilateral initiative integrating manufacturing, logistics, and high-value industries.

Collectively, these projects demonstrate Malaysia's strategic focus on creating a modern, digitally enabled, and sustainable construction landscape. The integration of transport, urban development, industrial, and digital infrastructure initiatives reflects a deliberate alignment with national development plans, including 13th Malaysia Plan (RMK-13) and PIKAS 2030, ensuring a robust pipeline of construction activity through the late 2020s and contributing significantly to economic growth, regional connectivity, and urban modernisation.

3. DIGITALIZATION IN MALAYSIA'S CONSTRUCTION INDUSTRY

Digitalization has become a central driver of transformation within Malaysia's construction sector as the industry seeks to improve productivity, transparency, and competitiveness. Traditionally characterised by manual processes, fragmented project coordination, and low technology adoption, the sector has faced long-standing challenges such as cost overruns, project delays, labour dependency, and inconsistent quality. Recognising these issues, the Malaysian government and industry bodies have intensified efforts to promote digital transformation through policy frameworks, technological incentives, and structured guidelines.

The Construction 4.0 Strategic Plan has served as the principal national roadmap, outlining the need for automation, digital integration, and the adoption of advanced technologies such as Building Information Modelling (BIM), industrialised construction methods, Internet of Things (IoT) devices, drones, and data-driven project management systems.

In recent years, Malaysian construction firms have increasingly embraced digital tools that improve efficiency and decision-making. Technologies such as BIM facilitate better design coordination and reduce clashes, while cloud-based platforms enhance collaboration between project stakeholders. According to the latest government directive under Pekeliling Perbendaharaan PK 1.15, which took effect on 1 July 2025, the use of BIM is mandatory for all public and private sector construction and infrastructure projects valued at RM 10 million and above. This mandate applies across the full project lifecycle, from planning and design through to construction and facilities management, and covers buildings, roads, utilities, and sewage systems.

3.1. Construction Digital Maturity Index (CDMI)

The advancement in technologies reflects Malaysia's recognition that digital adoption is essential not only for productivity gains but also for maintaining competitiveness in a global market, where clients and international partners demand more integrated and technology-driven project delivery methods. Despite progress, adoption levels remain uneven. Many small and medium contractors continue to face barriers such as limited capital, insufficient digital skills, and a lack of structured guidance on how to begin or sustain digital adoption.

To address these gaps and provide an industry-wide benchmark, the Construction Industry Development Board (CIDB), together with the Master Builders Association Malaysia (MBAM), introduced the **Construction Digital Maturity Index (CDMI)**, a national framework designed to measure and evaluate the digital readiness of construction organizations. The CDMI aims to support the nation's transition toward Construction 4.0 by providing a structured mechanism to evaluate how effectively digital tools, technologies, and processes are being integrated within the sector. This initiative arises at a time when Malaysia's construction industry is increasingly adopting digital solutions such as Building

Information Modelling (BIM), AI-assisted project management tools, and cloud-based collaboration platforms, all of which are becoming essential for enhancing productivity, transparency, and overall project efficiency.

The introduction of the CDMI reflects Malaysia's commitment to strengthening the digital competencies of its construction industry by providing organizations with a clearer understanding of their current digital capabilities. Through this index, companies can assess their strengths, identify gaps, and plan targeted improvements to enhance their digital maturity. The framework is intended to serve not only as a benchmarking tool but also as a roadmap for digital transformation, especially for firms that may lack the resources or expertise to implement digitalization initiatives effectively. By enabling companies to compare their digital progress against industry benchmarks, the CDMI contributes to raising overall standards and competitiveness within the sector.

At present, the CDMI is still in its developmental and pilot phases, with CIDB actively gathering feedback from contractors, developers, and other industry stakeholders. This engagement process is critical to refining the assessment criteria and ensuring that the index remains practical, inclusive, and representative of the diverse nature of Malaysia's construction landscape. Although detailed metrics and maturity levels have not yet been officially published, the CDMI is expected to assess aspects such as the adoption of digital technologies, the integration of digital workflows, the quality of data management practices, and the readiness of organizational culture to embrace digital change. As these components are finalized, the index will eventually serve as a national reference standard for digital performance in the construction industry.

3.2. Adoption of Digitalization

While CDMI is still developing, the recent report by Autodesk and Deloitte suggested that Malaysia is emerging in digital transformation within the construction sector as it ranks second in adopting digital technologies among six countries surveyed across the Asia-Pacific region, including Japan, Singapore, and Australia. The report highlights that Malaysian construction firms utilise an average of 6.9 digital technologies, outpacing the regional average by 50%. This surge is being driven by the country's increasing focus on integrating advanced technologies into traditional construction practices. Another notable finding is that 23 % of Malaysian construction firms' budgets are allocated to the implementation of new technologies. This demonstrates a clear commitment by the sector to modernise operations and maintain a competitive edge in an increasingly digital world. As Malaysia positions itself as a leader in the region, its construction firms are prioritising technology to improve efficiency and long-term sustainability.

The constant growth of construction value was driven by technologies such as BIM, modular construction, and smart contracts. Advancements in AI, IoT, and predictive analytics have enhanced project planning, decision-making, and productivity, paving the way for improved efficiency and resilience in the industry.

3.2.1. Key Technologies

Overall, businesses in the Asia Pacific region are now using an average of 6.2 out of 16 core and advanced digital technologies. In terms of Malaysia, the companies are already deploying core technologies such as BIM, mobile apps, cloud-based construction management platforms, and data analytics tools.

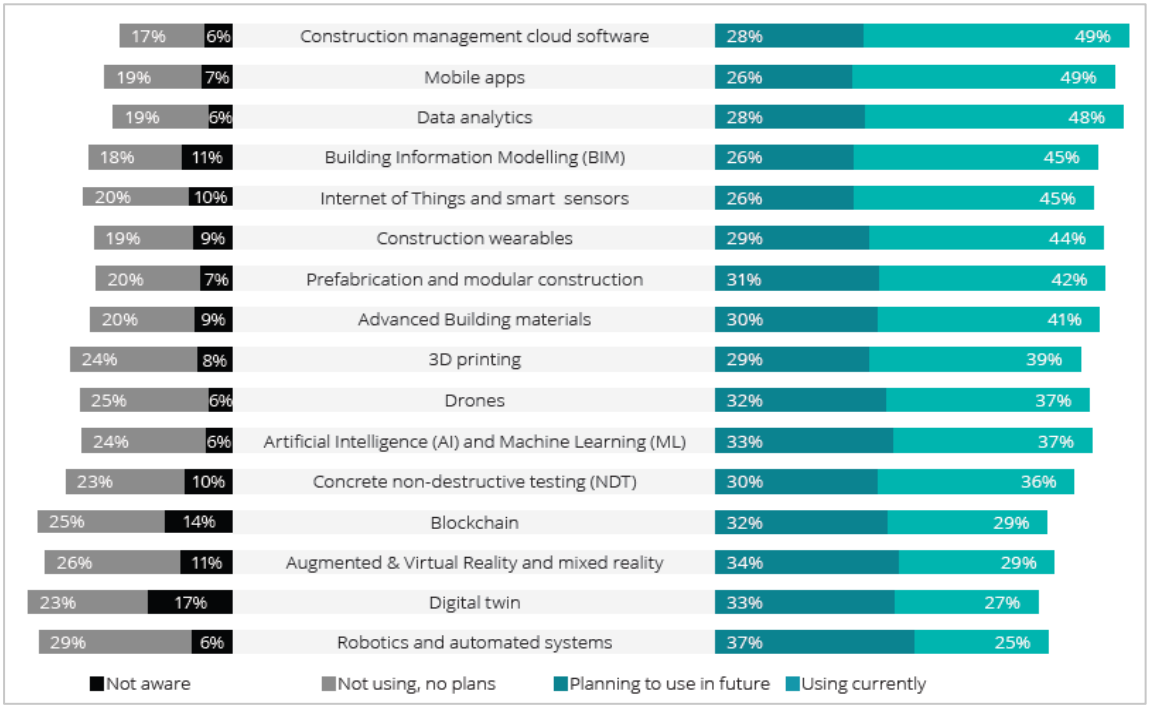

Fig. 4: Current and planned use of technologies in Construction

The chart suggests that businesses are becoming increasingly aware of the need to integrate more advanced and specialized technologies beyond the foundational tools already in place. The followings are the breakdown of key technologies and development in Malaysia:

3.2.1.1. Building Information Modelling (BIM)

BIM is central to digital transformation, enabling integrated design, engineering, and construction processes. It enhances collaboration, reduces errors, and optimizes building lifecycle performance. In Malaysia, BIM adoption is growing, particularly in mega projects, with applications like digital twins gaining traction for real-time monitoring and management.

The CIDB has been instrumental in promoting BIM adoption, with targets for its use in public and private projects. As mentioned earlier, BIM usage is mandatory for all government, GLC and private projects over RM 10 million; overall BIM penetration stands at around 55 %. Malaysia is at the forefront of BIM adoption, with 38 % of firms implementing the technology and demonstrating its practical success in the industry.

3.2.1.2. Industrialized Building System (IBS)

IBS involves prefabricating building components in factories before assembling them on-site. This prefabrication and modular construction approach improves quality, project timelines, reduces costs and waste and lowers carbon emissions. Malaysia has progressively increased the emphasis on IBS

usage, especially for public sector projects through mandatory IBS scoring requirements. CIDB assesses projects based on an IBS Score that reflects the extent of prefabrication and mechanisation used, with targets set for public tenders and approvals.

As of 2024, 91.5 % of affordable housing projects in Malaysia, or 1,913 projects, have adopted IBS, demonstrating the rising integration of this government-pioneered construction technology. While IBS adoption tends to be higher in government and government-linked companies' projects, currently only the larger developers and progressive contractors in the private sector adopt IBS more frequently, as smaller projects and bespoke architecture projects still rely heavily on conventional construction.

3.2.1.3. Augmented Reality (AR) and Virtual Reality (VR)

AR overlays digital data onto physical environments, while VR creates immersive simulations. These technologies enhance visualization, training, and on-site integration, with potential yet to be fully explored in Malaysia.

However, industry players like Gamuda are developing AR applications (e.g. BIMAR 2.0) to improve construction planning and clash detection. IJM Corporation is also exploring technology to improve coordination and visualization, etc. CIDB promotes AR/VR for site navigation, interaction with structures, and early problem detection, supporting the Construction 4.0 Strategic Plan.

3.2.1.4. Internet of Things (IoT) and Big Data

IoT enables real-time monitoring of construction sites, while big data analytics optimizes resource use and decision-making. These tools are increasingly integrated into smart construction sites.

Malaysia aims to be a leader in smart construction in Southeast Asia by embracing IoT and Big Data as part of its Industry4WRD and Digital Economy Blueprint initiatives. Continued investment in capacity building, research, innovation, and infrastructure is expected to accelerate adoption. Universities such as Universiti Teknologi Malaysia (UTM) and Universiti Sains Malaysia (USM) run research labs combining IoT, AI and construction technology, often in partnership with industry.

3.2.1.5. Artificial Intelligence (AI)

AI supports predictive maintenance, risk assessment, and energy optimization, contributing to smarter project management. The usage of AI in Malaysia's construction and development sector is rapidly expanding, driven by government initiatives, industry adoption, and strategic investments.

Leading construction companies such as Sunway Group utilize AI integrated with cloud platforms to monitor worksite conditions and intervene proactively when risks are detected. Another firm, Gamuda employs AI-augmented BIM tools like BIMAR to improve construction accuracy and reduce errors.

3.3. Government Incentives for Foreign Investment in Digitalization

Malaysia actively encourages foreign investment in smart construction technologies, which include BIM, IoT-enabled site monitoring, AI analytics, robotics, digital twins, and other Construction 4.0 solutions. The government provides targeted incentives to reduce operational costs, facilitate technology adoption, and promote collaboration between foreign technology providers and local contractors, thereby accelerating digitalization in the construction sector.

3.3.1. Malaysia Digital Status

The Malaysia Digital Status is a flagship incentive for foreign firms developing or implementing digital solutions, including smart construction technologies. Eligible companies receive reduced corporate tax rates on qualifying income and can utilize Investment Tax Allowances (ITA), enabling 60 to 100 % of capital expenditure on digital infrastructure and equipment to be offset against taxable income over five years. MD Status also grants full foreign ownership, unrestricted recruitment of skilled foreign knowledge workers, and exemptions from import duties and sales taxes on qualifying digital equipment such as IoT sensors, drones, robotics, and AR/VR devices. For smart construction, this incentive supports the deployment of BIM platforms, IoT-enabled monitoring systems, AI-powered construction analytics, and prefabrication planning tools.

3.3.2. Principal Hub Incentive

The Principal Hub Incentive encourages foreign smart construction technology firms to establish regional or global headquarters in Malaysia. Participating companies benefit from a reduced corporate tax rate on qualifying income and operational privileges, enabling centralized management of digital construction solutions across Southeast Asia. This is particularly beneficial for firms providing cloud-based BIM platforms, AI-driven project management systems, and integrated IoT construction networks, allowing Malaysia to serve as a strategic base for regional smart construction operations.

3.3.3. Special Economic Zones (SEZs) and Digital Innovation Hubs

Malaysia's SEZs and digital innovation hubs provide a conducive environment for smart construction technology deployment. Companies in these zones may access preferential tax rates, fast-track regulatory approvals, co-working facilities, and grants for technology adoption. For smart construction, this enables rapid pilot projects involving IoT site monitoring, digital twin simulations, robotic assembly, and automated prefabrication, while fostering partnerships with local contractors and engineering firms.

3.3.4 Industry 4.0 and R&D Incentives

Foreign investors adopting Industry 4.0 technologies for construction can benefit from tax deductions, grants, and R&D incentives. These incentives support the integration of digital twins, AI analytics, IoT sensors, and smart construction robotics into construction workflows. By leveraging these incentives, foreign firms can reduce development and implementation costs, accelerate innovation, and scale smart construction solutions more effectively.

3.4. Challenges and Opportunities

The digitalization of Malaysia's construction industry is a transformative journey marked by both significant challenges and promising opportunities. One of the foremost **challenges** is the high initial cost associated with implementing digital technologies, standards, and specifications. Many construction firms, especially smaller ones, find the upfront investment prohibitive, which slows down the adoption of tools such as BIM, IoT, and AI. Alongside cost concerns, resistance to change remains a major barrier. The industry's traditional practices and conservative mindset contribute to reluctance among stakeholders to embrace new digital workflows, compounded by a shortage of digital expertise and skilled manpower.

Communication inefficiencies and fragmented organizational processes further complicate digital integration, as many firms lack standardized procedures and digital leadership to drive transformation effectively. Additionally, concerns over cybersecurity and data privacy, as well as the complexity of integrating legacy systems with new technologies, pose technical challenges that require careful management. The industry also faces time constraints and tight project margins, limiting the ability of professionals to learn and implement new digital tools amid ongoing project demands.

Despite these hurdles, the **opportunities** presented by digitalization are substantial. Digital technologies enable better planning, monitoring, and coordination of construction projects, leading to enhanced productivity and reduced risks.

Government initiatives play a crucial role in fostering digital transformation. Programs such as CSP and the NCP 2030 provide policy frameworks, funding, and skills development programs to support industry-wide adoption of digital tools. Organizations like the CIDB actively promote training and awareness campaigns to increase digital literacy and dispel misconceptions about technology adoption. Pilot projects and sharing of successful case studies further encourage wider acceptance among construction professionals.

Moreover, the digitalization drive aligns with broader national goals of sustainability and competitiveness, positioning Malaysia to become a regional leader in smart construction. The integration of digital technologies supports sustainable building practices and enhances the country's ability to compete in the global construction market.

3.5. Future Outlook

Malaysia's construction industry is set to continue its digital transformation, with a strong focus on integrating Building Information Modelling (BIM) and Industrialised Building System (IBS). By 2025, the government aims to achieve 90 % BIM adoption in public projects, while the private sector also increasingly embraces this technology. The use of IBS in affordable housing projects has reached 91.5 % in 2023, with a target of constructing one million units using IBS by 2028.

These efforts are part of the broader NCP, which aims to boost productivity, reduce reliance on foreign labour, and enhance cost efficiency through technology. With continuous policy support, industry collaboration, and innovation, Malaysia is poised to strengthen its position as a leader in digital construction practices, driving sustainability and efficiency in the sector.

As the industry moves forward, it is expected to see increased integration of BIM and IBS, along with other emerging technologies, to drive efficiency, sustainability, and competitiveness. The government's strategic plans and ongoing efforts to address challenges will be crucial in achieving these goals.

4. CIRCULAR AND SUSTAINABLE CONSTRUCTION IN MALAYSIA

The Malaysian construction industry is gradually transitioning from traditional linear models ("take-make-dispose") toward sustainable and circular practices. This shift is driven by national policies, climate commitments, technological innovations, and market demand for green and resource-efficient buildings.

Malaysia's Circular Economy Blueprint (2025-2035) for Solid Waste was launched by the Ministry of Housing and Local Government to guide the nation in transitioning toward a circular economy across sectors, including construction, waste management, and materials use. It runs to 2035 and focuses on governance, legislation, digitalisation, infrastructure, market creation and Extended Producer Responsibility (EPR) schemes.

The construction industry is expected to experience several impacts from the blueprint. Procurement practices will increasingly favour materials that are recyclable, traceable, and resource-efficient, and design practices will shift toward modularity, adaptability, and de-constructable structures to maximize reuse potential.

Construction and demolition (C&D) waste reduction will become a priority, supported by better recycling infrastructure and digital tracking systems. Firms adopting circular principles will gain competitive advantages through certification, cost savings, and compliance with emerging regulations, while early adoption can improve ESG performance and access to green financing.

4.1. Adoption of Circular Construction

As of 2025, Malaysia has been gradually adopting circular construction practices, but overall implementation remains in the early stages. The country produces approximately 39,000 tonnes of solid waste per day, equivalent to around 1.17 kg per person daily, with construction and demolition (C&D) waste representing a significant portion of this total. Estimates suggest that around 25,600 tonnes of C&D waste are generated daily, though only about 15% of this waste has been recycled, indicating considerable room for improvement.

The national recycling rate was 35.4 % in 2023, with targets to reach 40 % by 2025, reflecting the government's push to advance circular economy practices. In the construction sector, approximately 45 % of firms currently pursue green building certifications, such as Green Building Index (GBI) or GreenRE, which encourage sustainable practices, including material efficiency and waste diversion. The adoption of recycled materials, including concrete, steel, and timber, has increased by about 20 % since 2020, and projections suggest that by 2025, around 30 % of construction materials used in Malaysia could be sourced from sustainable or recycled inputs.

Despite this progress, significant challenges remain. Large volumes of C&D waste are still generated, recycling infrastructure is limited, and many construction firms lack the awareness, technical capacity, and economic incentives to fully implement circular practices. While national policies - such as the Circular Economy Blueprint 2025–2035 and associated green construction guidelines - provide a strong framework and market incentives, adoption is largely incremental and concentrated in larger projects or firms with sustainability commitments.

Urban centres such as Kuala Lumpur, Penang, and Johor Bahru are integrating circular practices into city planning through smart recycling systems, nature-based solutions, and digitally enabled construction ecosystems. These efforts are backed by multilateral development banks and public-private partnerships, offering financial instruments and advisory services to scale circular construction models.

Overall, Malaysia's construction sector is making measurable progress toward circularity, with rising recycling rates, increased use of sustainable materials, and greater uptake of green building certifications, but full-scale adoption remains a work in progress, requiring continued policy support, infrastructure development, and industry engagement.

4.2. Key Initiatives and incentives

4.2.1. Green Building Certifications and MyHijau Mark

Malaysia promotes sustainable development through green building certifications such as the Green Building Index (GBI) and Leadership in Energy and Environmental Design (LEED). These frameworks encourage sustainable design practices, including the integration of energy-efficient systems like solar

panels, wind turbines, and natural ventilation, helping to reduce reliance on fossil fuels and to enhance building performance.

In addition, the GBI and MyHIJAU Mark provide market incentives for adopting sustainable construction practices. Buildings that achieve GBI certification can benefit from tax exemptions, stamp duty exemptions, and enhanced marketability through recognition as sustainable developments, encouraging developers to integrate energy efficiency, waste reduction and circular design strategies to achieve certification criteria.

4.2.2. Green Investment Tax Allowance (GITA), Green Income Tax Exemption (GITE)

One of the primary fiscal incentives is the Green Technology Tax Incentive framework, which includes GITA and GITE. Under this framework, companies that invest in eligible green technology assets listed in the MyHIJAU Directory or undertake qualifying green projects can apply for a 100 % investment tax allowance on capital expenditure and / or income tax exemptions, reducing taxable income and improving financial feasibility for sustainable construction and circular technologies.

4.2.3. Green Technology Financing Scheme (GTFS 4.0)

Malaysia's Green Technology Financing Scheme (GTFS 4.0) provides soft loans and financing support for green building projects and other sustainability initiatives. Participating financial institutions receive government guarantees of 60 to 80 % on the green portion of financing, with interest or profit rebates (e.g. around 1.5 % per annum), helping developers and building owners secure more affordable capital for energy-efficient, low-carbon and circular design investments in buildings and infrastructure.

4.3. Challenges

The Malaysian construction industry faces several challenges in adopting circular solutions, but the prospects remain promising due to strong policy support and rising awareness. One major challenge is the **lack of sufficient demand** for circular economy products and services, which creates a vicious cycle, where businesses hesitate to invest in circular models due to uncertain returns, while low supply further dampens demand. This hesitancy is compounded by the higher production costs associated with circular products, such as recycled materials, for which customers may be unwilling to pay a premium. Additionally, enforcement and implementation of national sustainability policies remain inconsistent, partly due to shifting political priorities and limited coordination among stakeholders.

Another significant barrier is the **low level of awareness** and understanding of circular economy principles within the industry and among the public. Many businesses and professionals lack the technical knowledge and trust needed to fully embrace circular practices, and there are organizational and social challenges related to collaboration and investment risk. The construction sector also grapples with practical issues such as managing construction and demolition waste, ensuring material quality and safety in recycled products, and integrating circular designs into existing project workflows.

4.4. Opportunities

Malaysia's **proactive policy landscape**, exemplified by the Circular Economy Blueprint and the Circular Economy Policy Framework, lays a solid foundation for future adoption. The government's goal of achieving a 40 % national recycling rate by 2025 and reducing greenhouse gas emissions by 45 % by 2030 provides a favourable climate for innovation.

For international players, including Austrian companies, opportunities exist in **advanced recycling systems, remanufacturing technologies, sustainable construction materials, and digital solutions for circular design and waste tracking**. With continued focus on education, vocational training, and industry collaboration, Malaysia's construction sector is well-positioned to become a regional leader in resource-efficient, low-waste, and circular practices.

5. CONCLUSION

Malaysia's construction industry stands at a pivotal moment of transformation, driven by the convergence of digitalisation, sustainability, and emerging circular economy practices. National initiatives such as the Construction 4.0 Strategic Plan, mandatory BIM implementation for projects above RM 10 million, and the development of the Construction Digital Maturity Index (CDMI) demonstrate the government's clear commitment to modernising the sector. Rapid adoption of technologies - including BIM, IBS, AI-driven project monitoring, IoT-enabled site management, and cloud-based collaboration - shows that Malaysian firms are increasingly aware of the productivity, safety, and cost advantages that digital tools bring. This growing digital maturity positions Malaysia among the leading adopters in the Asia-Pacific region and strengthens its competitive standing in the global construction landscape.

Parallel to this shift, circular construction is gradually emerging as a core pillar of Malaysia's sustainability agenda. The Circular Economy Blueprint 2025–2035, rising recycling targets, and the expansion of green certification systems (GBI, GreenRE, MyHIJAU) signal the transition toward resource-efficient, low-carbon, and waste-conscious development models. Although adoption remains at an early stage, constrained by limited demand, insufficient recycling infrastructure, and gaps in technical capability, the trajectory stays positive. Urban centres such as Kuala Lumpur and Penang are beginning to integrate circularity into planning. An increasing number of developers are incorporating recycled materials, modularity, and deconstruction principles into their projects.

Looking ahead, the integration of digitalisation and circularity is expected to redefine Malaysia's construction ecosystem. Digital tools such as BIM, digital twins, and IoT-based waste tracking can significantly accelerate circular adoption by improving transparency, material traceability, and lifecycle optimisation. Meanwhile, circular design approaches can complement digital workflows by reducing waste, enhancing project resilience, and enabling more sustainable construction lifecycles. Together, these shifts will shape a more productive, climate-aligned, and innovation-driven industry.

Overall, Malaysia is well-positioned to become a regional leader in smart and sustainable construction. Continued policy support, industry-academia collaboration, investments in workforce upskilling, and international partnerships, particularly in advanced digital and circular technologies will be essential. By embracing both digitalisation and circular solutions, Malaysia's construction sector can strengthen long-term competitiveness, unlock new economic opportunities, and contribute meaningfully to national sustainability and decarbonisation goals.

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