GSMA

Digital Nations 2025

Achieving the ASEAN Connectivity Strategic Plan

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Executive summary

The Association of Southeast Asian Nations (ASEAN) has made strong progress in recent decades, particularly in terms of economic growth. The combined gross domestic product (GDP) of ASEAN's 10 member states grew from $737 billion in 2000 to just over $4 trillion in 2024. Much of the progress has been underpinned by strategic development plans aimed at harnessing ASEAN's economic potential and enhancing its global competitiveness.

2025 is a pivotal year for the bloc's development agenda, with several plans drawing to a close in advance of a new cycle of initiatives commencing in 2026 – most notably, the ASEAN Community Vision 2045, which is supported by strategic plans including the ASEAN Connectivity Strategic Plan 2026–2035.

As ASEAN embarks on the next phase of its development journey, digital technologies will play an even more significant role in achieving the principal objectives of strategic plans. This is especially the case considering the rapid development and broad deployment of 5G, and increasing implementation of AI technologies (including cloud and edge intelligence), quantum computing, blockchain and other transformative innovations. Meanwhile, the cross-sector nature of the ASEAN Connectivity Strategic Plan underlines the need for a holistic approach to digitalisation. This aligns with the concept of a digital nation, where digitalisation is central to nation-building, supported by coordinated efforts to fully integrate digital technologies into every sector of the economy.

However, the success of this digital transformation hinges not only on infrastructure and policy but also on digital trust – the confidence that individuals, businesses and governments have in the security, privacy, reliability and ethical use of digital technologies. Building digital trust is essential to ensure widespread adoption, foster innovation and enable seamless cross-border digital interactions.

ASEAN has made progress with digitalisation in recent years, reflected in the performance of member states in the GSMA Intelligence Digital Nations Index and in other developments throughout the region. However, it also faces challenges that could slow the pace of digitalisation or result in a fragmented approach within the region, potentially affecting the effectiveness of digital technologies in advancing the ASEAN Connectivity Strategic Plan. Challenges include disparities in digital readiness, regulatory fragmentation and harmonisation issues, the mobile internet usage gap, the digital skills gap and geopolitical disruptions. Without addressing these issues (and without strengthening digital trust), the region risks a fragmented approach that could undermine the effectiveness of digital technologies in advancing the ASEAN Connectivity Strategic Plan.

In this context, successfully realising ASEAN's development plans requires concerted efforts by stakeholders to fully leverage the opportunities presented by digitalisation. This report highlights three principal measures to improve digital readiness:

- **Bridge the infrastructure gap –** Addressing the infrastructure investment gap requires a combination of strategies, including fiscal incentives, targeted funding for infrastructure deployment, and regulatory reform to reduce deployment costs.
- **Accelerate regional policy harmonisation –** Harmonising digital policy creates an integrated digital market, fosters interoperability, and stimulates economic growth through the promotion of cross-border data flows, e-commerce, digital payments and innovation.
- **Leverage international cooperation mechanisms –** These mechanisms can be used to exchange best practices on the development of advanced digital technologies, build the capacity of less advanced countries, and promote shared standards that reinforce digital trust across the region.

01
ASEAN development in context

The Association of Southeast Asian Nations[1] (ASEAN) aims to foster regional cooperation, economic integration, political stability and socio-cultural development across member states. The bloc has made strong progress in recent decades, particularly in economic growth.

The combined GDP of ASEAN's 10 member states grew from $737 billion in 2000 to just over $4 trillion in 2024[2] – a more than five-fold increase. Between 2010 and 2024, ASEAN economies expanded at an average annual growth rate of 4.5%, compared to a global average of 2.8% for the same period.[3] This sustained growth has driven tangible social and economic benefits for people and businesses, including better livelihoods, infrastructure, jobs and market opportunities.

Much of this progress has been underpinned by strategic development plans aimed at harnessing ASEAN's economic potential and enhancing its global competitiveness. Recent examples include the Master Plan on ASEAN Connectivity (MPAC) 2010,[4] which served as a foundation for MPAC 2025[5] and the ASEAN Community Vision 2025.[6] These initiatives have boosted intra-ASEAN trade and investment, have strengthened regional infrastructure and connectivity, and have advanced digital transformation through support for cross-border data flows, e-commerce and digital payments.

For ASEAN, 2025 marks a significant milestone, as Timor-Leste becomes the bloc's 11th member state in October, with full membership expected at the 47th ASEAN Summit in Kuala Lumpur. This expansion demonstrates ASEAN's ongoing commitment to strengthen regional integration. In addition, 2025 is a pivotal year for the bloc's development agenda, with several plans drawing to a close in advance of a new cycle of initiatives commencing in 2026 – most notably, the ASEAN Community Vision 2045[7] – a comprehensive, long-term roadmap designed to establish the bloc as a central player in the global economy. By deepening economic integration, promoting sustainable development and fostering inclusive growth that narrows development gaps among member states, ASEAN aims to position itself as the world's fourth-largest economy by 2030.

ASEAN Community Vision 2045 is supported by several strategic plans that operationalise its goals across three pillars: Political-Security Community, Economic Community and Socio-Cultural Community, with a focus on economic integration, connectivity, sustainability, human rights and regional resilience. The plans are shown in Table 1.

Referencing the ASEAN Connectivity Strategic Plan 2026–2035, this report examines the opportunities presented by digitalisation for achieving ASEAN's development goals, along with the necessary factors to facilitate this process.

1 Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand and Vietnam
2 Calculation based on IMF figures
3 ASEAN Statistics Division (ASEANstats)
4 See ASEAN Master Plan on Connectivity at asean.org
5 See Master Plan on ASEAN Connectivity 2025 at asean.org
6 See ASEAN Community Vision 2025 at asean.org
7 See ASEAN Community Vision 2045 at asean.org

Table 1

Key strategic plans supporting ASEAN Community Vision 2045

Source: ASEAN, GSMA

Plan	Timeframe	Pillar	Description
ASEAN Political-Security Community Strategic Plan	2025–2045	Political-Security	Aims to foster a peaceful, stable and resilient Southeast Asia by deepening political and security cooperation among ASEAN member states
ASEAN Economic Community Strategic Plan	2026–2030	Economic	Aims to deepen economic integration, promote sustainable growth, and position ASEAN as the world's fourth-largest economy by 2030
ASEAN Socio-Cultural Community Strategic Plan	2026–2035	Socio-Cultural	Aims to build a people-centred, inclusive, resilient and sustainable ASEAN Community by improving quality of life for all ASEAN citizens
ASEAN Connectivity Strategic Plan	2026–2035	Cuts across all three pillars	Aims to enhance physical, institutional and people-to-people connectivity to support regional integration

The ASEAN Connectivity Strategic Plan

The ASEAN Connectivity Strategic Plan 2026–2035 cuts across the three pillars of the ASEAN Community Vision 2045. It builds on the achievements and lessons learnt from MPAC 2010 and MPAC 2025. It is designed to help the region effectively respond to major global and regional trends, including digital transformation, climate change and the transition to net-zero emissions, the reconfiguration of supply chains, urban expansion with the rise of middleweight cities, evolving forms of regionalism, and demographic shifts such as an ageing population.

The ASEAN Connectivity Strategic Plan is structured around six focus areas:

- **Sustainable infrastructure –** Focuses on green infrastructure and low-carbon transport systems. This includes investments in transport, energy and digital infrastructure to enable smart cities and support environmental sustainability.
- **Smart and sustainable urban development –** Focuses on developing smart cities and villages to respond to urban challenges such as congestion, pollution and inequality. This involves creating inclusive, resilient and environmentally sustainable cities to accommodate the projected 90 million additional urban residents by 2030.[8]
- **Digital innovation –** Focuses on expanding digital connectivity, advancing emerging technologies such as AI, IoT and big data, facilitating cross-border data transfers, improving cybersecurity measures, and aiming for inclusive access to digital services. It is directed at digital infrastructure providers, fintech firms, payment service providers and digital platform operators.
- **Seamless logistics and supply chain –** Aims to boost regional supply chains via the Framework on ASEAN Supply Chain Efficiency and Resilience, focusing on disaster preparedness, diversification and advanced technology integration for better visibility and resilience.
- **Regulatory excellence and cooperation –** Supports the alignment of regulations and policies to enable trade, investment and services liberalisation, and addresses issues such as skilled labour mobility and cross-border data governance.
- **People-to-people connectivity –** Enhances skills development, labour mobility and cultural connectivity through initiatives such as the ASEAN-ROK TVET Mobility Programme. It also supports tourism, education and cultural exchanges.

8 ASEAN Smart Cities Framework, ASEAN, 2018

Over the past two decades, the formulation and implementation of ASEAN's strategic plans have occurred alongside rapid digitalisation across society, driven by the widespread deployment and uptake of mobile technologies. The introduction and adoption of 4G and 5G in the 2010s and 2020s, respectively, have been integral to facilitating seamless communication, broadening financial inclusion and enabling new businesses models to improve service delivery and address socioeconomic challenges across the region.

Recognising the potential for digitalisation to support its development plans, ASEAN has established several strategic initiatives to drive progress, shown on the right.

These developments are supported by regional commitments and initiatives focused on advancing the digital nation agenda.

- **The ASEAN ICT Masterplan 2015**[9] and **2020**,[10] and the **ASEAN Digital Masterplan 2025**,[11] aimed at achieving inclusive digital connectivity

- **The ASEAN Digital Data Governance Framework (ADDGF)**[12] in 2017, designed to enhance cross-border data flows and privacy standards

- **The ASEAN Open Data Network (AODN)**,[13] launched in 2021 to foster transparency and innovation through shared data platforms

- **The ASEAN Smart Cities Network (ASCN)**,[14] established in 2018 to encourage the adoption of digital technologies to tackle urban challenges such as traffic congestion and waste management

- **The ASEAN Single Window (ASW)**,[15] fully operational since 2019, which utilises digital infrastructure to strengthen cross-border trade and boost economic competitiveness through a unified digital platform for customs and regulatory agencies.

9 See ASEAN ICT Masterplan 2015 at asean.org
10 See The ASEAN ICT Masterplan 2020 at asean.org
11 See ASEAN Digital Masterplan 2025 at asean.org
12 See ASEAN Telecommunications and Information Technology Ministers Meeting (TELMIN) Framework on Digital Data Governance at asean.org
13 Policy Brief – Strengthening Open Government Data for Digital Cooperation in ASEAN, Economic Research Institute for ASEAN and East Asia, 2025
14 See ASEAN Smart Cities Network at asean.org
15 See ASEAN Single Window at asean.org

02
The impact of digitalisation on the ASEAN Connectivity Strategic Plan

As ASEAN embarks on the next phase of its development journey, digital technologies will assume an even greater role in achieving the principal objectives of strategic plans. This is especially the case considering the rapid development and broad deployment of 5G, and increasing implementation of AI technologies (including cloud and edge intelligence), quantum computing, blockchain and other transformative innovations.

Together, these technologies establish a robust ecosystem that integrates high-speed connectivity, intelligent analytics and localised processing. This creates a solid foundation for innovation across industries, enabling smarter, more efficient and more inclusive solutions in the focus areas of the ASEAN Connectivity Strategic Plan.

Throughout the region, digital technologies are being used to enhance supply chain transparency, optimise urban development and enable seamless mobility among member states. Digital innovation modernises infrastructure, streamlines logistics and improves cross-border service delivery. The shift towards digitalisation also supports the harmonisation of regulatory frameworks and standards, making it easier for businesses and governments to collaborate and operate across borders. Furthermore, digitalisation strengthens people-to-people connectivity by broadening access to essential services and skilled labour mobility via digital platforms.

Throughout the region, digital technologies are being used to enhance supply chain transparency, optimise urban development and enable seamless mobility.

2.1 Deploying sustainable infrastructure

Digital technologies underpin smart solutions for traffic management systems, which help reduce emissions. The practical applications of these technologies across ASEAN also include real-time monitoring of infrastructure projects, such as bridges and energy grids, to predict maintenance needs and optimise energy consumption. In Malaysia, for example, the government announced a RMY43 billion ($10 billion) commitment in June 2025 to upgrade the national grid infrastructure to meet the country's AI and battery energy storage ambitions.[16] This investment is complemented by the deployment of smart meters, and grid automation and data analytics solutions by national utility company Tenaga Nasional Berhad (TNB) to improve grid reliability, customer experience and support renewable energy integration and decarbonisation efforts, in line with ASEAN's sustainability goals.

$10 billion

Commitment from the Malaysian government to upgrade the national grid infrastructure to meet the country's AI and battery energy storage ambitions

Governments and private-sector players are also using technologies such as digital twins to monitor infrastructure in real-time, and edge intelligence solutions to ensure critical decisions (such as detecting structural anomalies) are made locally and instantly. Examples of digital technologies being applied to infrastructure development in ASEAN include the following:

- In Singapore, Keppel's Energy-as-a-Service (EaaS) solution uses AI and machine learning to optimise energy assets. The company is also collaborating with the National University of Singapore on smart grid technologies and implementing innovative building solutions including smart lighting and optimised cooling systems.
- AIS Thailand is using its 5G network for a smart mining project with SCG, employing 5G solutions to power autonomous vehicles for material transport within an industrial zone, enhancing efficiency and sustainability by reducing downtime and CO_2 emissions.

16 "Malaysia PM says $10 billion committed to national grid upgrade", Reuters, June 2025

2.2 Building smart and sustainable cities

Urbanisation is happening at a rapid pace in ASEAN, with more than half the population living in urban areas, though with significant variation between member states (e.g. Singapore at 100% urbanised versus Cambodia at 26%). An emerging trend across ASEAN is the rise of small and medium-sized cities, typically with fewer than 1 million inhabitants; these are increasingly driving economic growth. The cities benefit from improved infrastructure and enhanced connectivity to domestic and international markets and serve as hubs for micro, small and medium-sized enterprises (MSMEs).

Despite the economic opportunities, urbanisation also presents challenges, including increased traffic, pollution, environmental degradation and social inequality. In response, ASEAN has developed the ASEAN Sustainable Urbanisation Strategy (ASUS)[17] and the Smart Green ASEAN Cities (SGAC)[18] programme. Both rely on digital technologies to promote sustainable development, enhance municipal governance and build more inclusive cities. As a result, ASEAN has become a hub for smart city innovation, with cutting-edge solutions helping to improve resource management, alleviate congestion, advance waste management and generally enhance quality of life for residents.

In Indonesia, the 100 Smart Cities Movement integrates AI across 98 cities and 416 districts, with adaptive traffic control systems adjusting traffic signal timings based on vehicle volume, reducing idle time and emissions.[19] In Bali's Badung district, virtual assistants enhance the visitor experience by helping tourists plan itineraries, with natural language processing available in multiple languages. The new capital city, Nusantara, currently being developed in East Kalimantan, incorporates AI into its foundational planning as city planners implement intelligent infrastructure across healthcare, education, security and transport from the outset. This establishes a benchmark for sustainable urban development driven by advanced AI technologies.

In Vietnam, Ho Chi Minh City, in partnership with technology firm CMC, has unveiled an ambitious initiative aimed at establishing an AI-driven city model. Singapore uses 5G technology to support smart infrastructure applications, including intelligent street lighting and automated waste management systems. Meanwhile, Ayala Land in the Philippines is developing smart communities such as Arca South – a connected, mixed-use district that emphasises the 15-minute city concept,[20] and a fully integrated lifestyle for residents and businesses.

> ASEAN has become a hub for smart city innovation, with cutting-edge solutions helping to improve resource management, alleviate congestion, advance waste management and enhance quality of life.

17 See ASEAN Sustainable Urbanisation Strategy at asean.org
18 "Smart Green ASEAN Cities: New initiative to promote sustainable and smart cities in ASEAN", ASEAN, November 2021
19 "Indonesia's AI Revolution: How Southeast Asia's Largest Economy Became a Global AI Powerhouse", August 2025, Introl
20 An urban planning model where everything a resident needs in their daily life can be accessed within a 15-minute walk or cycle ride.

2.3
Enabling digital innovation

Digital innovation thrives at the intersection of high-speed connectivity, AI's data-driven insights and the proliferation of connected devices and intelligent sensors. Across ASEAN, this convergence is enabling the rollout of smart applications across economic sectors, including health, education and financial services, driving growth and unlocking economic opportunities for individuals and businesses in the digital economy.

For instance, Thailand has launched several initiatives focused on 5G-powered telemedicine platforms, such as the national Thailand Health Data Space 5G project and hospital-specific services such as Nopparat Rajathanee Hospital's telemedicine system. These platforms harness 5G to enable remote consultations, real-time high-definition video transmission, smart ambulances and AI-driven health data systems, effectively bridging rural and urban areas. Key participants in these initiatives include the Ministry of Public Health, operators True Corp and AIS, and equipment vendors such as Huawei.

The SME sector in ASEAN accounts for 97% of private-sector businesses and 85% of the workforce, and contributes 45% to the regional GDP.[21] Digital technologies have enabled these enterprises to expand their market access and customer base, enhance operational processes, reduce costs through tools such as cloud computing and AI, and enable instant payments through fintech solutions.

For example, the Gojek ecosystem, which originated in Indonesia and now operates in several ASEAN countries (including Singapore, Thailand and Vietnam) offers SMEs a Super App platform that integrates services such as ride-hailing, food delivery, logistics and digital payments. This provides avenues for customer engagement, streamlines operational tasks, manages expenses and supports financial inclusion.

Digital innovation thrives at the intersection of high-speed connectivity, AI's data-driven insights and the proliferation of connected devices and intelligent sensors.

21 Building SME resilience in Asia, UNDP, 2024

2.4
Facilitating seamless logistics and supply chain

ASEAN's varied geography, which includes archipelagos, tropical forests, mountains and highlands, presents challenges for logistics and supply chains, resulting in higher costs and complexity. This can lead to issues such as inaccurate inventory reporting, unclear tracking and coordination difficulties for multiple deliveries. Digital technologies have been implemented to support the transformation of logistics and supply chains, with the aim of improving efficiency, transparency and resilience. For instance, 5G enables autonomous vehicles, drones and IoT solutions for road, maritime and aerial logistics, while blockchain contributes to enhanced security and traceability in supply chain transactions, especially in the agricultural and food sectors.

— In **Singapore**, Singtel has partnered with Ericsson to implement advanced 5G solutions at Tuas Port – a move that supports PSA Singapore's ambition to build a fully automated port by the 2040s.

— In **Indonesia**, Zipline uses drones to deliver medical supplies, such as blood, vaccines and other life-saving products, to hard-to-reach locations, overcoming significant infrastructure challenges in the country's remote areas.

— In **Vietnam**, Vinamilk has partnered with TE-FOOD, a blockchain-based traceability solution provider, to track and trace its dairy products, especially organic milk, ensuring food safety and product quality from the farm to the consumer.

— In the **Philippines**, Shopee uses a cloud-based logistics network that integrates with third-party partners through its Shopee Seller Centre and Shopee App, enabling features such as in-app tracking and easy shipment arrangement for sellers.

— In **Malaysia**, Telekom Malaysia supports enterprise-level 5G asset tracking through its TM ONE business solutions by offering private 5G networks, enabling reliable, high-bandwidth connections for IoT devices.

— **Malaysia** is stepping up its efforts to establish itself as a regional hub for smart warehousing and logistics, through new initiatives at Selangor Aeropark. By using automation, data analytics and digital platforms, these efforts are expanding cargo handling capacity and streamlining the movement of goods across borders.

2.5 Supporting regulatory excellence and cooperation

Within the ASEAN Connectivity Strategic Plan, regulatory excellence and cooperation refers to efforts to harmonise and strengthen regulatory frameworks across member states to facilitate regional trade, investment and connectivity. This requires data-driven policymaking and cross-border collaboration, particularly in data governance, to support digital economy integration, enable data flows and address differences in regulatory frameworks among member states. For instance, ASEAN's Digital Economy Framework Agreement[22] seeks to coordinate data policies to encourage e-commerce and digital trade by emphasising unified data protection regulations and cross-border data flows, which are critical for regulatory clarity.

Digital technologies offer the infrastructure and tools required for gathering, analysing and using data to inform policymaking, supporting evidence-based approaches that are responsive to current needs. For instance, big data and analytics tools enable policymakers to identify economic trends and assess business performance, allowing them to develop policies for economic growth. Additionally, 5G-enabled IoT sensors used in smart city applications generate real-time data on traffic, energy consumption and public services, which helps policymakers plan targeted interventions.

As well as generating insights, digital technologies can further support ASEAN's ambitions for regulatory excellence by streamlining regulatory processes and ensuring harmonisation across member states. For example, the ASEAN Digital Integration Framework Action Plan (DIFAP)[23] uses digital systems to monitor trade facilitation, data flows and compliance, ensuring transparent and consistent regulatory practices throughout the region. Similarly, initiatives such as the ASEAN-Singapore Cybersecurity Centre of Excellence (ASCCE)[24] employ digital tools for capacity building and transparent data sharing, fostering trust within digital ecosystems.

Digital technologies can support ASEAN's ambitions for regulatory excellence by streamlining regulatory processes and ensuring harmonisation across member states.

22 "Digital Economy Framework Agreement (DEFA): ASEAN to leap forward its digital economy and unlock US$2 Tn by 2030", ASEAN, August 2023
23 See ASEAN Digital Integration Framework at asean.org
24 "ASEAN-Singapore Cybersecurity Centre of Excellence", Cyber Security Agency of Singapore, October 2021

2.6 Enhancing people-to-people connectivity

ASEAN is characterised by a range of ethnic groups and languages spoken throughout its member states. Many countries in the region include numerous ethnicities and tribes, each with their own languages, dialects, culinary traditions, clothing and celebrations. For ASEAN member states, transforming this diversity into a collective strength through regional cooperation is a key priority – to minimise the negative impacts of potential ethnocentric conflicts and foster economic growth across the region. In practice, this involves cultivating a shared sense of identity among individuals and communities, and harnessing diversity for development.

Digital technologies can contribute to these objectives by supporting seamless communication and collaboration across borders and different socio-cultural groups. They also increase access to education, healthcare and public services for communities, including those in remote or underserved locations, and encourage broader participation in the ASEAN economy. E-learning platforms help develop workforce skills and support labour mobility in the region. Meanwhile, digital IDs and digital payment systems provide mechanisms for trade and tourism across borders.

Digital platforms, such as social media (e.g. Facebook, Instagram), e-commerce (e.g. Shopee, Lazada, Alibaba), content distribution sites (e.g. YouTube, TikTok, Spotify) and service-based networks (e.g. Gojek, Uber, Airbnb), enable the exchange of information, goods, services and culture among users. This enhances mutual understanding and supports growth of trade and tourism. MSMEs, particularly those led by women and rural entrepreneurs, benefit significantly from these digital technologies, as they offer improved access to new markets and help overcome barriers to cross-border trade.

At the same time, ASEAN is advancing a regional, cross-border, digital payment system through initiatives such as Regional Payment Connectivity (RPC) and Project Nexus,[25] aimed at increasing efficiency, lowering costs and reducing dependence on foreign currencies. Key priorities include standardising QR-code payments and interlinking domestic instant payment systems. Although the region continues to face regulatory, infrastructure and financial literacy challenges, significant progress has been made. Several QR-code systems have been connected, including KHQR (Cambodia), QRIS (Indonesia), Lao QR (Laos), DuitNow (Malaysia), QR Ph (Philippines), PayNow (Singapore), PromptPay (Thailand) and VietQR (Vietnam).

25 "Enhancing Regional Payment Connectivity Across ASEAN+3 Economies", AMRO, April 2025

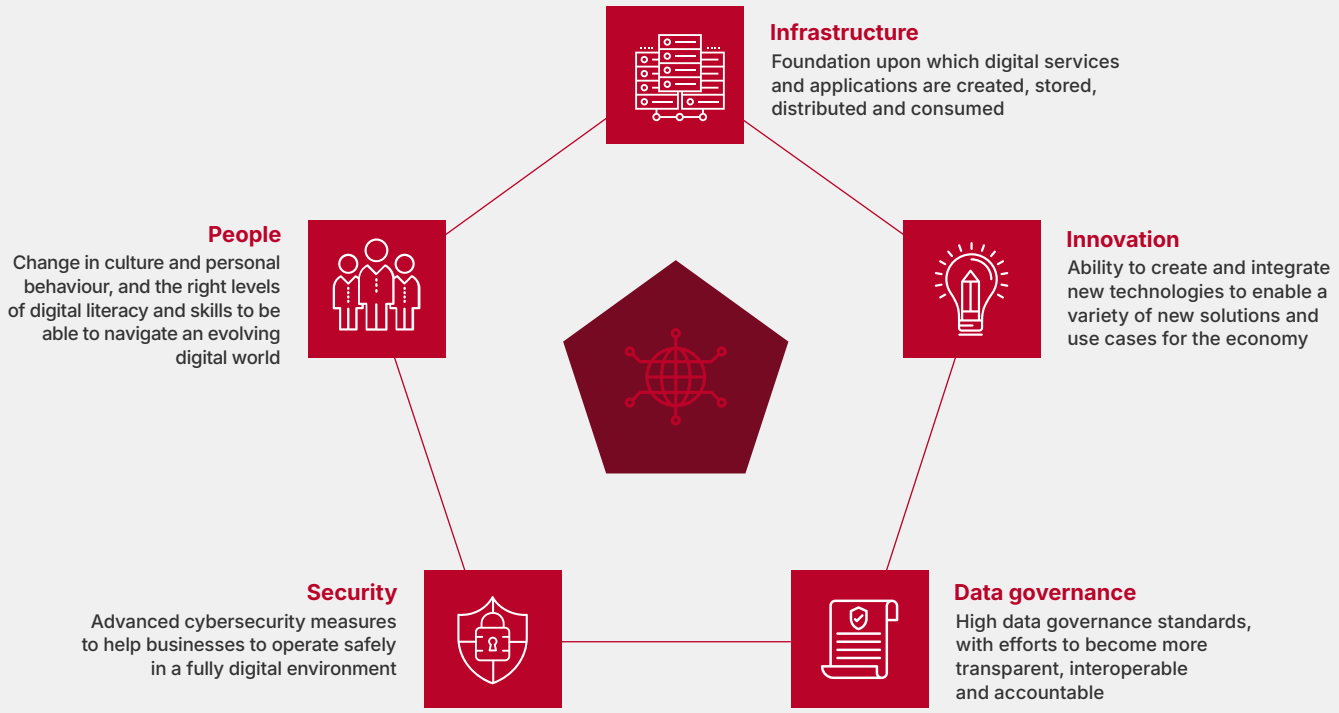
03
Assessing digital readiness in ASEAN: the Digital Nations Index

Digitalisation is already having a profound impact on the focus areas of the ASEAN Connectivity Strategy Plan. However, the cross-sector nature of the plan underlines the need for a holistic approach to digitalisation across ASEAN over the coming decade – one that emphasises digital transformation throughout the wider economy and a digital-first approach to the way society operates. This scenario aligns with the concept of a digital nation, where digitalisation is central to nation-building, supported by coordinated efforts to fully integrate digital technologies into every sector of the economy.

Figure 1

The five components of a digital nation

Source: GSMA Intelligence



3.1 The ASEAN Digital Nations Index

In recent years, countries in ASEAN and throughout Asia Pacific have begun outlining their digitalisation strategies and rolling out plans to become fully digital nations. For example, in August 2025, Malaysia launched is AI Nation Framework – a national strategy built on five pillars aimed at ensuring AI works for the benefit of every citizen. In June 2025, Vietnam passed a law aimed at establishing itself as a hub for AI, cryptocurrencies and technological innovation.[26]

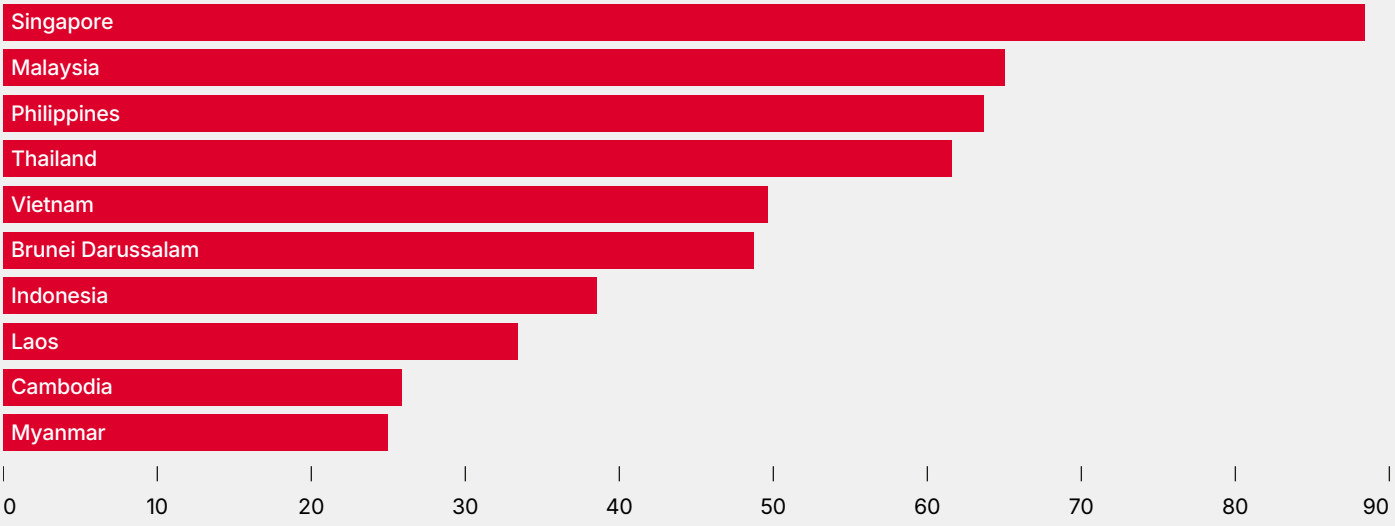
To track progress with these goals and measure the readiness of ASEAN members to use digital technologies in the implementation of the ASEAN Connectivity Strategic Plan, GSMA Intelligence developed the Digital Nations Index. This evaluates each country's digital readiness by combining five key components of digital nationhood. It uses numerical data and qualitative assessments to gauge performance.

Figure 2 presents the performance of ASEAN member states in the index, drawing on the combined scores for each of the five components of a digital nation (see Appendix for details on the methodology). Singapore ranks as the leading country in ASEAN on the 2025 index, achieving an aggregate score of 88 out of 100. Malaysia, Philippines and Thailand follow, each with scores above 60. Cambodia and Myanmar score below 30, highlighting a significant digital readiness gap between ASEAN member states.

Figure 2

Digital Nations Index: aggregate scores, 2025

Source: GSMA Intelligence



26 "Vietnam Passes First-Ever Law on Digital Technology Industry", Vietnam Briefing, June 2025

Figure 3 illustrates the performance of ASEAN member states in each component of the Digital Nations Index. On average, the people component achieved the highest scores across the region, while the infrastructure and innovation components demonstrated comparatively weaker results, with notable disparities observed between leading and trailing countries in the region.

Figure 3

Digital Nations Index: component scores, 2025

Source: GSMA Intelligence

Infrastructure

Digital readiness is linked directly to the availability of digital infrastructure, which serves as the basis for a digital nation and supports the development of other components. This includes hard digital infrastructure (such as mobile networks, fibre and other fixed networks, satellite connectivity, data centres and data exchange systems) and soft digital infrastructure including digital ID systems, electronic payments and other digital transaction systems. The infrastructure landscape in ASEAN varies significantly, with countries at different levels of development. Singapore is the regional leader in this component. However, its score of 80 indicates that there remains considerable potential for improvement.

5G technology will play a central role in driving digitalisation initiatives across the ASEAN region. Currently, operators in eight ASEAN member states have launched commercial 5G services.[27] Five countries – Malaysia, Philippines, Singapore, Thailand and Vietnam – have introduced 5G standalone (5G SA), which offers advanced capabilities to enable innovative solutions across economic sectors, including transport, energy infrastructure, smart cities and digital health. Some operators in the region have started deploying 5G-Advanced and 5G RedCap. In Singapore, M1 introduced the first commercial 5G RedCap network service for enterprise customers in Southeast Asia in June 2025, enabling 5G connectivity for low-power industrial IoT devices and wearables. In addition to 5G, data centre infrastructure is attracting significant investment throughout ASEAN, particularly in Indonesia, Malaysia and Singapore. It offers the potential to provide much-needed capacity to support AI workloads.

Investments drive expansion in data centre capacity

Malaysia

Malaysia Digital Economy Corporation disclosed in July 2025 that total investments under the Malaysia Digital initiative more than doubled to RM29.47 billion ($7 billion) in Q2 2025, compared to Q1. These were largely driven by robust activity in the data centre and cloud computing segments.[28]

Singapore

Singapore has introduced an energy-efficiency standard for data centres to address tropical conditions, serving as a reference point for other regions interested in sustainable digital infrastructure and resilient data centre development. Additionally, the IMDA is providing an Energy Efficiency Grant to support the adoption of the standards. The grant co-funds the purchase of pre-approved energy-efficient IT equipment, helping data centre end-users upgrade their infrastructure to comply with the new requirements.[29]

Laos

The Lao Ministry of Technology and Communications and Phongsavanh Group Company Limited signed an MoU to study the development of a national data centre and government data exchange system. This public–private partnership aims to strengthen Laos' technology and communications infrastructure for improved regional and global competitiveness.

27 Brunei, Indonesia, Laos, Malaysia, Philippines, Singapore, Thailand and Vietnam
28 "Malaysia's digital economy pulls RM29.5 bil in 2Q FDI, with data centres driving surge", The Edge Malaysia, July 2025
29 "Singapore IT Energy Efficiency Standard for Data Centres Launched", SG Press Centre, August 2025

Innovation

Innovation enables countries to harness emerging technologies, such as AI, blockchain and data analytics, to tackle challenges and enhance competitiveness. Innovation is the weakest component in ASEAN. While Singapore leads the innovation ranking across the wider Asia Pacific region with a score of 87, every other country in ASEAN scores below 45. Singapore has embedded innovation in its digital strategies through deliberate policies, investments and initiatives that position it as a global leader in building a digital nation. For example, Singapore's Smart Nation vision, launched in 2014, focuses on using digital technologies to transform the country into a connected, tech-driven society.

Given the cross-border nature of digital technology, many global innovations can be implemented locally, enabling countries with limited resources to benefit from the latest digital solutions. Nevertheless, strong local innovation is crucial to maximise the potential of digital technologies by tailoring solutions to specific (sometimes unique) challenges. Achieving this demands significant investment in digital infrastructure and skills, as well as a coordinated effort to foster growth in the local digital innovation ecosystem. This comprises connectivity providers such as mobile operators, tech hubs and start-ups, academic and research institutions, and businesses of all sizes.

Growing efforts to boost local innovation

Malaysia

Malaysia's first fully AI-powered banking service, called Ryt Bank, was launched in August 2025, using a homegrown, large-language model – ILMU – to understand and process natural conversation in Bahasa Malaysia, English and Manglish. This makes interactions intuitive and culturally familiar, ensuring banking services are accessible to communities throughout the nation.

Vietnam

In August 2025, Viettel announced the Viettel R&D Hub and An Khanh Data Centre. The R&D facility will focus on emerging technologies such as AI, big data and cloud computing to foster homegrown innovation and a skilled workforce, while the data centre, with a capacity of 60 MW upon completion, will provide infrastructure for AI, cloud computing and cybersecurity.[30]

Vietnam

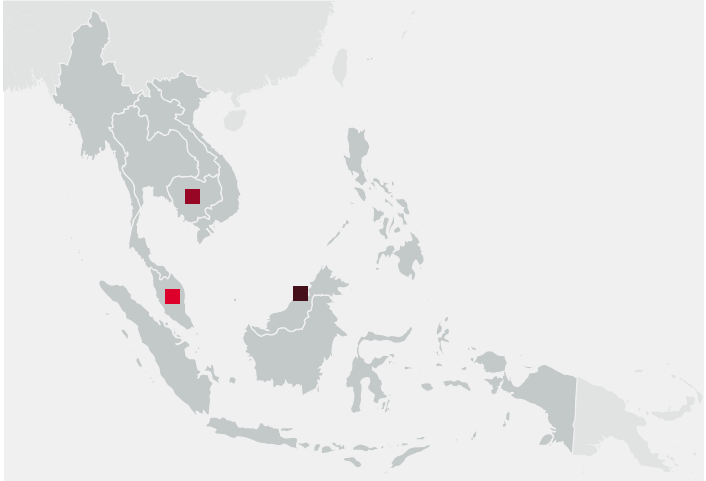
Viettel is also testing AI-based predictive analytics systems for urban planning and disaster response, offering authorities data-driven insights to manage resources and respond to potential challenges. These initiatives are part of a wider national approach to incorporate technology into areas including commerce, industry, governance and community services.

30 "Viettel breaks ground on major R&D, data centre projects", Vietnam+, August 2025

Data governance

Digital systems generate vast volumes of data, some of which contains sensitive personal and business information. If this data is not managed appropriately – whether in storage, transfer or analysis – it can undermine trust in the digital ecosystem. Recognising the critical role of data governance in achieving digital nation ambitions, governments across ASEAN are adopting high standards of data protection principles to ensure accountability, transparency and trust in digital services. The Philippines and Singapore are among the regional leaders in this area. Considerable room for improvement remains in Cambodia, Indonesia and Myanmar.

New data governance laws on the horizon



Brunei Darussalam

Brunei is adopting a whole-of-government approach in the implementation of its Personal Data Protection Order 2025, running from January 2025 to January 2026. This approach includes broad consultations with a variety of stakeholders and collaboration with ASEAN member states. Brunei draws inspiration from the data protection and cross-border data flow practices of advanced member states such as Singapore.

Cambodia

Cambodia published a draft of its first comprehensive personal data protection law, the Law on Personal Data Protection (LPDP), in July 2025. The LPDP is expected to come into force after a two-year implementation period, commencing from its enactment, which is anticipated in 2025 or early 2026. Once implemented, Cambodia will join seven other ASEAN member states that have established comprehensive data privacy legislation.

Malaysia

The Malaysia Department of Personal Data Protection released Guidelines on Cross-Border Personal Data Transfer in April 2025. The guidelines offer instructions for data controllers regarding compliance with Section 129 of the Personal Data Protection Act 2010 when transferring personal data outside Malaysia. They require data controllers to conduct Transfer Impact Assessments to examine the data protection standards in destination countries, provide options such as Standard Contractual Clauses and Binding Corporate Rules as alternative transfer mechanisms, and set out record-keeping requirements to demonstrate compliance.

Security

A digital nation relies on interconnected systems for essential services such as transport, energy and healthcare. These can be vulnerable to cyberthreats – malicious or otherwise – amid increasing digitalisation and geopolitical tensions, making cybersecurity a fundamental element in building a digital nation. Cybersecurity is crucial to protect the infrastructure, data and trust that underpin governance, the economy and societal functions in a technology-driven society. Singapore leads the region in this regard, but growing awareness of cyberthreats across ASEAN – with the number of attacks doubling in 2024 and rising by 85% between 2020 and 2024[31] – is prompting governments and private institutions to take steps to address threats.

Meanwhile, cybersecurity firm Kaspersky indicated that in 2024 more than 53 million hacking attempts targeting ASEAN businesses were identified and prevented. Vietnam, Thailand, Philippines, Singapore, Indonesia and Malaysia are among the most frequently targeted countries, with the manufacturing, government and finance sectors particularly affected. For example, Indonesia faced nearly 15 million Remote Desktop Protocol (RDP) brute-force attacks, representing a 25% rise on 2023, while Malaysia recorded a 14% increase.[32] Authorities in ASEAN are also addressing other forms of cyberthreat, such as online scams, unsolicited communications and impersonation, while working to identify and mitigate the sources of these attacks in their jurisdictions.

Tackling cyberthreats

Philippines

The president of the Philippines approved the National Cybersecurity Plan (NCSP) 2023–2028 in February 2025. The plan is designed to set policy direction and provide operational guidelines for building cybersecurity capacities and promoting a cyber-safe population. Its approval reflects the administration's stated policy focus on cybersecurity and its significance for national and economic security. The NCSP aims to improve the resilience of organisations against cyberthreats, protect operations and establish a secure digital environment that supports development and innovation.

Singapore

In July 2025, Singapore said it will soon announce new regulations that will require critical information infrastructure owners to report cybersecurity incidents suspected of involving advanced persistent threats (APTs). These measures, stemming from recent amendments to the Cybersecurity Act, are intended to strengthen national defences by improving early detection and enabling coordinated response efforts.

Malaysia

Malaysia's Cyber Security Act 2024 came into effect in August 2024, establishing regulatory standards and providing a legislative framework for the protection of national critical information infrastructure. The act also introduces provisions for the management of cybersecurity threats and incidents, as well as the regulation of cybersecurity service providers. Furthermore, it establishes the National Cyber Security Committee as the relevant authority to implement and enforce its provisions.

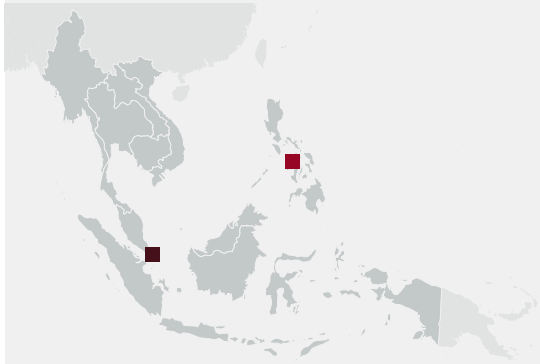
31 "Positive Technologies: cyberattacks on Southeast Asia doubled in 2024", PT Security, March 2025
32 "Cybercriminals Step Up Attacks on ASEAN Businesses: What Enterprises and Entrepreneurs Need to Know", The Asia Connects, May 2025

People

People are at the heart of a successful digital ecosystem, serving not only as users but also innovators, employees, policymakers and other roles that drive the development and adoption of digital services. Equipping individuals with the necessary digital skills to participate effectively in a digital nation must therefore be a priority for governments and stakeholders alike. The 'people' component is ASEAN's strongest area of performance in the Digital Nations Index, reflecting sustained efforts by governments across the region to broaden access to and use of digital services over the past decade (see the GSMA's Digital Societies in Asia Pacific series).

Although a significant usage gap[33] persists in mobile internet services – particularly among vulnerable groups such as women and the older age groups – there is an increasing focus on enhancing the digital competencies of the workforce across the private and public sectors. Efforts to empower individuals with the knowledge and skills necessary to leverage emerging digital technologies are advancing throughout the region. These measures include reskilling and upskilling initiatives, targeted programmes for specific population groups (such as micro-entrepreneurs) and revisions to educational curricula so they incorporate courses on future-oriented skillsets.

Equipping the workforce with future-ready digital skills



Singapore

Singapore is cultivating a pool of 'bilingual AI talents' – individuals who possess domain or functional expertise in a particular field and subsequently acquire advanced AI skills to transform their work and improve outcomes. To achieve this, the Infocomm Media Development Authority has introduced a suite of programmes designed to foster an AI-fluent workforce. These initiatives ensure non-technical staff at every level are equipped to integrate advanced technologies into their roles and contribute to the nation's wider innovation objectives.

Philippines

The Philippine government has implemented training programmes for persons with disabilities and employees under the Public Employment and Services Office as part of its efforts to enhance digital literacy and workforce readiness. The government has also launched tailored training programmes for older age groups and youth leaders, aimed at bridging the digital divide and encouraging responsible use of technology.

ASEAN

Go Digital ASEAN, led by The Asia Foundation and funded by Google.org, delivers digital skills training to MSMEs across the region to enhance their online presence. Following the success of its initial phase, Go Digital ASEAN 2 was launched in 2023, providing advanced and targeted digital education to more than 215,000 MSMEs throughout the region. This includes equipping around 141,000 business owners in Laos, Indonesia, Thailand and Vietnam with essential digital skills; connecting around 31,000 MSMEs through a regional webinar series; and offering advanced digital training to around 43,000 MSMEs in Brunei, Cambodia, Indonesia, Malaysia, Philippines, Singapore, Thailand and Vietnam.[34]

33 Those who live in areas covered by a mobile broadband network but do not yet use the mobile internet.
34 Go Digital ASEAN 2 Impact Research: Regional Summary Report, The Asia Foundation, 2024

3.2
Key digitalisation challenges in ASEAN

ASEAN has made progress with digitalisation in recent years, reflected in developments throughout the region. Nonetheless, it faces challenges that could slow the pace of digitalisation or result in a fragmented approach, potentially affecting the effectiveness of digital technologies in advancing the ASEAN Connectivity Strategic Plan.

Disparities in digital readiness

ASEAN member states vary in terms of digital readiness, as indicated by mixed performances in the Digital Nations Index, particularly in the infrastructure and innovation components. For example, while Singapore has nationwide 5G coverage and is investing in 5G SA and 5G-Advanced networks, commercial 5G has not been introduced in Cambodia and Myanmar. In Indonesia, although 5G has been launched, the delay in releasing adequate spectrum is holding back network rollout. The variation in digital readiness could limit the consistent implementation of advanced digital solutions, such as 5G-enabled urban development solutions, across the region.

Regulatory fragmentation and harmonisation issues

Differences in national regulations, including those related to data governance, e-commerce and digital trade, can present challenges to interoperability. For instance, Singapore's robust data privacy laws differ from frameworks found in less developed member states. This fragmentation increases the complexity of managing cross-border data flows and regulatory alignment under the Connectivity Strategic Plan, potentially increasing compliance costs for businesses and posing challenges for regional initiatives such as QR-code payments.

Financing and investment constraints

The ASEAN Connectivity Plan calls for substantial infrastructure spend, including on digital projects, to accelerate progress. Private-sector involvement is crucial to investment in digital infrastructure, such as 5G and fibre networks, and data centre facilities, but regulatory risks and uncertainties frequently pose challenges. Rising costs of compliance are creating significant financial burdens on network operators, slowing deployment and innovation. Additionally, the growing demands of AI workloads and the need for AI-ready connectivity infrastructure – capable of supporting AI inferencing at the edge – require further investment in high-performance networks. This underscores the need for enabling regulations at the national and regional levels to help close the investment gap in digital infrastructure across ASEAN while ensuring the ecosystem can support advanced digital technologies.

Digital skills gaps

Despite a predominantly young, tech-savvy population in ASEAN, the majority of MSMEs and public-sector employees lack the necessary skills to engage with advanced digital technologies such as AI and blockchain, which limits productivity gains from these innovations.[35] The ASEAN Connectivity Strategic Plan highlights the need for Industry 4.0 upskilling. However, challenges remain due to skills mismatches and limited training opportunities. In particular, the workforce and MSMEs in rural areas face greater difficulties accessing digital tools, which increases the risk of unemployment caused by automation.

The mobile internet usage gap

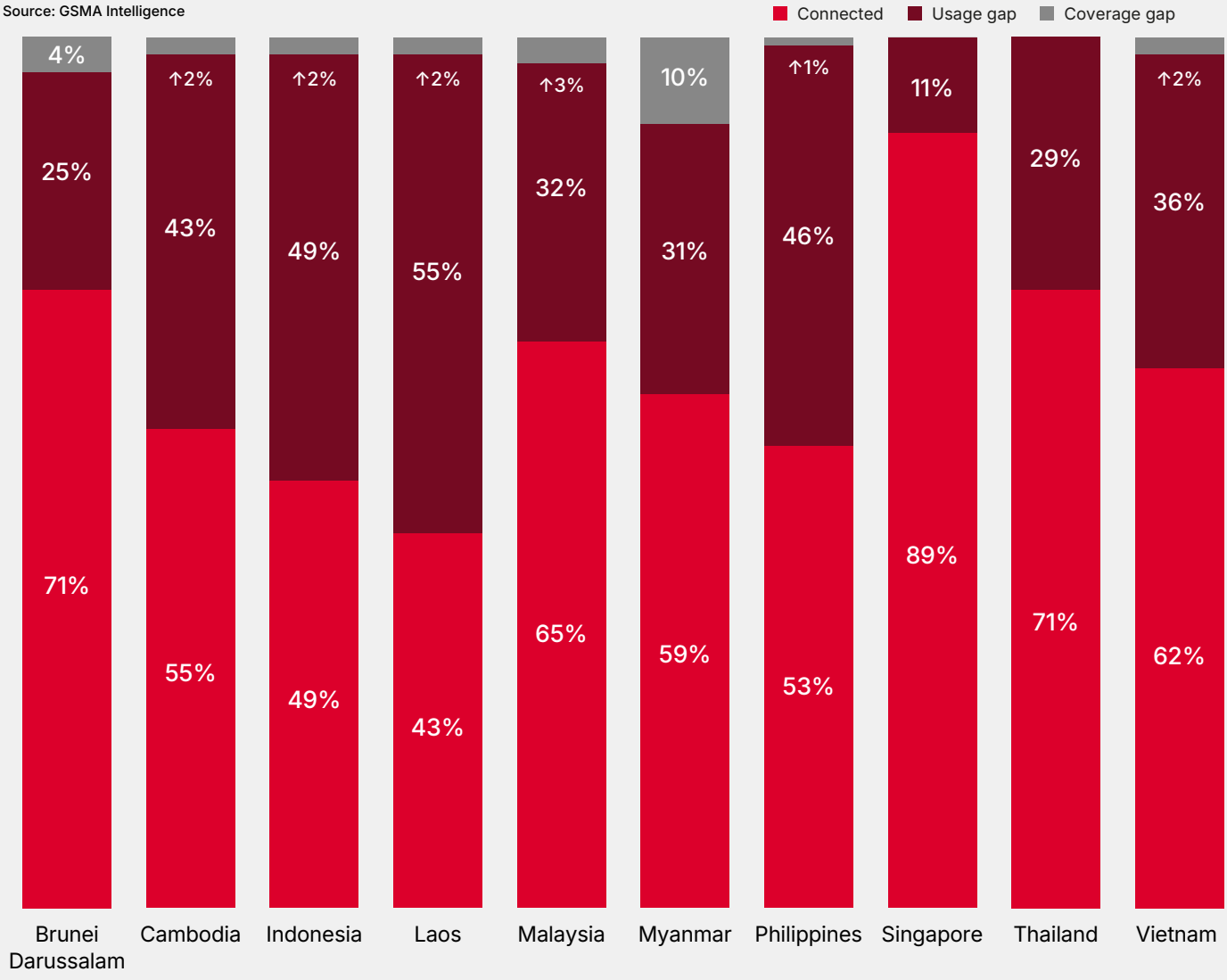
Despite substantial progress reducing the overall connectivity gap across ASEAN over the last decade, driven by significant investments from operators in mobile broadband infrastructure (particularly 4G and 5G), usage gaps persist in many countries (see Figure 4). Those without internet access risk exclusion from digital services that support people-to-people connectivity and participation in the broader ASEAN digital economy. Collectively, the region faces a usage gap of approximately 285 million individuals, representing more than two out of every five people. The exclusion of these individuals – and, in some cases, entire communities – from the digital economy restricts opportunities to enhance livelihoods and diminishes the potential contribution to national prosperity and global competitiveness that widespread digital adoption can deliver.

Figure 4

The connectivity landscape in ASEAN

Percentage of population

Source: GSMA Intelligence



35 Fostering Inclusive Growth in ASEAN's Digital Economy Through the DEFA and Regional Cooperation, Economic Research Institute for ASEAN and East Asia, 2025

Scam economy and the erosion of digital trust

Accelerated digitalisation across ASEAN has been accompanied by an increase in cyber scams and fraud, presenting significant challenges to consumer confidence and the adoption of digital services. The rise of romance scams, job scams, investment scams, malicious applications, phishing attacks and unregulated digital financial schemes is undermining trust in digital platforms.

As perpetrators exploit multiple channels and jurisdictions, addressing these risks necessitates cross-sector and cross-border collaboration, involving cooperation between governments, the private sector and other national authorities. Without a comprehensive and coordinated approach, efforts to counteract scams may become reactive, with threats merely migrating across domains. Maintaining digital trust depends on unified regulatory frameworks, robust cybersecurity protocols, public education initiatives, and international cooperation to effectively detect and mitigate fraudulent activities. Without these safeguards, the region faces the prospects of slower digital adoption, reduced investment and diminished engagement in the digital economy.

> Maintaining digital trust depends on unified regulatory frameworks, robust cybersecurity protocols, public education initiatives and international cooperation.

Geopolitical and external disruptions

Geopolitical tensions have, in some cases, led to increased digital protectionism, including data localisation laws introduced in response to global or regional rivalries. Likewise, regional conflicts such as the escalation of the Thailand-Cambodia border dispute in July 2025, or internal political crises, as seen in Myanmar, can undermine regional cohesion.[36] Broader issues, such as supply chain disruptions for microchips and other technological components, further complicate the realisation of key elements of the ASEAN Connectivity Strategic Plan.

36 "ASEAN Leaders' Statement on an Extended and Expanded Ceasefire in Myanmar", ASEAN, May 2025

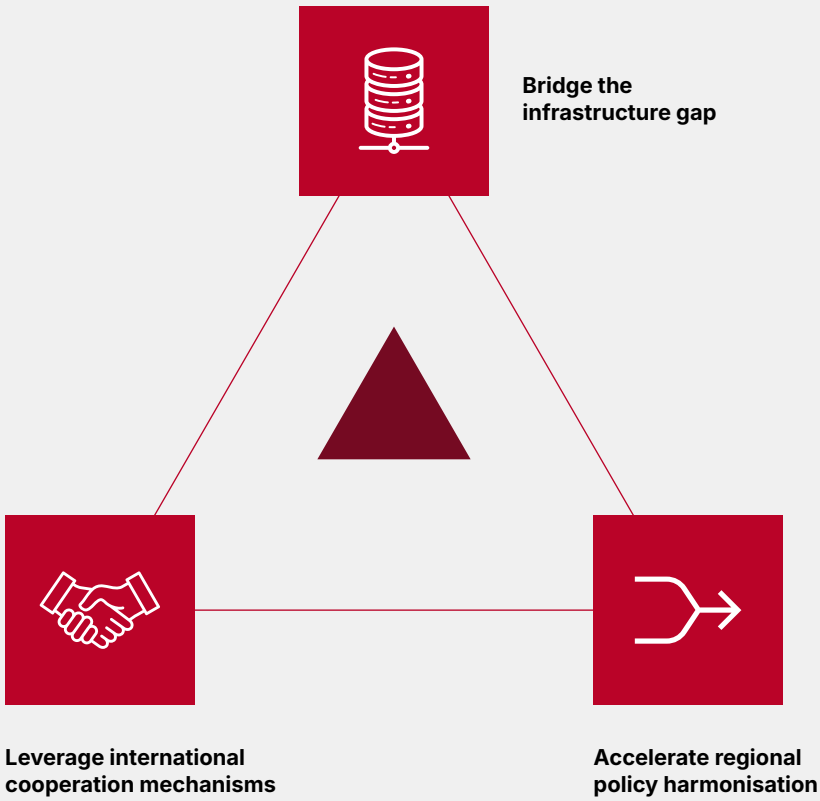
04
Enhancing digital readiness in ASEAN

The successful realisation of ASEAN's development plans requires concerted efforts by governments, private-sector organisations and other relevant stakeholders to fully leverage the opportunities presented by digitalisation. This involves implementing strategies to strengthen individual and collective digital readiness across member states, as well as addressing fragmentation in the regional policy framework to facilitate the effective deployment of digital technologies aligned with ASEAN's medium- and long-term development objectives.

Figure 5

Three principal measures designed to support the realisation of opportunities from digitalisation

Source: GSMA Intelligence



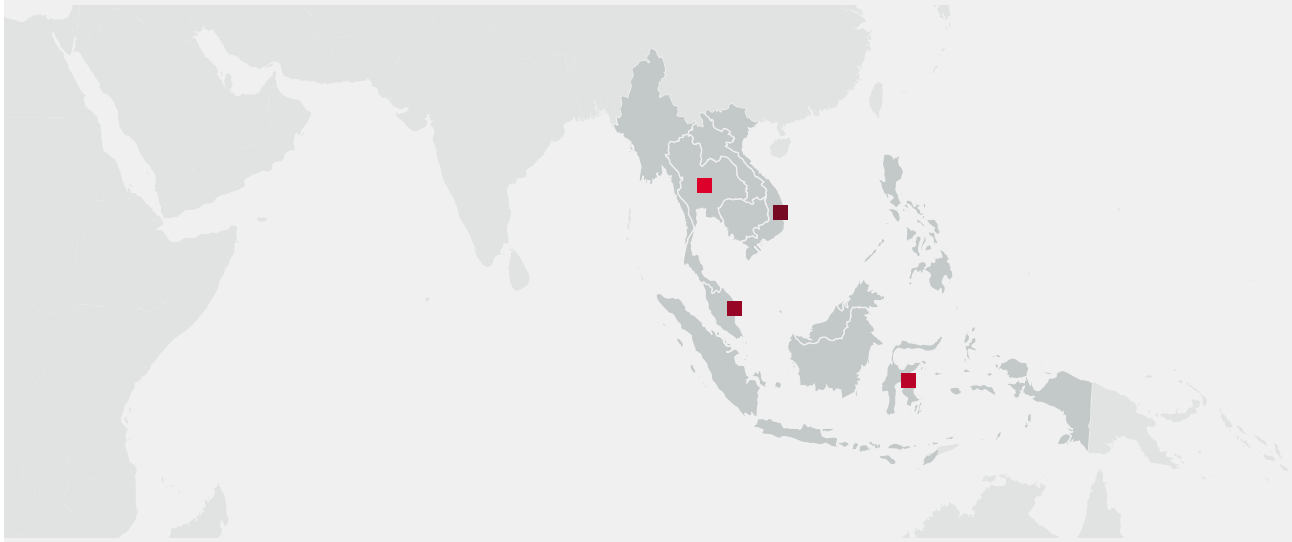
4.1
Bridge the infrastructure gap

A robust and future-proof digital infrastructure is essential to achieve digital readiness. This requires comprehensive investment in areas such as 5G networks and cloud infrastructure, which underpin high-speed connectivity, data processing and the adoption of advanced technologies including AI and machine learning. Across ASEAN, there is a considerable shortfall in investment in digital infrastructure, largely due to high network deployment costs, regulatory uncertainty and uneven economic development across the region's diverse markets.

Addressing the investment gap for connectivity requires a combination of strategies: fiscal incentives and targeted funding for infrastructure deployment in areas unlikely to attract private capital, alongside regulatory reform such as streamlining permitting processes and encouraging spectrum and infrastructure sharing, to reduce deployment costs. Meanwhile, demand for data centres is set to continue rising, as a result of government support, digitalisation and trends such as AI, cloud, 5G, fintech and e-commerce. This underscores the need for measures to incentivise private-sector investment in data centre facilities, bridging the investment gap in cloud infrastructure.

Across ASEAN, there is a considerable shortfall in investment in digital infrastructure.

Examples of government efforts to bridge the investment gap



Vietnam

In Vietnam, the government introduced operator incentives in the form of a subsidy to cover 15% of the cost of base station equipment, provided operators were able to build 20,000 base stations by the end of 2025, with the total subsidy amount capped at the revenue generated from the auction.[37] This move allows revenue collected from operators to be reinvested into the industry, ultimately benefiting digital transformation in Vietnam.

Malaysia

Malaysia, which has attracted investments from companies including AWS, Google, Microsoft and Oracle, offers data centre developers a 100% Investment Tax Allowance on capex for up to 10 years. The government has also allocated RMY1.65 billion ($390 million) for submarine cable networks to enhance connectivity.[38] Malaysia has accelerated the power supply process for data centres, reducing implementation times. In July 2025, the government announced a new Data Centre Framework, set to take effect in October 2025, aimed at supporting sector growth. Meanwhile, the Johor-Singapore Special Economic Zone provides incentives such as customised tax rates, while creating a cross-border hub that gives developers access to dual-market demand and a more predictable regulatory environment.

Indonesia

Indonesia offers a range of tax and non-tax incentives to attract data centre investment, including permitting 100% foreign ownership, corporate tax holidays of up to 20 years, exemptions from withholding tax on dividends, simplified profit repatriation procedures and reduced electricity tariffs.[39] The government is also supporting the development of green data centres through public–private partnership schemes as part of its 2024–2029 Medium-Term Development Plan.[40]

Thailand

Thailand's Board of Investment offers substantial incentives for data centre development, including an eight-year corporate income tax exemption, exemptions on import duties for machinery, and full foreign ownership rights.[41] Investors also benefit from non-tax advantages such as the ability to remit foreign funds and to employ highly skilled international staff. Additional strategic benefits include location within the Eastern Economic Corridor, access to submarine cable networks, and the potential for lower operational costs compared to other regional hubs.

37 "Vietnam to subsidize telecom providers for 5G network expansion", VietNamNet, February 2025
38 "Navigating Data Centres: Seizing investment opportunities in Asia Pacific", CBRE, September 2024
39 "Data Centres: An International Legal and Regulatory Perspective: Spotlight on Indonesia", Watson Farley & Williams, July 2025
40 "Indonesia partners private sector to invest in green data centres", GovInsider, June 2025
41 "Navigating Data Center Investment in Thailand: Regulations, Incentives, and Strategic Insights", Mahanakorn Partners Group, March 2025

4.2
Accelerate regional policy harmonisation

ASEAN's diverse economic, technological and regulatory landscape results in fragmentation and hinders seamless digital integration. This in turn impedes collective digital readiness and access to regional markets for individuals and businesses, particularly MSMEs with limited resources to absorb extra transactional and compliance costs.

In this context, harmonising digital policy is crucial for ASEAN to create an integrated digital market, fostering interoperability and stimulating regional economic growth through the promotion of cross-border data flows, e-commerce, digital payments and innovation. A unified framework simplifies regulatory processes, builds investor confidence, enhances resilience against cyberthreats and helps bridge the digital divide, enabling member states to compete more effectively on the global stage.

> Harmonising digital policy is crucial for ASEAN to create an integrated digital market.

Data governance and cross-border data flows

ASEAN member states have varying data protection laws, ranging from Singapore's robust Personal Data Protection Act to weaker frameworks in countries such as Myanmar. This inconsistency impedes the cross-border data flows that are vital for digital trade, e-commerce and smart infrastructure. Standardising data privacy regulations in line with global benchmarks (such as achieving interoperability with GDPR) and implementing the provisions of the ASEAN Framework on Digital Data Governance[42] (including common data classification standards and cross-border transfer mechanisms) can facilitate secure and trusted data sharing. The collaboration among several countries on cross-border QR payments demonstrates how aligned data policies can enhance digital trade, making a strong case for harmonisation to scale services across the region.

Cybersecurity standards

ASEAN faces a range of cyberthreats, including ransomware, phishing and online scams. The cybersecurity capabilities of individual member states vary, resulting in vulnerabilities across interconnected systems such as smart cities and regional supply chains. These risks can be addressed by adopting a harmonised approach to cybersecurity standards, particularly for critical information infrastructure sectors such as energy, transport and telecoms under the ASEAN Regional CERT framework.[43] There is also a strong case for developing region-wide incident response protocols and mandatory breach reporting to strengthen trust in digital platforms.

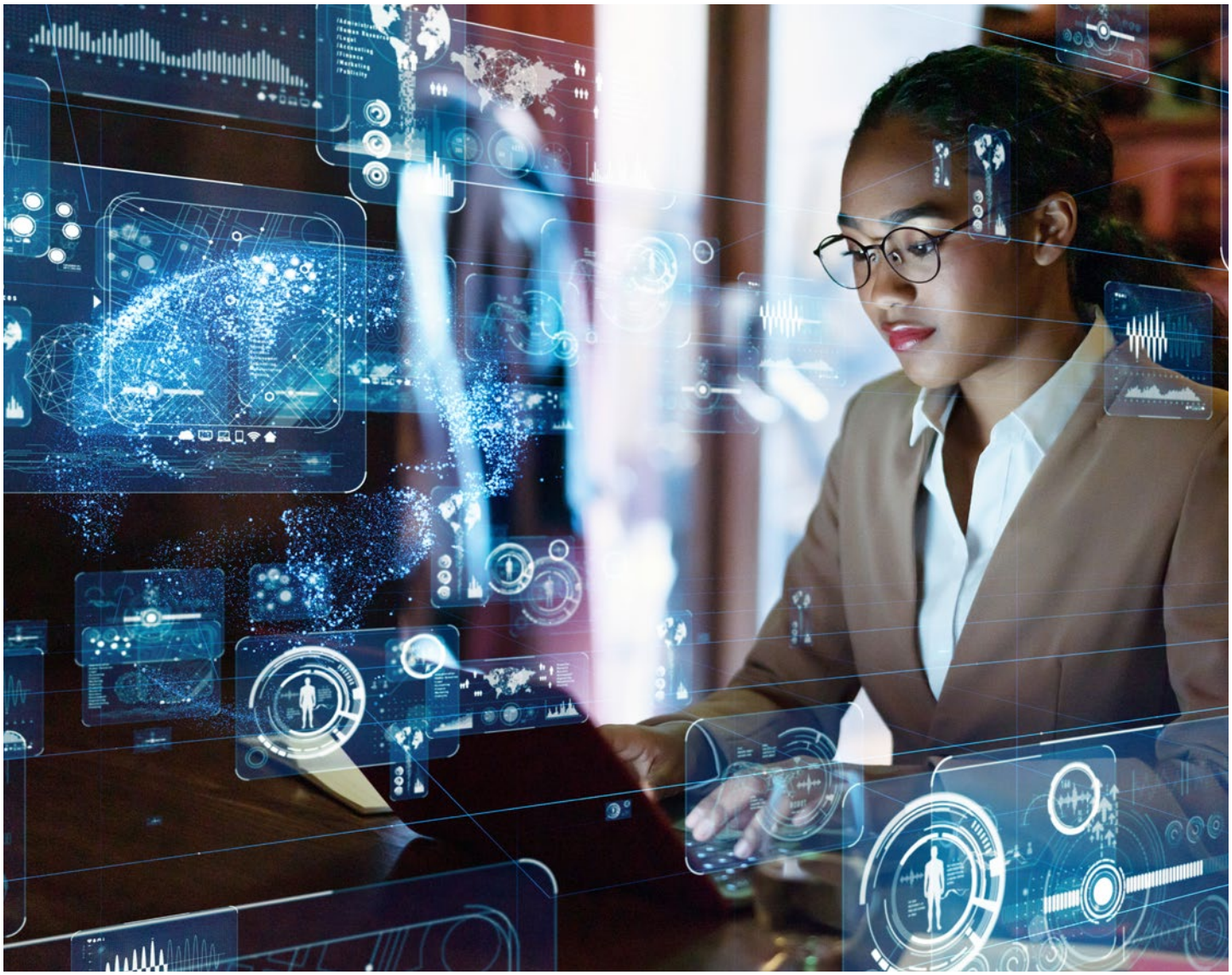
42 See ASEAN Data Management Framework at asean.org
43 See ASEAN Cybersecurity Cooperation Strategy at asean.org

Digital trade and e-commerce

The e-commerce market is expanding in different ASEAN member states but faces challenges due to inconsistent regulations on taxation, consumer protection and digital payments at the regional level. For example, differences in VAT rules for digital services create complexities for cross-border transactions, indicating a need to harmonise e-commerce policies regarding digital taxation, consumer rights and dispute resolution. Additionally, consistent standards for digital signatures and electronic contracts could support more efficient trade and logistics. The ASEAN Single Window for customs clearance represents progress in trade facilitation, but broader regulatory alignment may be required for digital marketplaces to operate effectively.

AI and emerging technology governance

Uptake of AI, blockchain and other emerging technologies varies considerably; Singapore has established AI governance measures, while some countries have yet to develop comprehensive policies. Such inconsistencies can result in challenges, including barriers to cross-border collaboration, unequal access to technology, and uneven economic and social benefits from emerging technologies. Opportunities to harmonise policies around the development and adoption of these technologies include establishing a regional AI governance framework founded on the principles of transparency, fairness and accountability, as detailed in the ASEAN Guide on AI Governance and Ethics;[44] standardising blockchain protocols for trade finance and supply chain tracking to ensure interoperability; and implementing joint R&D programmes to share resources and expertise.



44 See ASEAN Guide on AI Governance and Ethics at asean.org

4.3 Leverage international cooperation mechanisms

ASEAN member states, either collectively or individually, have established bilateral agreements and engaged in international cooperation with other countries and regional blocs. These agreements address areas including economic trade, climate change and maritime security. Many of these partners, such as China, the EU, Japan and South Korea, are recognised for their technological expertise.

ASEAN member states can leverage these partnerships and other international mechanisms to exchange best practices on the development and implementation of advanced digital technologies. For instance, digital technologies are included in ASEAN-Korean digital-economic cooperation,[45] emphasising the development of digital talent, the growth of the digital economy, and efforts to narrow the digital divide through initiatives such as the Korea-ASEAN Digital Academy and the Korea-ASEAN Digital Innovation Flagship project.

Opportunities exist to enhance digitalisation efforts through cooperation agreements among member states, enabling knowledge sharing and capacity building. Collaboration between more advanced markets, such as Singapore and Malaysia, and developing economies including Cambodia and Laos, can help address disparities in digital readiness within ASEAN. The Brunei Darussalam–Indonesia–Malaysia–Philippines East ASEAN Growth Area[46] exemplifies the potential of intra-ASEAN initiatives to strengthen the region's collective digital capabilities.

Opportunities exist to enhance digitalisation efforts through cooperation agreements among member states, enabling knowledge sharing and capacity building.

45 "Securing Growth: ASEAN-South Korea Economic Resilience – OpEd", Eurasia review, May 2025
46 See www.bimp-eaga.asia/about-bimp-eaga

Call to action: use the Digital Nations Index to help achieve the ASEAN Connectivity Strategic Plan

The coming decade will be a pivotal period in ASEAN's development, as the implementation of the ASEAN Connectivity Strategic Plan 2026–2035 and other medium-term goals lay the groundwork for building on past achievements and fulfilling the objectives of the ASEAN Community Vision 2045. Digitalisation will play a crucial role throughout this process, enabling innovative solutions across all focus areas of the development plans, but only to the extent of individual and collective digital readiness across the region. Accordingly, improving digital readiness should be a priority for all ASEAN member states, starting with identifying areas of the digital ecosystem that need strengthening.

Given this context, there is an opportunity for governments, private sector players and other stakeholders across ASEAN to use the Digital Nations Index, which offers valuable insights into the state of digital readiness among member states, as a tool to identify key areas for national improvement. This is particularly crucial for achieving the ASEAN Connectivity Strategic Plan, given the vital role digitalisation plays in realising the bloc's development objectives. Building on the findings of the index, ASEAN countries should adopt a whole-of-government approach – engaging the public and private sectors – to address internal barriers to digitalisation.

In addition to national advancements, it is vital to pursue collective progress at the regional level to prevent a fragmented approach to ASEAN's social and economic development. This requires collaboration within the bloc and with external partners to share best practices for progress towards becoming digital nations. Crucially, this requires coordinated efforts to harmonise ASEAN digital policies – not in a race to the bottom, but by establishing mechanisms, such as knowledge sharing and policy standardisation in line with global benchmarks, to help less advanced member states close gaps with regional leaders.

Appendix: index methodology

Digital Nations Index metrics

The GSMA Intelligence Digital Nations Index examines the five key components of a digital nation: infrastructure, innovation, data governance, security and people. It maps the aspirations of governments in the region to these components.

The metrics of the Digital Nations Index rely on 21 indicators across the five main components. Each component consists of the following dimensions, number of indicators and corresponding weighting of indicators:

1. **Infrastructure:**
   - a. Networks – 5 indicators (40% weighting)
   - b. Spectrum – 1 indicator (30% weighting)
   - c. Cloud – 1 indicator (15% weighting)
   - d. Emerging technology – 2 indicators (15% weighting)
2. **Innovation:**
   - a. Global Innovation Index – 1 indicator (25% weighting)
   - b. R&D expenditure – 1 indicator (25% weighting)
   - c. Legal protection – 1 indicator (25% weighting)
   - d. Startup ecosystem – 1 indicator (25% weighting)
3. **Data governance:**
   - a. Data protection – 1 indicator (50% weighting)
   - b. Cross-border data flows – 1 indicator (50% weighting)
4. **Security:**
   - a. Cybersecurity laws – 1 indicator (100% weighting)
5. **People:**
   - a. Digital inclusion and online participation – 2 indicators (40% weighting)
   - b. Future skills – 1 indicator (20% weighting)
   - c. Digital literacy – 1 indicator (20% weighting)
   - d. Online safety – 1 indicator (20% weighting)

Infrastructure is measured across four dimensions:

1. **Networks:** Adoption of technologies, including 5G, FTTP, NB-IoT, RedCap and non-terrestrial networks.
2. **Spectrum:** The amount of sub-1 GHz, 1–3 GHz, 3-6 GHz and mmWave spectrum used for mobile services per operator.
3. **Cloud:** Expenditure on public cloud infrastructure.
4. **Emerging technology:** Assessment of relevant industry developments across emerging technologies, including AI, drones, robotics and quantum computing.

Innovation is measured across four dimensions:

1. **Global Innovation Index:** The Global Innovation Index is an annual ranking of countries by their capacity for, and success in, innovation.
2. **R&D expenditure:** Gross domestic expenditures on R&D.
3. **Legal protection:** Evaluates national intellectual property laws.
4. **Startup ecosystem:** Measures the maturity of a country's startup ecosystem.

Data governance is measured across two dimensions:

1. **Data protection:** Considers the extent to which there is an independent and/or resourced supervisory authority for data privacy enhancing enforcement activities and whether this authority coordinates with other supervisory and relevant authorities both within and outside the region.
2. **Cross-border data flows:** Considers policy and regulatory guidance on CBDFs, assessing the range of data-transfer mechanisms on CBDFs and/or adequacy requirements.

Security is measured across one dimension:

1. **Cybersecurity laws:** Assesses the extent to which countries have fit-for-purpose cybersecurity laws and regulations.

People is measured across four dimensions:

1. **Digital inclusion and online participation:** Analyses the percentage of mobile internet users as a share of the total population and the availability of online content and services that are relevant to local populations.
2. **Future skills:** Examines the percentage of science, technology, engineering and mathematics degrees as a share of all tertiary-education degree recipients.
3. **Digital literacy:** Measures adult literacy rates and school-life expectancy to determine whether individuals have the basic skills needed to use mobile internet.
4. **Online safety:** Evaluates the level of online safety for children across different countries.

Building the index

The process for building the index consisted of determining the relevant data for the five components, identifying the 21 indicators, normalising the data, addressing missing data and calculating the composite of the measures. For all the indicators, the index used the latest data available at the time of research and took the values for each indicator from the same year.

The creation of the index required a complete data set, so the imputing of variables used a 'hot-deck' method of imputation to imply a value for a country by taking the value of a similar country.

The indicators had different units and scales, so the index normalised any indicator that did not use a 100-point scale to make the indicator values comparable and to construct aggregate scores for each country. For indicator values that required normalisation, the process set minimum and maximum values to transform the indicators into indices between 0 and 100 using the following formula:

Normalised value = ((actual value – minimum value) / (maximum value – minimum value)) × 100

After normalisation of the necessary values, the index became a composite of the five components on a 100-point scale, according to the weights for the indicators listed above, with 1 representing the worst situation and 100 the best. This normalisation allows comparison of the countries' scores for each category. To calculate the overall score, the index used the sum of the indicators within each component while taking into consideration each indicator's weighting.

The data for the index came from a variety of sources, including GSMA Intelligence, DQ Institute, FTTH Council, Startup Blink, Statista Market Insights, Oxford Insights, the US Chamber of Commerce, the World Intellectual Property Organization and the World Bank.

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