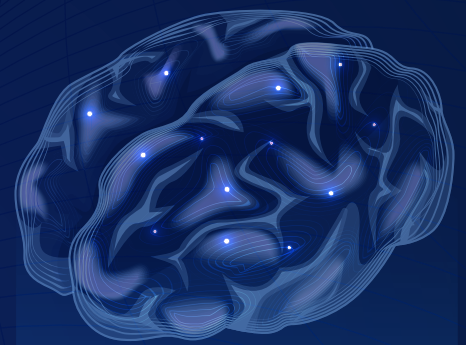


Artificial Intelligence:

Policies and Priorities for Southeast Asia





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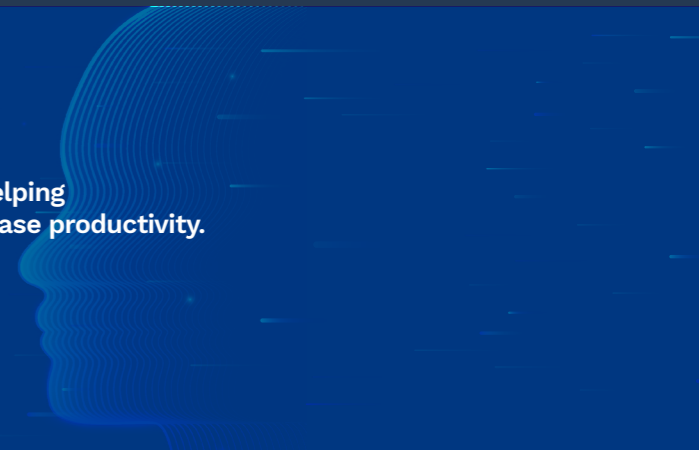
This report has been prepared by Access Partnership and commissioned by the Digital Prosperity for Asia (DPA) Coalition with endorsements from Amazon Web Services (AWS). Information in this report is derived or estimated by Access Partnership's analysis and from publicly available information. Where information has been obtained from third party sources, this is referenced in the footnotes. We would also like to thank Bryan Tan, Chief Data Scientist at Carro and Nidhi Gupta, CEO and Co-founder of Portcast for sharing their insights on AI in the region.

Contents

Introduction	1
Priority 1: Adopt appropriate cloud-first, data flow, and cybersecurity policies to harness the full potential of AI	3
Enabling Free Flow of Data	4
Ensuring Trusted Data Flows	4
Priority 2: Develop an AI Talent Pipeline to Close the Skills Gaps	5
The AI Skills Gap	5
Adapting Education & Training Curricula	6
Practical Training	6
Priority 3: Increase Awareness and Build Capacity amongst SMEs	6
Priority 4: Implement AI Principles to Develop Ethical AI Systems	8
AI Principles and the Rise of Responsible AI	8
Developing AI Principles in ASEAN	9
Priority 5: Adopt a Risk-based, Globally Interoperable Approach to AI Policymaking	9
Annexures	11
Annex A: Global Approaches to Responsible AI	11
Annex B: Case Studies of AI Guidelines in ASEAN	11



AI adoption will reverberate throughout the economy, helping businesses in every sector improve operations and increase productivity.



Introduction

The benefits of Artificial Intelligence (AI) have been widely recognized—AI can transform business models and service delivery and enable emerging markets to leapfrog traditional technologies, develop new ways of reaching underserved populations, and offer new avenues for business innovation. Across sectors, AI can lower costs and barriers to entry and deliver new innovations to serve last-mile populations.¹

Defining AI

Generally, there is no single, universally accepted definition of AI. In its current common definition, it is a broad term and can be applied to any technology that overlaps with any form of human intelligence, such as learning, problem solving, and pattern recognition. The Organisation for Economic Co-operation and Development (OECD) defines an AI system as “a machine-based system that can, for a given set of human-defined objectives, make predictions, recommendations, or decisions influencing real or virtual environments”.

As it is currently used, AI most commonly refers to Machine Learning (ML), a subset of AI that enables systems to automatically learn and improve from experience and data without explicit programming. This also includes deep learning, a subset of machine learning that uses a structure that mimics the human neural system to analyze different factors and produce an output.

A recent study by Kearney and Asian-based strategic investor EDBI estimates that wider adoption of AI in Southeast Asia (SEA) has the potential to add an estimated USD 1 trillion to the member states of the Association of Southeast Asian Nations (ASEAN)'s GDP by 2030.² Although AI research and adoption are lower in ASEAN compared to the United States, China, or Europe, there has been considerable innovation in this space across countries in ASEAN (the box on the next page provides some examples). The economic benefits of AI adoption will reverberate throughout the economy, helping businesses in every sector improve operations and increase productivity.



USD 1 Trillion
Potential
addition to
ASEAN's GDP

¹ International Finance Corporation (IFC). 2020. *Artificial Intelligence in Emerging Markets*. Retrieved from: https://www.ifc.org/wps/wcm/connect/95a40480-27b5-4b99-8b4c-7768ae6a53a2/AI-Report_Web.pdf?MOD=AJPERES&CVID=nhLrRc

² Kearney. 2020. *AI is integral to Southeast Asia's future, but it is still in an early stage*. Retrieved from: <https://www.kearney.com/digital/article/?a/racing-toward-the-future-artificial-intelligence-in-southeast-asia>

Examples of AI Innovation in ASEAN



NATURAL LANGUAGE PROCESSING

Indonesian Language Chatbot Solutions: Kata.ai, Indonesia-based homegrown technology startup, developed the first natural language processing algorithms for Bahasa, the primary language in Indonesia.



AGRICULTURE

AI in Agritech: Sero, a Vietnam-based agriculture start-up, helps farmers tackle the challenges of unstable crop yields by utilizing AI analytics of imagery and in-field data.



CYBER THREAT

AI for Cybersecurity: CloudSEK, Singapore's cybersecurity start-up, focuses on leveraging AI technology to help businesses identify, predict, and resolve cyberattacks in real-time with minimal human intervention.



EDUCATION

Adaptive and Personalized Learning: Ruangguru, an Indonesian start-up, uses AI to create adaptive and personalized learning experiences for students.



ENERGY

Improving Energy Efficiency: Thailand-based startup, ENRES, is an Internet of Things (IoT) and AI-based energy optimization platform that utilizes AI technologies to automatically analyze, recommend, and control the required equipment to ensure best efficiency.



URBAN MOBILITY

Safety and Security: Grab partnered with Vietnam's leading information technology corporation, FPT, to develop new AI technologies such as visual recognition and authentication as well as real-time communication with a focus on increasing safety and quality for driver partners, passengers and merchants.



HEALTHCARE

Basic Healthcare Services at Scale: Indonesian health-tech start-up Prixia plans to use the \$3 million funding to scale its AI-powered health management platform and user base while improving healthcare access and digital health transformation in Indonesia.



To harness the potential of AI, governments should proactively create a conducive environment which encourages AI adoption. Developing national AI strategies which identify priority areas for investment and research can provide a comprehensive vision and pathway towards this goal. Under this strategy, policymakers should develop principles that guide the development of AI in the right direction and reduce the risks associated with AI. Concurrently, policymakers should also develop an ecosystem for AI to flourish, ensuring an enabling policy environment that can spur AI innovation and adoption. This is multi-faceted and includes ensuring that legal frameworks in place are cognisant of AI, ensuring that businesses are aware of and able to leverage AI, and that labour is adequately trained to meet the increasing demand for technical skills.



Overall Recommendation: Governments in ASEAN should develop national AI strategies which proactively design and develop conducive environments for AI innovation and adoption, while managing risks. National AI strategies can be built around the priority areas defined below.

PRIORITIES	RECOMMENDATIONS
1 Adopt appropriate cloud-first, data flow, and cybersecurity policies to harness the full potential of AI	<ul style="list-style-type: none"> • Governments should ensure that technologies which are critical enablers of AI are similarly offered the ability to grow so as to not indirectly stifle the growth of AI. • Encourage cloud adoption to enable access to the significant computing resources required to train AI/ML solutions and democratize access to emerging technologies. • Harmonize data protection and cybersecurity policies with international best practices to ensure the safety and security of AI systems.
2 Develop a Robust AI Talent Pipeline to Close Skills Gaps	<ul style="list-style-type: none"> • Evolve school curricula to keep up with the pace of technological innovation and provide science, technology, engineering and mathematics (STEM) skills. • Enable the workforce to transition to an AI-driven economy through lifelong education and reskilling programs. • Support recruitment and employment programs around AI.
3 Increase Awareness and Build Capacity amongst SMEs	<ul style="list-style-type: none"> • Encourage small and medium-sized enterprises (SMEs) to adopt AI, through awareness programs and incentives.
4 Implement AI Principles to Develop Ethical AI Systems	<ul style="list-style-type: none"> • Governments in ASEAN should proactively develop AI principles to guide the development of ethical AI systems. • Based on internationally recognized approaches, ASEAN governments can consider adopting the following key AI principles: Inclusivity, human-centricity, transparency and explainability, robustness, and accountability.
5 Adopt a Risk-based Approach to AI Policymaking	<ul style="list-style-type: none"> • A risk-based approach to AI policymaking ensures the risks of AI are mitigated, without stifling socially beneficial innovation. • ASEAN countries should align with existing risk frameworks such as, National Institute of Standards and Technology (NIST) and International Organization for Standardization (ISO) to ensure interoperability

Priority 1: Adopt appropriate cloud-first, data flow, and cybersecurity policies to harness the full potential of AI

There is a strong relationship between AI innovation, cloud-first policies, data protection, and cybersecurity. Training AI solutions requires significant computing resources—democratizing access through cloud-first and appropriate data flow policies is thus critical to enabling AI innovation.

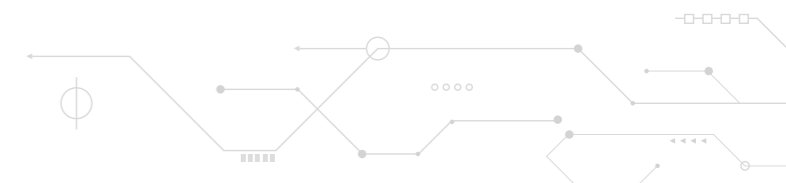
ENABLING FREE FLOW OF DATA

Data localization requirements that mandate data to be stored within a country, will hamper the development and deployment of AI-based technologies. Like other emerging technologies, AI depends on the access to and processing of high-quality data that often resides in more than one country. To maximize the full potential of such data-intensive technologies, data needs to be able to move, store, and process seamlessly across borders. With cross-border data flows, ASEAN-based companies will continue to have access to secure and state-of-the-art AI services offered by global companies, regardless of where they (or their technology stack) are located. Cross-border data flows are also vital for digital trade growth in ASEAN and are a key requirement in several multilateral trade agreements such as the Regional Comprehensive Economic Partnership (RCEP) and the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), that many ASEAN member states are part of.

ENSURING TRUSTED DATA FLOWS

Across ASEAN, member states are at different stages of developing privacy and cybersecurity laws. While member states such as Singapore, Malaysia, Thailand, and Philippines have existing personal data protection legislation, others are only beginning to or in the process of developing such laws. Member states in the latter category can leverage existing international privacy frameworks such as the OECD and Asia-Pacific Economic Cooperation (APEC) Privacy Frameworks, as well as regional frameworks consistent with global standards on cross-border data flows such as the APEC Cross-Border Privacy Rules (CBPR) System and ASEAN Digital Data Governance Framework. By ensuring alignment with international frameworks on privacy, ASEAN can ensure that personal data remains protected without unnecessarily inhibiting data flows, and without impeding the development of AI in the region.

As for cybersecurity regulations, ASEAN member states such as Singapore, Thailand, Philippines, and Vietnam have made progress in developing overarching cybersecurity laws with centralized authorities to formulate policies that govern cybersecurity activities and prevent cybersecurity threats. However, these cybersecurity laws should not contain any broad mandates for data residency and should remain technology-neutral. They should set out the baseline expectation for cybersecurity when organizations rely on digital technologies (including AI), rather than containing prescriptive requirements for operationalization of cybersecurity frameworks. Other countries like Laos, Malaysia, Myanmar, Indonesia, and Cambodia have not formulated an overarching standalone cybersecurity law. Should they decide to do so, they should ensure that these frameworks are aligned to international best practices such as the National Institute of Standards and Technology's (NIST) Cybersecurity Framework. Such alignment is necessary in order to ensure that data flows are not unnecessarily inhibited and to allow emerging technologies such as AI to flourish.



Priority 2: Develop an AI Talent Pipeline to Close the Skills Gaps

THE AI SKILLS GAP

Governments must invest in skilling initiatives to develop a pool of talent with AI skills and ensure that all workers are positioned to thrive as the job market evolves. AI is poised to generate greater growth in global economies, with 97 million new jobs expected to be created by 2025.³ AI will change the workplace, allowing people to focus elements of their job that are most rewarding and which require human ingenuity. AI will also change the types of skills that are most in demand in the workplace. This is evidenced by the growth of AI-related employment opportunities across sectors including engineering, software design, and programming. However, this increase in the demand of AI skills has created a skills shortage in technical skills and IT across economies.^{4,5} While industry is working to solve this problem by providing AI/ML training for interested individuals, a more holistic approach would benefit the industry as a whole. Governments can intervene to fill this skills gap by redesigning curricula and introducing lifelong education and reskilling programs to enable ASEAN to keep pace with evolving technological innovations.

Interviews with SMEs have indicated that talent availability is a challenge—governments seek to attract foreign firms for investments, while young talents favor big technology companies or government-funded entities. As a result, SMEs in ASEAN report that they face skills shortages and are unable to attract talent. When asked about how governments should address the issues of talent and skills shortages, Singapore-based start-ups Carro and Portcast identified gaps which the public sector can fill. Carro suggested that computing education be incorporated early as part of the mainstream curriculum for students, while Portcast expressed interest in seeking talent from tertiary institutions that have existing AI research expertise.^{6,7}

“ Excerpt from interviews with SMEs Carro and Portcast

“Governments are currently attracting foreign firms for investments. While it is a good sign, it also provides disadvantages as competition for talent pose greater challenges for smaller companies. Talent acquisition has become an issue for the smaller, local firms as professionals consider joining larger foreign firms. To circumvent the issue of talent and skills shortage in Singapore, Carro and other small local firms have outsourced our operations to other countries such as Thailand, Vietnam, and even Ukraine to do the product development.” – **Carro Chief Data Scientist, Bryan Tan.**

“Talent development is an area where Portcast needs support. A lot of young talents favour big technology companies or government-funded entities, so it has been difficult to attract the best talent. So, I hope that there will be initiatives from the government to address this issue.” – **CEO and Co-Founder of Portcast, Nidhi Gupta.**



97 Million
New jobs
expected
by 2025

³ World Economic Forum. 2020. Future of Jobs Report 2020. Retrieved from: <https://www.weforum.org/agenda/2020/10/dont-fear-ai-it-will-lead-to-long-term-job-growth/>

⁴ World Economic Forum. 2018. ASEAN's reskilling challenge: here's how we prepare for the future of work. Retrieved from: <https://www.weforum.org/agenda/2018/09/aseans-reskilling-challenge-how-do-we-prepare-for-the-future-of-work/>

⁵ CNBC. 2019. Skills shortage is stopping many Asian companies from embracing A.I., study shows. Retrieved from: <https://www.cnbc.com/2019/02/20/microsoft-ids-study-skills-shortages-stopping-companies-from-using-ai.html>

⁶ Carro is a Singapore-based startup, using AI technology to transform the car buying and selling experience. <https://carro.sg/about>

⁷ Portcast is a Singapore-based startup, using AI technology to improve supply chain resilience. <https://portcast.io/about-us/>

ADAPTING EDUCATION & TRAINING CURRICULA

The first step to building this AI talent pool is for governments to include in existing education and training curricula a focus on Science, Technology, Engineering, and Mathematics (STEM) and relevant skills development in tertiary institutes. As the future of work changes, curricula must also evolve to teach students AI skills at an early age so that they can pursue career paths in the tech sector and develop a passion and aptitude for STEM subjects. Such AI skills may include coding and software development, which can be included in the foundational STEM curricula of primary and middle schools.

Learning outcomes of AI curricula should be more focused on fostering creativity in conceptualizing AI technologies and ethics.⁸ Some of the key AI curriculum areas include data literacy, contextual problem-solving, ethics of AI, understanding and using AI techniques. To date, 11 countries have developed and endorsed K-12 AI curricula and another four countries have AI curricula in development.⁹

PRACTICAL TRAINING

To complement the AI educational curricula and in line with the ASEAN Digital Skills Vision 2020 program, governments can partner with industry to ensure the skills required in the AI industry are met with industry training programs. As the needs of employers evolve, the public sector should also develop reskilling programs for workers who may be displaced by rapid digital transformation. One prime example is the Luxembourg's Digital Skills Bridge project, a public-private partnership which successfully brought together government agencies, trade unions, businesses, and educators to help train and retrain job seekers and current employees according to the new competencies required of the identified job.

Governments should also support recruitment and employment programs on AI. Government-funded apprenticeships are important routes to help upskill people into technical roles such as data scientists and machine learning engineers. In Singapore, the AI Apprenticeship Programme trained up to 200 AI professionals by allowing them to work industry projects and deepen skills in AI to enhance their career opportunities in AI-related roles. Training allowance would also be given to apprentices for the on-the-job training on a real-world AI problem.¹⁰

Priority 3: Increase Awareness and Build Capacity amongst SMEs

SMEs form the backbone of most ASEAN economies, accounting for more than 96% of all enterprises and 85% of all employment.¹¹ Governments in ASEAN should ensure SMEs are not left out as the region leverages AI to grow.

Despite the productivity benefits of AI, SMEs typically lag in the uptake of digital technologies relative to larger, well-resourced firms. Adoption gaps across small and large firms could exist due to misconceptions around AI tools being extremely costly, resource-intensive, or complex. However, SMEs don't do not require large resources to leverage and benefit from AI-enabled cloud technologies as the cloud has democratized AI/ML. SMEs can run and incorporate AI models or solutions into their technology stack at a reasonable cost, with pay-as-you-go pricing models. The diverse range of vendor solutions available include cloud

⁸ UNESCO. 2022. UNESCO releases report on the mapping of K-12 Artificial Intelligence curricula. Retrieved from: <https://www.unesco.org/en/articles/unesco-releases-report-mapping-k-12-artificial-intelligence-curricula>

⁹ UNESCO. 2022. K-12 AI curricula: a mapping of government-endorsed AI curricula. Retrieved from: <https://unesdoc.unesco.org/ark:/48223/pf0000380602>

¹⁰ AI Singapore. 2022. Application for AI Apprenticeship Program. Retrieved from: <https://aisingapore.org/industryinnovation/aiap/>

¹¹ ASEAN. Development of Micro, Small, and Medium Enterprises in ASEAN (MSME). Retrieved from: <https://asean.org/our-communities/economic-community/resilient-and-inclusive-asean/development-of-micro-small-and-medium-enterprises-in-asean-msme/>

computing-based Software-as-a-Service (SaaS) and Machine-Learning-as-a-Service (MLaaS) that offer scalability of AI solutions. SMEs that use SaaS are granted access to pre-trained AI models such as cloud enterprise resource planning, cloud consumer relationship management, 3D prototype design and even online fraud detection. Existing AI services that run on cloud also do not require developers with specialized degrees in AI.



Governments can play a key role in supporting SMEs to adopt and experiment with AI technologies by partnering with hyperscale cloud service providers (CSPs) or subsidizing AI exploration projects. To enhance SMEs' access to advanced technologies, governments need to proactively raise awareness on the benefits and opportunities of AI and remove misconceptions. Training programs targeted at SMEs can help build awareness of the relevance and benefits of AI while also building the capacity and skills of workers.

The first step for governments to raise awareness among ASEAN SME leaders on AI benefits is to facilitate SMEs' transition to AI adoption. Within ASEAN, Singapore has taken the first step to develop co-funding schemes for SMEs to adopt frontier technologies like AI. The government has set aside SGD 1 billion for new digital transformation schemes undertaken by SMEs including the Emerging Technology Programme, which aims to co-fund the costs of trials and adoption of frontier technologies like AI and other technologies. The SGD 1 billion package also includes the Chief-Technology-Officer-as-a-Service (CTOaaS) initiative that provides SMEs with access to professional information technology consultancies so that they are more able to identify and adopt digital solutions.¹²

Developing effective knowledge-sharing mechanisms can also benefit SMEs in their AI journey. Case studies of successful AI adoption amongst SMEs in ASEAN can help other SMEs chart out their AI adoption journey, and learning platforms such as OECD Digital SMEs Global Initiative can enable knowledge transfer and a more supportive ecosystem for SMEs looking to benefit from AI.¹³

¹² Enterprise Singapore. 2021. Budget 2021: Local companies can access co-funding schemes to transform, digitalise. Retrieved from: <https://www.enterprisesg.gov.sg/media-centre/news/2021/february/local-companies-can-access-co-funding-schemes>

¹³ OECD. OECD Digital for SMEs Global Initiative. Retrieved from: <https://www.oecd.org/digital/sme/>

Priority 4: Implement AI Principles to Develop Ethical AI Systems

AI national strategies should include efforts to develop principles to guide the development of ethical AI systems. Based on internationally recognized approaches, ASEAN governments can consider adopting the following key AI principles that are aligned with the five OECD Principles on AI: Inclusive growth, sustainable development and well-being; human-centred values; transparency and explainability; robustness, security, and safety; and accountability.

AI PRINCIPLES AND THE RISE OF RESPONSIBLE AI

Principles are a useful starting point, especially for a nascent technology such as AI, as they are non-prescriptive and provide the flexibility to experiment and test new solutions.

The recognition of potential risks that stem from AI development and adoption, particularly where that risk results in significant harm to an individual (such as where there is a risk to an individual's civil rights), has given rise to the concept of "Responsible AI" (see Annex A for a discussion on Responsible AI). While many organizations have worked to establish principles and comprehensive definitions for Responsible AI, most of them are aligned with the OECD's Principles on AI. The figure below illustrates OECD's AI principles and compares them with other influential international approaches to AI principles.

	OECD AI PRINCIPLES ¹⁴	G20 AI PRINCIPLES ¹⁵	EU ETHICS GUIDELINES FOR TRUSTWORTHY AI ¹⁶	UNESCO AGREEMENT ON THE ETHICS OF AI ¹⁷
	Inclusive growth, sustainable development and well-being	Inclusive growth Sustainable development	Inclusive growth Sustainable development	Fairness and non-discrimination Sustainability
	Human-centred values (e.g., privacy, fairness)	Human-centricity	Respect for human autonomy	Human oversight and determination Right to privacy and data protection
	Transparency and Explainability	Transparency	Explicability ¹⁸ (operate transparently)	Transparency and explainability Awareness and literacy
	Robustness, Security and Safety	Robustness		
	Accountability	Accountability		Responsibility and accountability Multi-stakeholder and adaptive governance and collaboration.
	Robustness, Security and Safety	Security	Prevention of harm	Proportionality and Do No Harm Safety and security

¹⁴ OECD AI Policy Observatory. 2019. OECD AI Policy Overview. Retrieved from: <https://oecd.ai/en/ai-principles>

¹⁵ G20. 2019. G20 AI Principles. Retrieved from: <https://www.g20-insights.org/wp-content/uploads/2019/07/G20-Japan-AI-Principles.pdf>

¹⁶ European Commission. 2021. EU Ethics Guideline for Trustworthy AI. Retrieved from: <https://ec.europa.eu/futurium/en/ai-alliance-consultation.1.html>

¹⁷ UNESCO. 2021. Recommendation on the Ethics of Artificial Intelligence. Retrieved from: <https://unesdoc.unesco.org/ark:/48223/pf0000380455>

¹⁸ Explicability is a precondition for achieving informed consent from individuals interacting with AI systems and in order to ensure that the principle of explicability and non-maleficence are achieved the requirement of informed consent should be sought. Source: <https://www.euractiv.com/wp-content/uploads/sites/2/2018/12/AIHLEGDraftAIEthicsGuidelinespdf.pdf>

DEVELOPING AI PRINCIPLES IN ASEAN

AI policy is still at a nascent stage in ASEAN. While there is recognition of AI risks and ethical issues within the ASEAN ICT Masterplan 2020 review and subsequently the ASEAN Digital Masterplan 2025 (ADM 2025), there is a lack of regional policy or guidance on AI governance. The ADM 2025, which was developed to deepen the use of digital technologies for economic and social development, acknowledged the importance of addressing key ethical issues in the deployment of AI solutions to foster trust.¹⁹ That said, AI governance is not highly prioritized in the ADM 2025.

On an individual level, countries within ASEAN are at varying stages of development. Member states such as Singapore and Malaysia are more advanced in developing frameworks and guidelines to promote the ethical development of AI. Others, such as Thailand, Indonesia, and Vietnam, recognize the need to address the harms of AI through national roadmaps. Annex B provides a list of case studies to describe the progress across ASEAN.

As ASEAN member states formulate national AI plans, they can refer to existing international AI principles (described in the previous table) to ensure the development of ethical and responsible AI while promoting interoperability. As trade agreements are increasingly including considerations on AI, developing principles in line with internationally recognized frameworks is also important for countries seeking digital economy agreements. The OECD AI Principles have set the international standard for governments to follow. They provide a framework for development of trustworthy AI systems which benefit society, respect human rights and dignity, and are transparent and robust. In developing their AI principles, governments should also consult diverse stakeholders and experts including academia, industry, and civil society to provide strategic advice.

Priority 5: Adopt a Risk-based, Globally Interoperable Approach to AI Policymaking

Where a jurisdiction has established governing principles to set a baseline for assessing whether existing legal protections remain fit-for-purpose, governments should introduce risk frameworks in their national AI strategies to address the risks across the AI lifecycle, including in the design, development, and use of AI systems. The OECD risk classification framework, recommends a risk-based approach to regulating AI to ensure that oversight and intervention is focused where it is most needed.²⁰



¹⁹ ASEAN. 2021. ASEAN Digital Masterplan 2025. Retrieved from: <https://asean.org/wp-content/uploads/2021/08/ASEAN-Digital-Masterplan-2025.pdf>

²⁰ OECD. 2022. OECD Framework for the Classification of AI Systems. Retrieved from: <https://www.oecd-ilibrary.org/docserver/cb6d9eca-en.pdf?expires=1674060226&id=id&accname=guest&checksum=C16D228A126DD7E13782E3184489A62C>

Risk-based frameworks for regulating AI should define various tiers of AI risks and target high-risk AI systems. For instance, the European Commission's proposed AI Act focuses only on regulating high-risk uses of AI rather than imposing broad compliance requirements on the technology itself.²¹ However, the European approach may not be entirely suited for ASEAN. In particular, ASEAN Governments should be wary of overly-broad categories of "high risk systems", which would endanger market interoperability. Instead of labelling entire sectors/activities as high-risk, the focus should instead be on specific use cases that are likely to pose a material risks to individuals, such as when AI is used to automate decisions that impact a person's access to financial services, employment, healthcare, or government services.²²

A risk-based approach should assign compliance requirements for high-risk use cases to the actor(s) best placed to address the potential risks. AI governance frameworks should distinguish between the roles of AI developers (who develop generic AI products which can be used in a multitude of settings) versus AI deployers (organizations who implement AI-based solutions in specific contexts). Developers are best placed to ensure the accuracy and technical limitations of AI systems, while deployers will be aware of the contextual use-cases and the harms that could arise from those. Deployers are also best placed to mitigate potential risks and ensure they implement AI-based solutions in adherence with relevant regulations.

Rather than adopting a one-size-fits-all approach to AI regulation, the risk-based approach described above would categorize systems according to risk level, and appropriately assign obligations which are commensurate with the risks. This reduces compliance burdens, especially for SMEs for whom burdensome regulations can be a significant barrier to adopting and innovating with new technologies. Governments in ASEAN can use the internationally recognized examples provided in this report to develop AI risk frameworks which will allow AI systems to proliferate in ASEAN while effectively managing risks.

Governments in ASEAN should also ensure that their risk-based policies on AI are globally interoperable by leveraging international technical standards. International standard-setting bodies such as the International Organization for Standardization (ISO) and the Institute of Electrical and Electronics Engineers (IEEE) have the reach and capacity to set standards with input and consensus from experts, which effectively manage risks without impeding innovation and efficiency. Ensuring that local policies and regulations are aligned to relevant internationally recognized standards is a key mechanism for promoting global harmonization while also building trust in ASEAN-based AI solutions.



²¹ European Commission. 2021. Regulatory framework proposal on artificial intelligence. Retrieved from: <https://digital-strategy.ec.europa.eu/en/policies/regulatory-framework-ai>

²² In Australia, the New South Wales Government announced a new AI Assurance Framework that takes a similar risk-based approach. They Framework proposed risk categories for AI systems used by public agencies, with very high-risk AI activities defined as those which "make and implement operational decisions that can negatively affect human wellbeing autonomously of human input" (such as, self-driving vehicles). New South Wales Government. 2022. NSW AI Assurance Framework. Retrieved from: <https://www.digital.nsw.gov.au/policy/artificial-intelligence/nsw-ai-assurance-framework>

Annexures

ANNEX A: GLOBAL APPROACHES TO RESPONSIBLE AI

A widely accepted approach to Responsible AI identifies three pillars for the design of Responsible AI systems:²³

- 1 The first pillar requires society to take responsibility for the impact of AI. Researchers and AI developers should be trained and educated on their responsibilities when developing AI systems which impact society, while governments and citizens should deliberate on issues of liability.
- 2 The second pillar highlights the need for mechanisms that enable AI systems to reason and act according to ethics and human values. This includes developing models and algorithms to take decisions based on human values.
- 3 The third pillar is around developing forms of governance which are participatory and endeavour to understand how diverse societies work with and live with AI technologies.

Private sector companies like Amazon, Meta, Google, Microsoft, and IBM came together in 2016 to form the Global Partnership on AI to Benefit People and Society (GPAI).²⁴ The GPAI is a non-profit coalition with participation from academic, civil society, industry, and media organizations, committed to creating solutions to advance the responsible use of AI. Specifically, one of the tenets of the GPAI involves collaboration to ensure that AI research and engineering communities remain socially responsible, sensitive, and engaged with the potential influences of AI technologies on society. Other core pillars also seek to ensure the safety, transparency, accountability, and fairness of AI systems.







The Responsible AI Institute (RAI) is a non-profit organization founded in 2017, with a global membership comprising of global corporations, tech and service providers, governments, and NGOs, as well as universities and academia. The RAI produced the world's first accredited certification program for responsible AI in 2021 that demonstrates compliance with emerging regulations such as the EU AI Act. Developed under the World Economic Forum's Global AI Action Alliance, the responsible AI certification is based on objective assessments of fairness, bias, explainability, and other concrete metrics of responsibly built AI systems.²⁵

ANNEX B: CASE STUDIES OF AI GUIDELINES IN ASEAN

Singapore

In Singapore, the government announced its National AI Strategy in 2019 to map out a plan for the development and deployment of scalable, impactful AI solutions in key sectors of high value and relevance by 2030. The Strategy identifies five national AI projects to use AI technologies to address national challenges and deliver impactful socio-economic benefits to Singaporeans. A key thrust of the National AI Strategy is to establish citizens' trust on the responsible use of AI. One of the efforts undertaken by the government include developing Asia's first Model AI Governance Framework, to provide "detailed and readily implementable guidance to private sector organizations to address key ethical and governance issues when deploying AI solutions".²⁶ The Framework adopts a risk-based management approach to address the technology risks associated with AI

²³ Virginia Dignum. 2017. Responsible Artificial Intelligence: Designing AI for Human Values. Retrieved from: https://www.itu.int/dms_pub/itu-s/opb/journal/S-JOURNAL-ICTF.VOL1-2018-1-P01-PDF-E.pdf

²⁴ Partnership on AI. About Us. Retrieved from: <https://partnershiponai.org/about/>

²⁵ Responsible AI Institute. 2022. Why RAI Certification?. Retrieved from: <https://www.responsible.ai/certification>

²⁶ PDPC. 2020. Model Artificial Intelligence Governance Framework Second Edition. Retrieved from: <https://www.pdpc.gov.sg/-/media/Files/PDPC/PDF-Files/Resource-for-Organisation/AI/SGModelAIGovFramework2.pdf>

and is based on two high-level guiding principles: (1) Organizations using AI in decision-making should ensure that the decision-making process is explainable, transparent and fair, and (2) AI solutions should be human-centric.²⁷

In 2019, Singapore's central bank, the Monetary Authority of Singapore (MAS), announced a partnership with the financial industry to enable financial institutions to assess their AI-driven solutions against the principles of fairness, ethics, accountability, and transparency (FEAT). The Veritas initiative was developed as a framework to operationalize the FEAT principles in guiding the responsible use of Artificial Intelligence and Data Analytics in financial services and translate these guidelines into practical implementation of the FEAT principles.

Malaysia

The Ministry of Science, Technology and Innovation launched the Malaysian National AI Roadmap for 2021-2025, envisioning "a nation where AI augments jobs, drives national competitiveness, encourages innovation and entrepreneurship to bring economic prosperity, social good and improve people's wellbeing." The roadmap incorporates the Principles for Responsible AI as 1) Fairness, 2) Reliability, Safety & Control, 3) Privacy & Security 4) Inclusiveness, 5) Transparency, 6) Accountability, and 7) Pursuit of human benefit & happiness. It further includes strategies and initiatives to achieve the national vision, such as the adoption of hyperscale AI cloud computing and storage, advancing AI research and development, strengthening digital infrastructure to enable AI, fostering AI talents, cultivating AI awareness, and enhancing global collaboration.²⁸ While there are also plans to institutionalize AI principles for implementation, the government has not started on those initiatives.

The Philippines

The Department of Trade and Industry (DTI) announced a National AI Roadmap in May 2021 to position the Philippines as an AI powerhouse.²⁹ The roadmap outlined the implementation, infrastructure, and investments needed to cover AI readiness, namely, (i) Digitization and Infrastructure, (ii) Research and Development, (iii) Workforce Development, and (iv) Regulation. Under regulation, the government plans to protect human rights and put into place equitable AI-activating opportunities. The proposed National Center for AI Research is a key feature of the roadmap, with the aim of employing scientists and research engineers to enhance AI competitiveness.

Indonesia

Indonesia does not currently have the provisions to regulate AI or an official agency to oversee AI development. However, the Indonesian National Research and Innovation Agency (BRIN) has developed a national strategy for the development of AI between 2020 and 2045, with a focus on AI projects in education and research, health services, bureaucratic reform, food security and smart cities.³⁰ The launch of the national guidelines, published as an e-book, marks a step forward in embracing AI technology. Some government agencies are promoting AI development at schools and teaching facilities. Recognizing the lack of provisions for regulations to oversee AI developments, the guidelines suggest the establishment of a data ethics board to oversee its development as well as to create regulations and national standards for AI innovation.³¹

²⁷ PDPC. 2020. Model Artificial Intelligence Governance Framework Second Edition. Retrieved from: <https://www.pdpc.gov.sg/-/media/Files/PDPC/PDF-Files/Resource-for-Organisation/AI/SGModelAIGovFramework2.pdf>

²⁸ Malaysia's Ministry of Science, Technology, and Innovation. 2021. Malaysia National AI Roadmap 2021-2025. Retrieved from: <https://airmap.my/>

²⁹ Department of Trade and Industry. The Philippines' National AI Roadmap. Retrieved from: <https://www.dti.gov.ph/archives/national-artificial-intelligence-roadmap-launch/>

³⁰ Indonesia's National Research Agency (BRIN). 2020. Indonesia's National AI Strategy. Retrieved from: <https://ai-innovation.id/server/static/ebook/stranas-ka.pdf>

³¹ The Jakarta Post. 2020. Indonesia sets sights on AI in new national strategy. Retrieved from: <https://www.thejakartapost.com/news/2020/08/13/indonesia-sets-sights-on-artificial-intelligence-in-new-national-strategy.html>



Thailand

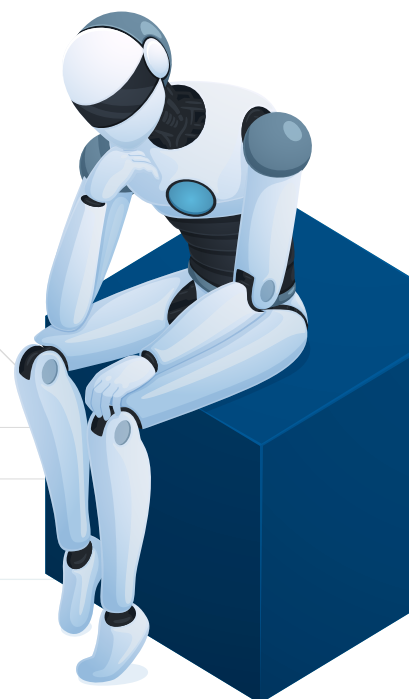
The Ministry of Digital Economy and Society of Thailand (DES) issued a draft set of AI ethics guidelines in 2019 for the development of AI, as part of raising competitiveness under the 20-year national strategy plan for 2018-37. The guidelines serve as practices to be followed by researchers, developers, and service providers engaging in tech development. The DES also emphasized that the guidelines are necessary to prevent the misuse of technology, with the future possibility of developing the guidelines and practices further into regulation. Under the guidelines, the development of AI technologies must comply with international standards. It must also be developed with accountability, responsibility, equality, and fairness to ensure data protection and reliability of AI use.³² In July 2022, Thailand also issued its National AI Strategy and Action Plan focused on human capital development, economic growth, and sustainability.



Vietnam

The Vietnamese government issued a National Strategy on Research & Development (R&D) and Application of AI in 2021, to develop AI until 2030.³³ The aim of the strategy is to develop Vietnam into a center for innovation, and the development of AI solutions and applications in ASEAN and globally. This strategy aligns well with some of the OECD AI principles, including promoting investments in AI R&D, fostering a digital ecosystem for AI, and providing an enabling policy environment for AI. The strategy also outlined some of the directions the government plans to undertake, including the development of a system of legal documents and regulations related to AI. Policies and laws are expected to be formulated to create an open legal corridor to meet the requirements of promoting research, development, and application of AI in real life. By doing so, the strategy seeks to avoid technology abuse and infringement upon legitimate rights and interests of organizations and individuals.

PREPARED BY:



³² OpenGov. 2019. Thailand Drafts Ethic Guidelines for AI. Retrieved from: <https://opengovasia.com/thailand-drafts-ethics-guidelines-for-ai/>

³³ Vietnam Government News. 2021. National Strategy On R&D and Application of Artificial Intelligence. Retrieved from: <https://en.baocinhphu.vn/national-strategy-on-rd-and-application-of-artificial-intelligence-11140663.htm>