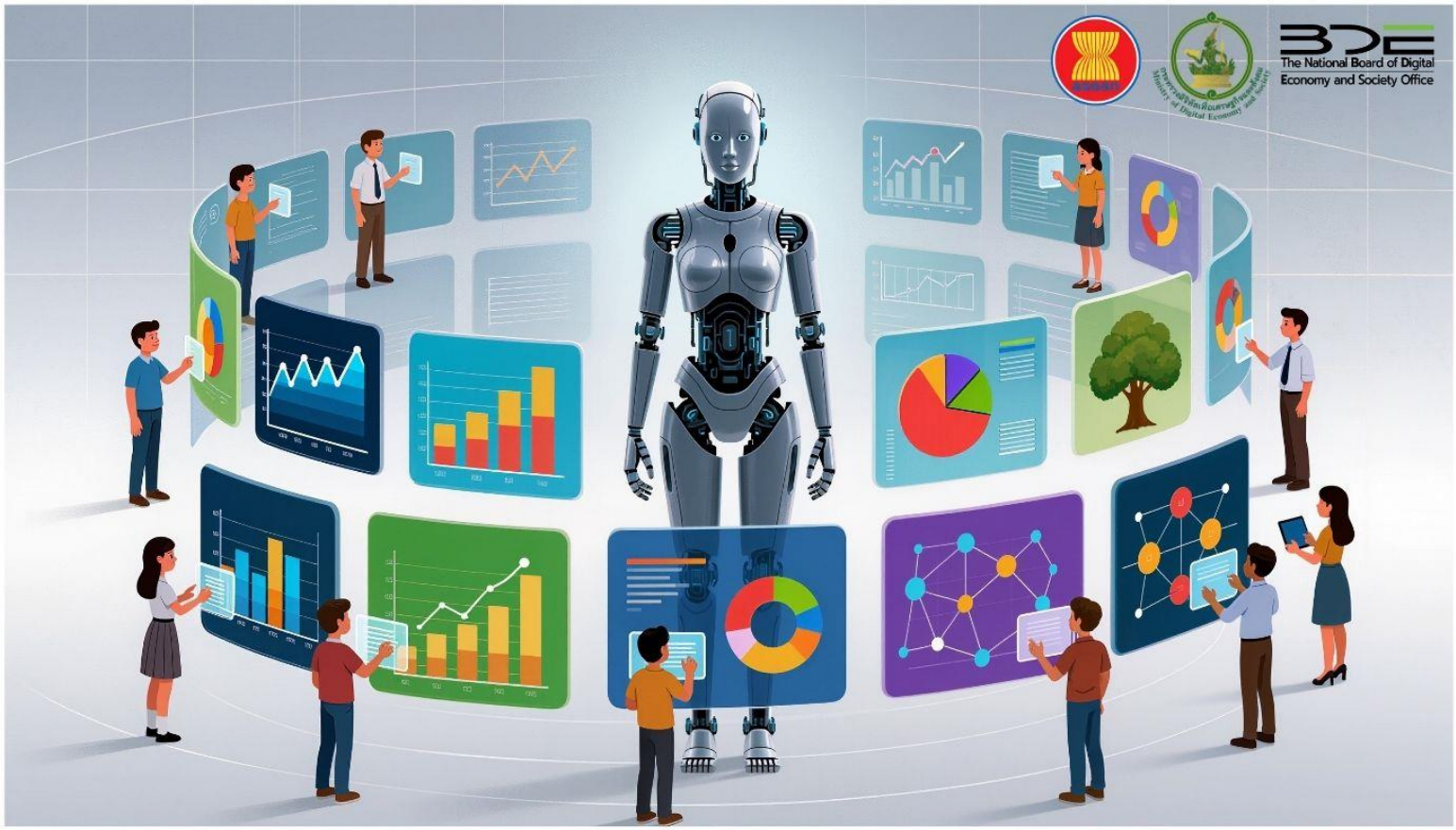

ASEAN AI TRANSITION INNOVATION FRAMEWORK

Report on AI-Related Literature and Policies Existed in Both the Industry and Government Sectors, Both Within and Outside ASEAN.

The National Board of Digital Economy and Society Office (BDE) was established on September 16, 2016, in accordance with the Restructuring of Government Agencies Act (No. 17), B.E. 2559 (2016), alongside the establishment of the Ministry of Digital Economy and Society.

Subsequently, on January 25, 2017, the Digital Development for Economy and Society Act, B.E. 2560 (2017) was enacted. This legislation defined the powers and duties of the Office in its capacity as the secretariat for the National Digital Economy and Society Commission.

Published in 2026 by:
The National Board of Digital Economy and Society Office (BDE)
Ministry of Digital Economy and Society
Thailand
Tel: +668 0072 7072
Email: saraban@bde.go.th
https://www.bde.go.th/

Preface

This report presents the ASEAN AI Transition Innovation Framework (AITIF) project, which was endorsed at the 5th ASEAN Digital Ministers' Meeting (ADGMIN) and its related meetings, hosted by Thailand from 13–17 January 2025 as part of the project's formal implementation process.

The report primarily aims to present the findings of a comprehensive literature review on the "Development of an AI Literacy Framework to Support Future Development under the Framework of International Cooperation (AI Literacy Framework)." In undertaking this work, the designated working group systematically examined and consolidated relevant concepts, theoretical foundations, and internationally recognized standards to establish a robust and evidence-based foundation for the design and development of the AI Literacy Framework.

Furthermore, the content of this report covers the conclusions drawn from the Workshop, which provided an opportunity for representatives from member countries of the Association of Southeast Asian Nations (ASEAN) to participate, share opinions, exchange perspectives, and offer recommendations regarding the study results. This collaborative process ensures that the developed conceptual framework aligns with the regional context and is accepted at an international level.

However, regarding the specific project outputs and key tools developed, readers and interested parties may consult the comprehensive report titled "ASEAN AI Transition Innovation Framework (AITIF): Report on AI Literacy Framework, AI Readiness Assessment Tool, and Online Course for AI-Driven Transformation" for further details.

The project team incerely hopes that the information from the literature review and the recommendations from the regional meeting presented in this report will be beneficial to government agencies, the private sector, and relevant stakeholders. It is intended to serve as a guideline for driving and developing artificial intelligence skills for the population and workforce in the region.

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Part 1

Introduction

Artificial Intelligence (AI) is a technology of paramount importance for both the present and the future. AI plays a pivotal role in driving the economy across various sectors. For instance, AI facilitates automation, reduces costs, enhances efficiency, and conserves resources. Furthermore, AI aids in data analysis and trend prediction, enabling businesses to effectively develop new products and services that meet customer needs. Additionally, AI assists in processing complex data, allowing organizations in both the public and private sectors to respond rapidly to market changes.

Currently, AI has become an integral part of daily life through various applications, ranging from mobile banking services to medical diagnostic tools. Consequently, AI literacy—the understanding and ability to utilize artificial intelligence—is crucially important for the work and daily lives of citizens at all levels. Frequently, the general public interacts with AI unknowingly, even without working directly with the technology. A lack of awareness and understanding prevents individuals with limited technological backgrounds from utilizing AI technology effectively. Moreover, if organizational personnel lack the knowledge and understanding of AI operations, applications, and capabilities, it may compromise the organization's ability to compete in the external market.

AI literacy is defined as the understanding and ability to apply AI technology in professional and daily contexts through four fundamental principles: (1) Learning and understanding basic operations and recognizing AI-enabled technologies; (2) Learning and understanding the mechanics of AI technology; (3) Learning and understanding the tools utilized for AI development; and (4) Learning and understanding how to coexist with AI technology. AI literacy is intrinsically linked to other technological literacies, specifically:

(1) AI literacy overlaps with Data literacy.

(2) Individuals possessing Science literacy and Computational literacy are better positioned to foster AI literacy.

(3) Digital literacy is a fundamental prerequisite for the development of AI literacy.

AI literacy is regarded as a fundamental factor in driving the economic engine during an era of rapid technological advancement. It will become a critical skill for organizations and personnel across various professions—such as accounting, law, human resource management, marketing, tourism, and other fields not directly related to technology.

The National Board of Digital Economy and Society Office (BDE), Ministry of Digital Economy and Society, Thailand, which is mandated to formulate policies, plans, and measures to promote, develop, and implement digital activities for the economy and society, has established ICT professional skill standards for 11 professions since 2012. Furthermore, BDE has coordinated with and advocated for ASEAN member states to certify these standards. Currently, all 11 ICT professional standards have been recognized by ASEAN member states and can be benchmarked against professional skills within the region.

BDE recognizes the critical importance of AI literacy for the nation's digital economic and social development. Consequently, it intends to study and develop: (1) An AI Literacy Framework to support future development under the framework of international cooperation; (2) An AI Skill Checklist and AI Skill Taxonomies; (3) An AI Readiness Assessment Tool; and (4) A Website for AI Transformation Consulting.

These initiatives align with national policies and strategies, including the National AI Action Plan for Thailand’s Development (2022–2027), specifically under:

Strategy 1: Preparing the country regarding social, ethical, legal, and regulatory aspects for AI application.

Strategy 3: Increasing human capacity and AI education development.

Strategy 5: Promoting the application of AI technology and systems in the public and private sectors.

Furthermore, this operation is conducted under an international cooperation framework to develop and establish joint standards, thereby supporting the ASEAN Digital Masterplan 2025 regarding Reskilling, Upskilling, and New Skills under Strategy 5 (Digital Transformation). It also aligns with the objectives of the Digital Economy and Society Development Fund, which provides subsidies for research and development to public agencies, private entities, and the general public concerning digital development for the economy and society.

Project Objectives

1. Enhance AI literacy and transformation across ASEAN to support economic growth, social inclusion, and digital transformation.

2. Promote AI /adoption in organizations via an AI readiness assessment tool.

3. Enhance an individual's professional AI skills with AI skill checklists and AI skill taxonomies.

Target Groups

The project targets the following groups within the Association of Southeast Asian Nations (ASEAN) member states:

1. Public Sector Personnel: Officials and executives within government agencies seeking to develop AI understanding and skills to support policy formulation and the implementation of AI in the public sector.

2. Private Sector Personnel: Executives and employees within business organizations seeking to adopt AI to enhance operational efficiency and create business opportunities.

3. General Public: Individuals interested in developing the skills to understand and utilize Artificial Intelligence in their daily lives or respective careers.

4. International Cooperation Organizations: International agencies involved in the development and standardization of AI Literacy, with a specific focus on ASEAN member states.

5. Educational Institutions and Researchers: Faculty members, students, and researchers interested in studying AI Literacy trends and AI skill development at both international and regional levels.

6. Organizations Assessing AI Readiness: Agencies seeking to utilize the AI Readiness Assessment Tool to evaluate and develop guidelines for AI adoption within organizations in Thailand and ASEAN member states.

7. Individuals Seeking AI Career Development: Personnel seeking to enhance their AI skills to increase career opportunities or adapt to the transformations of the digital era.

Outputs

1. AI-related literature and policies existed in both industry and government sectors both within and outside ASEAN.

2. AI literacy skill standards.

3. AI skill checklists.

4. A Taxonomies.

5. AI readiness assessment tool.

6. AI literacy online lesson and assessment.

Outcomes

1. Elevation of National Digital Skills: Public and private sector personnel, as well as the general public, possess AI Literacy and can effectively and knowingly apply AI technology in their work and daily lives.

2. Organizational Digital Transformation: Government agencies and business sectors can assess their own readiness and possess clear guidelines for adopting AI to reduce costs, increase operational efficiency, and create new business opportunities.

3. Labor Standards Equivalent to International Levels: Thailand possesses AI professional standards that are consistent with and recognized at the ASEAN level, enhancing the capacity for labor mobility and competitiveness in the global market.

4. Support for National and ASEAN Policies: Concrete implementation in accordance with the National AI Action Plan and the ASEAN Digital Masterplan 2025.

5. Intellectual Infrastructure Ready for Competition: The education sector has a direction for curriculum development, and the labor sector possesses tools (Taxonomies) for self-development planning to support the AI-era economy.

Part 2

Development of an AI Literacy Framework to Support Future Development under the Framework of International Cooperation (AI Literacy Framework)

Study Findings and Literature Review on AI Literacy: An Examination of Promotion Strategies and Development Policies in Leading Global Nations

1. Promotion and Policies for AI Literacy Development

1.1 Artificial Intelligence Development

In the 21st century, Artificial Intelligence (AI) has evolved beyond a mere technological innovation to become a definitive indicator of competitiveness and a primary economic driver within the global community. Nations worldwide recognize that establishing leadership in AI is crucial for securing future prosperity and stability. According to the 2025 AI Engagement Index, compiled by ApX Machine Learning, the assessment comprises two primary components: The Global AI Engagement Rankings: This metric provides a comprehensive overview of global AI activities by identifying nations with the highest volume of AI learners and enthusiasts, thereby reflecting the magnitude of the AI talent pool within each country. The Per Capita AI Engagement Rankings: This metric analyzes data based on the number of internet users to illustrate AI adoption rates relative to the online population, highlighting nations with the highest intensity of AI utilization on an individual basis. (ApX Machine Learning, 2025)

Table 1: Global AI Engagement Rankings 2025

Rank	Country	The AI Engagement Index (%)
1.	United States	100.00
2.	People's Republic of China	29.56
3.	Republic of India	28.42
4.	Federal Republic of Germany	27.74
5.	Russian Federation	26.33
6.	Republic of Korea	18.99
7.	United Kingdom	16.56
8.	Republic of China (Taiwan)	16.41
9.	Japan	14.05
10.	French Republic	13.80
15.	Singapore	10.39
20.	Socialist Republic of Vietnam	7.84
21.	Republic of Indonesia	7.53
23.	Thailand	6.02
28.	Federation of Malaysia	3.69
41.	Republic of the Philippines	2.31
87.	Kingdom of Cambodia	0.24
116.	Republic of the Union of Myanmar	0.07
130.	Negara Brunei Darussalam	0.05
144.	Lao People's Democratic Republic	0.03

Source: Compiled by ApX Machine Learning (2025), published on June 23, 2025

Based on Table 1, the Global AI Engagement Ranking for 2025 reveals that the United States is the definitive leader in Artificial Intelligence (AI) engagement. It achieved the maximum index score of 100.00%, reflecting an advanced level of AI development and application. The People's Republic of China follows in second place with an index of 29.56%, while the Republic of India ranks third with 28.42%. These are followed by the Federal Republic of Germany (27.74%) and the Russian Federation

(26.33%), both of which remain in the leading group of AI engagement. Furthermore, other Asian nations—such as the Republic of Korea (18.99%), the Republic of China (16.41%), and Japan (14.05%)—along with European nations like the United Kingdom (16.56%) and the French Republic (13.80%), also play significant roles within the top ten rankings.

Within the ASEAN region, the Singapore secures the highest ranking, placing 15th globally with an index score of 10.39%. It is followed by the Socialist Republic of Vietnam in 20th place with an index of 3.88%, the Republic of Indonesia in 21st place (3.53%), the Kingdom of Thailand in 23rd place (6.02%), and the Federation of Malaysia in 25th place (3.69%). The remaining ASEAN nations are ranked subsequently: the Republic of the Philippines at 41st place (2.31%), the Kingdom of Cambodia at 87th place (0.24%), the Republic of the Union of Myanmar at 116th place (0.07%), Negara Brunei Darussalam at 130th place (0.05%), and the Lao People's Democratic Republic at 144th place (0.03%).

Thailand's ranking at 23rd place, with an index score of 6.02, indicates that the country's level of AI engagement remains relatively low when compared to leading nations. However, this simultaneously reflects significant opportunities for development, capacity expansion, and the strengthening of AI technological potential to elevate international competitiveness.

In the context of promoting and formulating policies for Artificial Intelligence (AI) skill development, distinct leaders emerge across global regions. Notably, the United States and the People's Republic of China stand at the forefront of the AI Engagement Index. According to recent research by Vention[1], it is projected that by 2030, AI will contribute approximately 14.8% to the Gross Domestic Product (GDP) of the United States and 26.1% to that of the People's Republic of China. The leadership of both nations has explicitly declared that AI will serve as a fundamental instrument in defining national strategy, with the primary objective of establishing a competitive economic advantage. Consequently, both the United States and China must place significant emphasis on policies promoting domestic AI literacy and skill

[1] https://ventionteams.com/solutions/ai/report?utm_source=chatgpt.com

development. It is only through deep proficiency and understanding of this discipline that a nation can maximize the efficiency and benefits derived from these technologies.

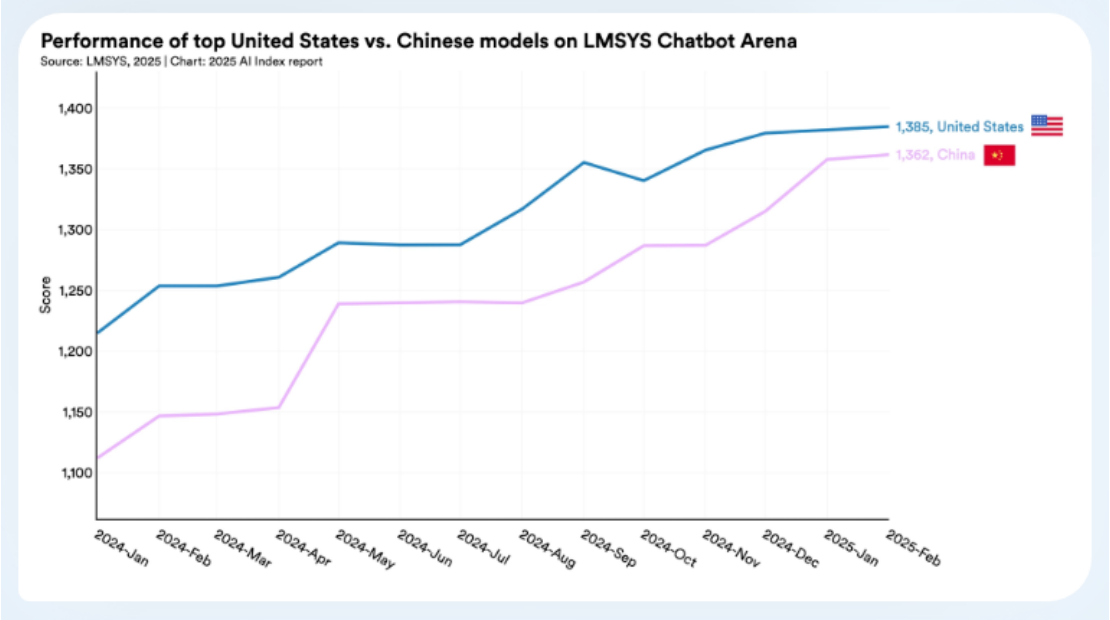

Figure 1: Performance Comparison of Leading AI Models from the United States and the People's Republic of China on the LMSYS Chatbot Arena Platform (January 2024 – February 2025)[2]

Figure 1, based on data from the Artificial Intelligence Index Report 2025 published by Stanford University, illustrates the performance of leading AI models from the United States and the People's Republic of China on the LMSYS Chatbot Arena platform.

The data reveals significant trends regarding the United States' models. In January 2024, these models recorded an initial score of approximately 1,230 and demonstrated consistent growth thereafter. From February through July 2024, the scores increased gradually, followed by a distinct upward adjustment observed in August 2024. This positive trajectory continued from October through December 2024,

[2] https://hai.stanford.edu/assets/files/hai_ai_index_report_2025.pdf

culminating in January 2025, where the United States models achieved a peak score of 1,385.

Simultaneously, models from the People's Republic of China began with a score of approximately 1,100 in January 2024. They experienced a marked increase during April 2024, followed by a temporary plateau between May and July 2024. Subsequently, the growth trend accelerated again from August through December 2024, ultimately reaching a level of 1,362 points by February 2025.

The graph in Figure 2 indicates that while United States AI models continue to demonstrate superior performance and maintain a competitive edge over those of the People's Republic of China, the performance gap between the two nations has narrowed significantly over the course of a single year. This trend underscores the rapid advancement of the People's Republic of China's capabilities and reflects the intensifying competition within the global AI industry.

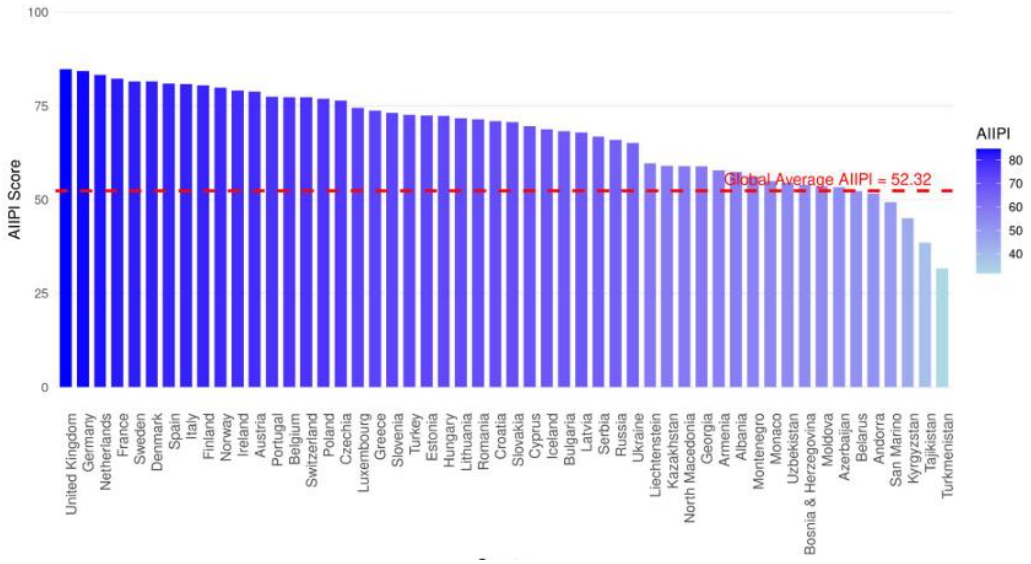

Figure 2: Comparison of the Artificial Intelligence Innovation and Preparedness Index (AIIPI) of Countries in the European Union and Central Asia Relative to the Global Average

The member states of the European Union are recognized for their high levels of investment in innovation. According to the Innovation Index 2024 rankings (TheGlobalEconomy.com, 2025) presented in Table 1, the majority of the top ten

nations are located within Europe. Furthermore, Figure 2 illustrates the Artificial Intelligence Innovation and Preparedness Index (AIIPI) developed by Martey Addo et al. (2025).This graph reflects the levels of innovation and AI readiness of individual nations relative to the global average of 52.32 (indicated by the red dashed line). The following key observations are noted:

Leading Nations: The leading group consists of the United Kingdom, the Federal Republic of Germany, the Netherlands, and the Kingdom of Sweden. With AIIPI scores exceeding 75, these nations demonstrate advanced progress and high readiness regarding infrastructure, research, and AI application at both policy and industrial levels.

High-Potential Nations: Meanwhile, the Kingdom of Denmark, the Republic of Finland, the Italian Republic, the Kingdom of Norway, and the Republic of Austria fall within the 70–75 score range. This indicates robust AI development that closely rivals that of the leading nations.

Developing Regions: Conversely, countries in Eastern Europe, Central Asia, and parts of Africa—such as the Republic of Kazakhstan, Georgia, the Republic of Azerbaijan, and the Republic of Armenia—score between 40 and 55. Being near or below the global average, these scores reflect ongoing challenges regarding infrastructure, research investment, and AI technology adoption.

Nations with Significant Constraints: Finally, the lowest-scoring group, including the Kyrgyz Republic and Turkmenistan, holds scores below 40. This indicates significant constraints regarding technology access, human capital, and supportive policies.

Within the Asia-Pacific region, Japan possesses the highest potential and readiness regarding AI, serving as a key leader capable of shaping the trajectory of regional technological development. As illustrated in Figure 3, which presents the Artificial Intelligence Innovation and Preparedness Index (AIIPI) scores for Asia-Pacific nations compared to the global average of 52.32 (indicated by the red dashed line), the leading group comprises Japan, the Republic of Korea, Australia, Singapore, and the People's Republic of China. With AIIPI scores exceeding 75, these nations

demonstrate outstanding potential in AI development, encompassing research, investment, and practical application within both commercial and industrial sectors.Furthermore, nations such as New Zealand, Malaysia, and Indonesia also maintain scores above the global average, indicating their readiness to adapt to future technological shifts in AI

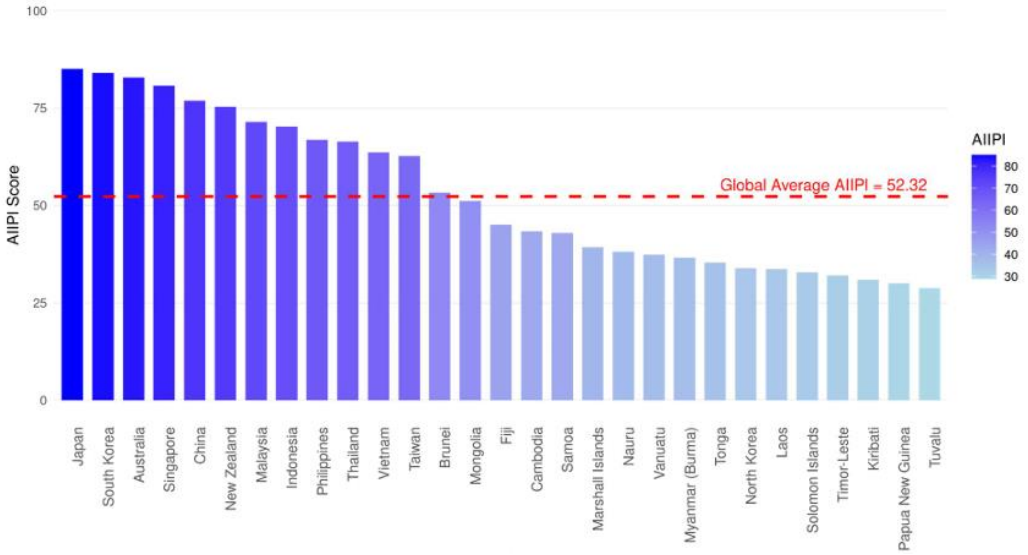

Figure 3: Comparison of the Artificial Intelligence Innovation and Preparedness Index (AIIPI) of Countries in the Asia-Pacific Region Relative to the Global Average

In the case of Thailand, when comparing the Artificial Intelligence Innovation and Preparedness Index (AIIPI) of Asia-Pacific nations against the global average of 52.32, it is observed that Thailand's score sits slightly above the global mean. This reflects a moderate level of readiness, particularly in the areas of human resource development, AI adoption within the business sector, and policy support from the government.

Based on the preceding analysis, this project has selected four global leaders in artificial intelligence (AI) for examination: the United States, the People's Republic of China, the European Union, and Japan. Each of these plays a pivotal role and represents the dynamics of competition on the global stage.

Table 2: Summary of Rationale for Selecting Case Study Countries

Country	Description
United States	A global leader ranking 1st in The AI Engagement Index with a score of 100.00 and possessing the highest AI model performance. Furthermore, AI is designated as a core national strategy to establish economic competitive advantage, with projections indicating that by 2030, AI will generate revenue accounting for 14.8% of GDP.
People's Republic of China	Exhibits rapid growth and high competitive potential against the United States. The People's Republic of China ranks 2nd in The AI Engagement Index and holds AIIPI scores within the leading group of the Asia-Pacific region. Notably, projections indicate that AI will generate revenue as high as 26.1% of GDP by 2030—the highest rate globally—demonstrating intense competition driven by the rapid development of AI model capabilities chasing the global leader.
European Union	A group of nations characterized by high levels of innovation and readiness, with several ranking among the top globally, such as Germany (Rank 4), the United Kingdom (Rank 7), and France (Rank 10) in The AI Engagement Index. Additionally, the AIIPI index reveals that leading European nations like the United Kingdom, Germany, and the Netherlands achieve scores exceeding 75, indicating exceptional readiness in infrastructure, research, and AI application.
Japan	The leader with the highest potential and readiness in the Asia-Pacific region. Japan ranks within the top 10 globally in The AI Engagement Index (Rank 9) and

Country	Description
	holds the highest Artificial Intelligence Innovation and Preparedness Index (AIIPI) score in the Asia-Pacific group, reflecting outstanding potential in setting the direction for technological development at the regional level.

Regarding international organizations selected as case studies for their recognized frameworks and standards related to Artificial Intelligence (AI) literacy, the Organisation for Economic Co-operation and Development (OECD) has been identified as a key entity. The OECD plays a pivotal role as an initiator and developer of the AI Literacy Framework (AI Lit Framework) in collaboration with the European Commission.

Furthermore, this framework is intrinsically linked to the 2029 Programme for International Student Assessment (PISA). Beyond the assessment of core student competencies in reading, mathematics, and science, the 2029 PISA evaluation introduces a new "innovative domain" specifically focused on media and AI literacy. Additionally, the OECD plays a significant role in supporting and disseminating information through various activities and is recognized as a leading organization in establishing international guidelines for Responsible AI.

1.2 Examples of Promotion and Policies for AI Literacy Development

To provide an overview of examples regarding promotion and policies for AI literacy development in the four aforementioned entities, this section focuses on projects or developments occurring from 2020 onwards. This period marks the public release of OpenAI's GPT-3[3], which served as a catalyst for the significant and continuous surge in the popularity of AI usage that persists to the present day.

[3] https://openai.com/index/gpt-3-apps/

1.2.1 United States

1.2.1.1 America's AI Action Plan “Winning the AI Race: America’s AI Action Plan”[4] which was published by The White House on July 23, 2025. This action plan was formulated to establish over 90 central policy measures to support the nation's Artificial Intelligence (AI) development, with the objective of enhancing the economic competitiveness of the United States.

(1) Objective

The action plan was formulated to serve as operational guidelines for various agencies involved in the country's Artificial Intelligence (AI) development, wherein the 90 measures were established in conjunction with the clear identification of responsible units.

(2) Implementation Strategy

The 90 measures are directly related to three pillars: (1) Accelerating innovation; (2) Building America's AI infrastructure; and (3) Leading in international diplomacy and security.[5] Key policy examples include:

(2.1) Promoting Innovation and AI Adoption

Repealing federal regulations that serve as barriers to AI development and deployment, and soliciting feedback from the private sector regarding the deregulation of these rules.

(2.2) Supporting National AI Exports

The Department of Commerce and the Department of State will closely collaborate with the industrial sector to design a comprehensive AI export model, which includes hardware, AI models, software, applications, and various other related standards.

(3) Achievements

Given that the action plan was recently released to the public in July 2025, the achievements visible in the initial phase are primarily related to the positive response from the industrial sector regarding various policy measures.

[4] https://www.whitehouse.gov/articles/2025/07/white-house-unveils-americas-ai-action-plan/

[5] https://www.whitehouse.gov/articles/2025/07/white-house-unveils-americas-ai-action-plan/

Specifically, the deregulation of rules perceived as obstacles to competition in the global market has played a significant role in supporting the acceleration of the country's overall innovation development.

1.2.1.2 The President of the United States enacted Executive Order (EO) 14277, titled "Advancing Artificial Intelligence Education for American Youth". This order was issued and signed by President Donald J. Trump on April 23, 2025.

(1) Objective

To formulate urgent policies aimed at elevating the nation's AI education standards and maintaining global leadership in artificial intelligence:

(2) Implementation Strategy

Overall, these urgent policies prioritize collaboration with leading private sector entities—such as Google, Code.org, IBM, Pearson Education, HP, Zoom, NVIDIA, MasterCard, Dell Technologies, Microsoft, Amazon, Apple, Adobe, OpenAI, xAI, Anthropic, and numerous other world-class organizations—to support the necessary learning resources for students from Kindergarten through Grade 12 (K-12). Key objectives include: (1) reducing unnecessary administrative burdens on teachers; (2) creating opportunities for professional development regarding AI tools; and (3) actively promoting high-quality, formal AI curricula and professional certification programs available nationwide..

(3) Achievements and Contributions

Private sector organizations have provided substantial support to the initiative, including:

(3.1) Google: Committed $150 million over three years to support the project

(3.2) Code.org: Expanded access to learning for 25 million students during the 2025–2026 period.

(3.3) The Pearson Education: Provided a total of 250,000 complimentary vouchers for teachers to obtain the Generative AI Foundations certification.

(3.4) Amazon: Provided $30 million in credits for cloud computing and AI technology to organizations supporting students and teachers [6]

1.2.1.3 The National Artificial Intelligence Research Resource (NAIRR) Pilot[7] This project currently is led by the National Science Foundation (NSF) in collaboration with 28 related agencies.

(1) Objective

To provide the essential infrastructure required for Artificial Intelligence (AI) research, including data for system training and testing, as well as the software and hardware necessary for research operations. This also encompasses prototype models that enable researchers to avoid starting their work from scratch. The project has designated a two-year period for testing the concept's feasibility, commencing on January 24, 2024.

(2) Implementation Strategy

Generally, access to vital research resources—such as platforms, datasets, software, and models—is considered the cornerstone of research across all disciplines. This project, operating as a collaboration between the public and private sectors, facilitates more convenient access to such resources. Consequently, this accessibility serves as a key incentive that has attracted a large number of research teams to participate in the project.

(3) Achievements

This project has resulted in over 400 U.S. research teams participating and gaining effective access to various platforms, datasets, software, and models. This has directly resulted in Research and Development (R&D) across multiple fields—such as Agriculture, Drug Discovery, Cybersecurity, and Education Research—proceeding more rapidly and effectively.

1.2.1.4 Creating Helpful Incentives to Produce Semiconductors and Science Act (CHIPS and Science Act) President Joe Biden signed this act into law on

[6] https://www.whitehouse.gov/articles/2025/09/major-organizations-commit-to-supporting-ai-education/

[7] https://www.nsf.gov/news/nsf-announces-funding-establish-national-ai-research

August 9, 2025, authorizing a budget of $280 billion for implementation over a period of 10 years.

The enactment of this law aims to address the issues where the United States was severely impacted during the COVID-19 pandemic, as the domestic semiconductor industry could produce only 12% of the hardware demanded by the global market, and existing domestic production did not cover high-tech technologies.

(1) Objective

To reduce long-term dependency on foreign high-tech semiconductor technology and to support the domestic industry in increasing production capacity, as well as effectively expanding exports to global markets.

(2) Implementation Strategy

Approved an investment budget of $280 billion for a 10 year period, with the budget allocation divided as follows:

(2.1) A budget of $200 billion for research projects, education, and bringing related products to market, distributed among three main organizations/agencies as follows:

(2.1.1) The National Science Foundation (NSF): To expand projects regarding Artificial Intelligence (AI), Quantum Computing, Climate Science, and STEM Education Personnel Development, promoting learning in the fields of Science, Technology, Engineering, and Mathematics.

(2.1.2) Department of Energy (DOE): To further promote both energy innovation and advanced computing.

(2.1.3) The Department of Commerce (DOC) and National Institute of Standards and Technology (NIST): To focus on industrial technology standards and manufacturing research.

(2.2) A budget of approximately $52.7 billion will be used specifically for the semiconductor industry sector, as follows:

(2.2.1) Direct financial assistance and subsidies to the industry: $39 billion

(2.2.2) Approximately $13.2 billion for Research and Development (R&D), as well as personnel training and related education.

(2.2.3) A 25% investment tax credit for companies building or expanding specialized facilities specifically for advanced semiconductor manufacturing. [8]

(3) Achievements

According to data from 2024, the U.S. Department of Commerce announced private sector investment plans in CHIPS projects worth over $30 billion across 23 projects. It is expected that these will create more than 115,000 jobs in manufacturing and construction.

1.2.2 People's Republic of China

1.2.2.1 Next Generation Artificial Intelligence Development Plan[9]

This is the national AI development plan announced in July 2017, which leverages the government support system with the objective of making the country a global leader in AI by 2030.

(1) Objective

The goal is to lead the world in AI system development by 2030. This objective is divided into three sub-objectives: [10] The three sub-objectives are:

Phase 1: To possess AI knowledge, capabilities, and technology equivalent to the global level by 2020.

Phase 2: To possess AI knowledge, capabilities, and technology at a global leading level for certain business sectors by 2025.

Phase 3: To possess AI knowledge, capabilities, and technology at a global leading level by 2030.

[8] https://www.britannica.com/money/CHIPS-And-Science-Act

[9] https://multimedia.scmp.com/news/china/article/2166148/china-2025-artificial-intelligence/index.html

[10] https://archivemacropolo.org/analysis/how-chinas-massive-ai-plan-actually-works/?rp=m

(2) Implementation Strategy

Due to the fact that Artificial Intelligence (AI) systems require a large amount of resources for development, and given that China is facing restrictions from the United States, the strategy for driving AI research and development in the People's Republic of China to meet its stated objectives employs a method called the “Whole-of-nation” approach.

This approach involves mobilizing resources—including investment funds, technology, and personnel—from across the entire country for the development of Foundation Models (or Large Language Models: LLMs). These models serve as the foundation for Generative AI and require extensive resources to operate.

The mobilization of these resources begins with the integration of government AI research laboratories with the country's leading companies to develop a specialized AI Ecosystem for research and development. It is expected that this ecosystem will be established in multiple regions across the country.

Additionally, the People's Republic of China has sought to establish collaborations with personnel from various countries (excluding the United States) to mobilize human resources to participate in research and development. This effort aims to support the country in achieving its established goals by 2030.

(3) Achievements

A large volume of research conducted within the country has resulted in the number of companies developing Artificial Intelligence (AI) products and services increasing from 1,400 to 5,000 within the past five years.[11]

1.2.2.2 “AI Plus” Plan[12] The country's latest Artificial Intelligence development plan, which the Chinese government announced on August 26, 2025, is a plan focused on integrating AI into six key national areas to accelerate the development of high-quality productivity through AI technology. The six areas are:

[11] https://www.ptinews.com/story/business/china-unveils-plan-to-accelerate-integration-of-ai-with-energy-sector/2895763

[12] https://english.www.gov.cn/policies/latestreleases/202508/27/content_WS68ae7976c6d0868f4e8f51a0.html

(1) Science and Technology (2) Industrial Development (3) Consumption Upgrade (4) People's Well-being (5) Governance (6) Global Cooperation

(1) Objective

To serve as a strategic implementation guideline for the country's AI development, with the goal that by 2027, AI systems will be fully integrated into all six key areas, and the deployment of Intelligent Terminals and Agent systems will exceed 70%, which will increase to 90% by 2030, and ultimately achieve the goal of becoming a country with a fully intelligent economy and society by 2035.

(2) Implementation Strategy

The State Council is responsible for formulating the policies, with the National Development and Reform Commission (NDRC) serving as the coordinator for implementation across various ministries and provinces. Its role is to organize and ensure the efficient delivery of work according to the plan.[13]

(3) Achievements

In the first half of 2025, exactly 439 large-scale projects were registered, covering over 30 diverse industries such as healthcare and medicine, agriculture, education, smart manufacturing, and financial technology (FinTech). These projects play a crucial role in effectively promoting AI innovation development.

One significant example is the Smart Agriculture Platform Project, a comprehensive platform consisting of multiple components aimed at increasing the country's agricultural productivity, including:

(1) Big Data Platform: Collects national agricultural data to be used by the system for providing supportive information and recommendations on various issues to farmers.

(2) One Map: Consolidates various national agricultural maps for service delivery and processing.

(3) Basic Model of Smart Agriculture: Involves developing fundamental agricultural models (e.g., crop growth, animal behavior, and production

[13] https://www.gov.cn/zhengce/content/202508/content_7037861.htm

management decisions). The target group for this platform covers over 15 million farmers in 31 provinces, and it has already provided more than 6 billion services.[14]

1.2.2.3 National Integrated Computing Network (NICN) This is a large-scale infrastructure project to consolidate computing resources and create a national data infrastructure, which began operating in 2022.[15]

(1) Objective

To develop an integrated national computing network that helps increase the efficiency of computing resource utilization across China, meet the computing resource demands of various sectors, and reduce the high cost of processing, particularly in the development of Artificial Intelligence technology.

(2) Implementation Strategy

The Ministry of Industry and Information Technology (MIIT) has issued an Action Plan clearly specifying that the system must be ready to support public use by 2028.[16]

(3) Achievements

It is expected that the entire infrastructure—including the network system, related hardware, and data—will be completed between 2027 and 2028.[17]

1.2.3 European Union

1.2.3.1 European Union Digital Investment Program This €8.1 billion digital investment program was launched in 2021 following the COVID-19 pandemic, with the goal of reducing reliance on foreign technology. The project is scheduled for the period 2021–2027 and focuses on six main areas: (1) Supercomputing (2) Artificial Intelligence (AI) (3) Cybersecurity (4) Advanced Digital Skills (such as AI, Cloud to Edge

[14] https://www.ndrc.gov.cn/xxgk/jd/jd/202508/t20250826_1400077.html

[15] https://subsites.chinadaily.com.cn/Qiushi/2024-12/25/c_1059054.htm

[16] https://www.stdaily.com/web/English/2025-06/24/content_359491.html

[17] https://english.www.gov.cn/news/202501/06/content_WS677bc89fc6d0868f4e8ee8ea.html

Computing[18]) , and (Data Capacities) (5) Deployment and Best Use of Digital Technologies in Economy and Society (6) Semiconductors

(1) Objective

To allocate financial support to all six digital business sectors, including funding for developing knowledge and skills for citizens who wish to work in these businesses, as well as relevant public sector officials.

(2) Implementation Strategy

To procure the necessary resources for research and development across all six business sectors, with key actions including:

(2.1) Development of the European AI Platform:

To be used as a central platform for experimenting with and testing AI systems.

(2.2) Establishment of the EU-wide Common Data Space: To promote the sharing and joint use of data in AI development.

(2.3) Procurement of hardware, software, tools, and data: Serving as a central platform for the research and development of state-of-the-art Cybersecurity Solutions.

(2.4)The collaborations with university level educational institutions and global research centers: For training and knowledge transfer in related technologies.

(3) Achievements Concrete investments have been made in various projects.

1.2.3.2 Coordinated Plan on AI[19] This plan, adopted by the European Commission in 2021, is an updated strategy following the 2018 plan. It is aimed at strengthening the European Union's competitiveness and strategic leadership in the

[18] Cloud to Edge Computing: A concept that combines cloud computing with edge computing to leverage the advantages of both. Data and instructions are sent from the cloud system to end devices or "the edge," such as IoT devices, for rapid processing near the data source. The results are then sent back to the cloud, or partially processed data is sent back to the cloud for further analysis.

[19] https://digital-strategy.ec.europa.eu/en/policies/plan-ai

development and adoption of AI, specifically focusing on overcoming the challenges posed by COVID-19 and supporting the EU's green and digital transitions.

(1) Objective

To jointly increase Europe's competitiveness in Artificial Intelligence technology so that it can compete at the global level.

(2) Implementation Strategy

To support EU member states in developing their own national strategies to reinforce the overall competitiveness of the European Union, while also establishing funds to support various projects under the plan.

(3) Achievements

Since 2021, there has been a proposal to mobilize €1 billion annually from the Horizon Europe R&D program and the Digital Europe Programme. As of 2023, the total investment generated from this mobilization amounted to €4.4 billion.

1.2.3.3 EU AI Act[20] This is the world's first Artificial Intelligence law specifically focused on setting AI governance standards. The law was approved by The Council of the EU on May 21, 2024. Overall, the law is expected to be fully enforced in 2026.

(1) Objective

To serve as the world's first legal framework concerning Artificial Intelligence by defining the risk levels of AI systems and positioning Europe as a leader in systematically emphasizing AI systems based on their risk level.

(2) Implementation Strategy

The European AI Office and the member state authorities shall be responsible for enforcing, regulating, and carrying out the provisions of this Act.

(3) Achievements

It is considered the world's first comprehensive legal framework on Artificial Intelligence, focused on promoting the development of

[20] https://artificialintelligenceact.eu/the-act/

Trustworthy AI[21] However, despite the existence of both the Coordinated Plan on Artificial Intelligence and the EU AI Act, 2024 investment results reflect a significant difference: Europe's total AI investment was US$31 billion, while the United States' investment reached US$109.1 billion. This stark difference raises questions about the impact of these laws and projects on AI investment in Europe.

1.2.4 Japan

1.2.4.1 AI Promotion Act[22] This Act was established to set out fundamental principles for policies that promote the research, development, and use of Artificial Intelligence (AI) in Japan. Its objectives are to foster economic and social growth and to make Japan "The Most AI-Friendly Country in the World."

(1) Objective

To create an environment conducive to investment and experimentation related to the development and use of AI (Specifically promoting the use of AI, a point heavily emphasized by this law, making it the first law in the world to do so). The approach is similar to that of the United States: minimizing regulations and requirements that could potentially impede AI investment and development in the country.

(2) Implementation Strategy

This Act does not include legal penalties for organizations that fail to comply with its requirements or guidelines. However, according to domestic news reports, if an organization commits a significant violation of rights, the government may resort to issuing a "Public Reprimand". Given Japanese culture, being reprimanded in such a manner may serve as pressure for organizations to adhere to the established guidelines.

(3) Achievements

There are no clear results yet from the enactment of this Act, as it only came into effect in May 2025.

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[21] https://digital-strategy.ec.europa.eu/en/policies/regulatory-framework-ai

[22] https://fpf.org/blog/understanding-japans-ai-promotion-act-an-innovation-first-blueprint-for-ai-regulation/

1.2.4.2 Moonshot Research and Development Program [23] his program was established to attract researchers from around the world to participate in research and development that presents a challenge for those researchers who wish to be involved in the project. Its aim is to solve complex and difficult social problems.

(1) Objective

This program aims to attract researchers from around the world to jointly solve challenging problems defined across 10 main goals:
(1) Overcoming the limitations of body, brain, space and time (2) Proactive Ultra-early disease prediction and intervention (3) Synergistic Coevolution of AI and robots (4) The Cool & Clean Earth Goal (5) Sustainable food supply and responsible consumption (6) Realizing fault-tolerant universal quantum computer (7) To Age 100 without any Health Concerns Goal (8) Controlling and modifying the weather (9) Increasing peace of mind and vitality (10) Diverse applications of fusion energy.[24]

(2) Implementation Strategy

To promote research using "difficulty and challenge" as a guideline, while also allocating supportive funding. Highly challenging project goals are set to test the capabilities of researchers, such as creating collaborative Artificial Intelligence Robots (AI Robots) by 2050[25]

(3) Achievements

Research conducted across various fields has resulted in numerous practical applications, such as: (1) (1) Robot systems for responding to natural disasters[26] (2) Robot systems for construction work on the Moon [27] (3) Detection systems in a simulated environment of river channel blockage[28]

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[23] https://www8.cao.go.jp/cstp/english/moonshot/top.html

[24] Energy generated from nuclear fusion reactions. It is a clean, safe, abundant energy source that does not produce greenhouse gases or radioactive waste.

[25] https://moonshot-cafe-project.org/en/

[26] https://moonshot-cafe-project.org/en/2025/07/10/250310publicdemo-e/

[27] https://moonshot-cafe-project.org/en/2023/03/14/ experimental-tests-on-robotic-mobility-and-construction-works/

[28] https://moonshot-cafe-project.org/en/2022/10/16/ we-conducted-a-demonstration-of-the-sensing-equipment-in-a-simulated-environment-of-river-channel-blockagefutase-dam/

1.2.5 Organisation for Economic Co-operation and Development (OECD)

The OECD, as the primary initiator in defining the AI Literacy Framework (AILit Framework), is collaborating with the European Commission (EC) and receiving support from Code.org to develop and define key terms used within the AILit Framework, as well as create reference guidelines for the responsible use of AI technology. Furthermore, the OECD is linking this framework to student assessment through the PISA 2029 program[29] to promote the widespread development and dissemination of this framework through various international activities.

The AILit Framework aims to establish common standards for AI Literacy at the primary and secondary education levels in Europe. This literacy framework is structured based on the concept of competence, composed of Knowledge, Skills, and Attitudes. It is divided into four domains: (1) Engaging with AI (2) Creating with AI (3) Managing with AI (4) Designing AI

In addition, the OECD Recommendation on AI established five value-based principles for trustworthy AI, which are emphasized throughout the AI system lifecycle: (1) Inclusive Growth, Sustainable Development and Well-being: For AI to enhance human capabilities and reduce inequality. (2) Rule of Law, Human Rights, Democratic Values, Fairness, and Privacy: AI systems must respect these principles and have safeguards against risks. (3) Transparency and Explainability: For humans to understand the origin and decision-making process of the AI. (4) Robustness, Security, and Safety: Systems must be stable, undergo risk assessments, and be safely switched off or disengaged when harm occurs. (5)Accountability (Reviewable): Stakeholders must be responsible for the functioning of the AI, and data and processes must be traceable. Thus, it is evident that the OECD plays a crucial role as a pioneer and a trendsetter in the field of Artificial Intelligence. Not only is it the main initiator in developing the AILit Framework for compulsory education and linking this standard to international

[29] The Programme for International Student Assessment (PISA) 2029 cycle involves assessing the core competencies in reading, mathematics, and science of 15-year-old students. The special feature of PISA 2029 is the assessment of the Innovative Domain, which focuses on Media and Artificial Intelligence Literacy.

assessments like PISA 2029, but it also established the five “value-based principles” (OECD Recommendation on AI) to create guidelines for trustworthy AI. These principles cover various dimensions, ranging from inclusive growth, human rights, transparency, safety, and auditable accountability.[30]

1.3 Overall Analysis of AI Skills Development Promotion and Policies

Overall, the analysis of promotion and policies related to the development of Artificial Intelligence skills across the four major entities (China, the European Union, Japan, and the OECD) reveals the following key findings:

1.3.1 Objectives of Promotion and Support

Most projects emphasize either national AI Development Plans or Legislation that supports the country's AI development in various forms. The most notable and clearly effective approach is the formulation of action plans with a definite direction. These plans are characterized by being concise, clearly defining the responsible parties and the timeline for implementation, and addressing the following key issues:

1.3.1.1 Reduction of regulations that may impede the country's AI development to enhance operational efficiency. Countries where this approach is clearly evident are the United States[31] and the People's Republic of China. [32]

1.3.1.2 Every country prioritizes the collection of high-quality data for use in national AI system research and development.

1.3.2 Focus on developing central infrastructure systems

Every country has plans and projects related to the development of central infrastructure, including national databases, for use in research and development. This is especially aimed at reducing the high research costs associated with Large

[30] Details regarding the OECD are stipulated in Activity 4.1.1.4, which involves studying and assessing the alignment of Thailand’s laws and regulations with the OECD’s Recommendation of the Council on Artificial Intelligence and the AILit Framework. Further results are detailed in Activity 4.1.2: Development of the Draft ASEAN AI Literacy Framework.

[31] https://www.whitehouse.gov/wp-content/uploads/2025/07/Americas-AI-Action-Plan.pdf

[32] https://www.fmprc.gov.cn/mfa_eng/xw/zyxw/202507/t20250729_11679232.html

Language Models (LLMs), which are generally too expensive for most organizations to procure independently.

1.3.3 Prioritizing the mobilization of knowledge for national AI research.

Many countries have projects that focus on mobilizing knowledge from various experts to develop AI technology in specified fields, such as the AI Plus Program of the People's Republic of China and the Moonshot Research and Development Program of Japan. This has resulted in significant awareness and accelerated development across various sectors.

Development of Artificial Intelligence Literacy and Skills to Support Growth in the ASEAN Region

1. Development of AI Literacy and Skills in ASEAN

To illustrate the direction of developing AI literacy and skills in ASEAN based on various ongoing regional projects, this section of the report provides a brief overview of relevant projects in the region, with a focus on those that establish Artificial Intelligence Literacy and Skills frameworks in each country.

1.1 Negara Brunei Darussalam

Negara Brunei Darussalam places great emphasis on the development of Artificial Intelligence (AI) literacy skills and the formulation of AI policies to prepare its citizens, government agencies, and businesses for the digital era driven by advanced technology.The Brunei government focuses on building a society with a deep understanding of AI in terms of its use, development, and governance, ensuring the technology is adopted ethically, transparently, and responsibly. Furthermore, comprehensive AI policies and regulatory guidelines have been issued to support the creation of a sustainable innovation ecosystem and strengthen the country's regional and global competitiveness.

Status of Artificial Intelligence Operations in Brunei Darussalam: Governance, Guiding Principles, and Skills Development

AI Governance In the area of Artificial Intelligence Governance (AI Governance), Brunei Darussalam published the document, “Guide on AI Governance and Ethics”, Version 1.0, in April 2025 (B.E. 2568). This guide adopts a Principles based Approach to governance, referencing standards from the Association of Southeast Asian Nations (ASEAN) and the United Nations Educational, Scientific and Cultural Organization (UNESCO). Currently, the relevant agencies are accelerating work on drafting and revising this document to Version 2.0, with the aim of expanding the content scope to cover the rapidly evolving Generative AI technology.

The guiding principles comprise 7 key principles with essential content covering various dimensions:

Transparency and Explainability: Ensuring the AI system's processes and outcomes can be understood and explained.

Data Protection and Data Governance: Establishing frameworks for safeguarding personal data and governing data usage.

Safety and Security: Guaranteeing the reliability, robustness, and security of the AI system.

Fairness and Equity: Promoting impartiality and equal treatment in the application of AI.

Skills Development. In the dimension of Skills Development, the government has driven initiatives through the “coding.bn” project, which focuses on training computer programming skills aligned with labor market demands for youth and unemployed groups. This runs concurrently with the “Digital Upskilling” “Training Programme", which emphasizes transferring technical knowledge leading to the international professional certification, such as the Microsoft Azure AI Fundamentals course. Furthermore, the Brunei ICT Industry Competency Framework has been applied to systematically define the Career Path in the fields of Data and Artificial Intelligence. Brunei Darussalam also plays a leading regional role as the main driver in developing

the ASEAN AI Scaling Framework and plans to formulate a National AI Strategy to lay the foundation for long-term development.

One of the significant movements occurred on April 11, 2025 (B.E. 2568), when the Brunei's Authority for Info-communications Technology Industry (AITI) published the Brunei AI Guide on AI Governance and Ethics for Negara Brunei Darussalam , setting the direction for ethical and responsible AI development. This guide presents 7 key principles: Transparency and Explainability, Safety and Security, Fairness and Equity, Data Protection and Data Governance, Robustness and Reliability, Human-Centricity, Accountability and Integrity. These principles form a crucial framework for the appropriate development and deployment of AI in the country (US-ASEAN Business Council, 2025).

In addition, Negara Brunei Darussalam is implementing two significant projects related to the development of the AI Literacy Framework:

Project 1: "AI Ready ASEAN"

The "AI Ready ASEAN" Project was officially launched in Negara Brunei Darussalam on June 5, 2025.This is a significant collaboration between the ASEAN Foundation, supported by Google.org, aimed at preparing ASEAN citizens to cope with an AI-driven future, reducing the digital divide, and truly creating a society ready for AI technology.The main objective is to enhance essential Artificial Intelligence (AI) skills for 5.5 million people across the 10 ASEAN member countries, preparing them for the digital era. Brunei Darussalam's specific goal is to train 20,000 citizens in cooperation with local partners: Universiti Teknologi Brunei (UTB) and the Big BWN Project.The primary target groups are youth, educators, and parents, enabling them to use and understand AI responsibly. The learning approach emphasizes hands-on practice, such as "Hour of Code" workshops, to build awareness and understanding of AI (Universiti Teknologi Brunei, 2025).

This project holds significant economic importance, launched in response to the high investment in AI in Southeast Asia, reaching US$30 billion, which is expected to boost ASEAN's GDP by 10-18% by 2030. Beyond technical skills, this project places a strong emphasis on the ethical, responsible, and inclusive development and use of AI.

Project 2: AI Guidance for Schools Toolkit [33] This project is led by the Ministry of Education with the goal of utilizing Artificial Intelligence technology to assist teachers in achieving effective teaching and focusing on the responsible use of Artificial Intelligence.

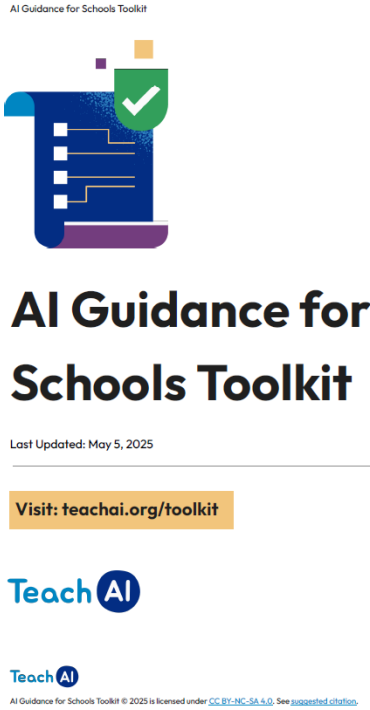

Figure 4: AI Guidance for Schools Toolkit, Brunei Darussalam

[33] https://www.everythingbrunei.com/d/pPfQJdJi

1.1.1 3 Key Guidelines for Education Systems to Effectively Integrate AI into Teaching and Learning

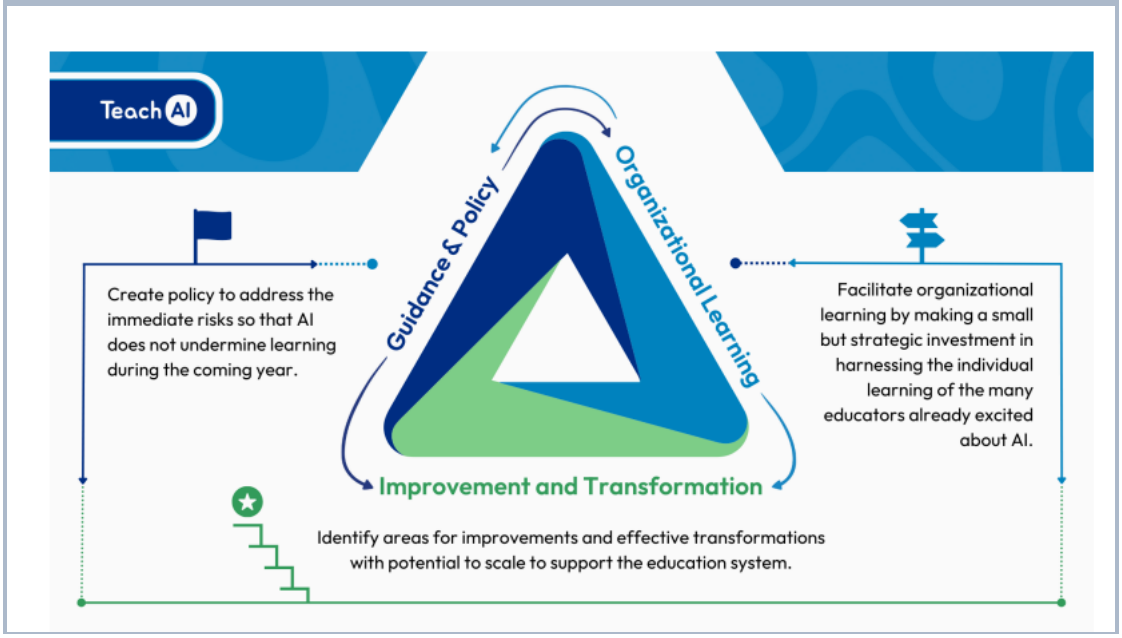

Figure 5: 3 Key Approaches for Effective AI Integration in Teaching/Learning [34]

1.1.1.1 Managing Immediate Risks (Policies and Guidelines)

This section focuses on creating policies and practical guidelines to manage the urgent risks arising from the use of AI. The goal is to establish policies to address immediate risks and ensure that AI does not undermine learning. Guidance on AI should not be delayed, as teachers and students already have access to these tools, and many technologies have embedded AI.Therefore, the necessary actions include: (1) Ensure that AI usage aligns with existing safety and privacy policies. (2) Provide guidance to students and staff on the opportunities and risks of AI. (3) Clearly define appropriate and inappropriate uses, especially regarding academic integrity and grading.

1.1.1.2 Organizational Learning

This section focuses on promoting learning and creating shared knowledge within the organization regarding the use of AI. The goal is to make strategic investments to gather learnings from educational personnel who are already

[34] AI Guidance for Schools Toolkit

interested in and experimenting with AI.Therefore, the necessary actions include: (1) Prioritize professional development for all staff. (2) Collect individual staff experiences with AI use to record successes, identify gaps, and build the overall organizational knowledge and capacity. (3) Expand the scope of consideration to cover other operational aspects, such as evaluating existing AI tools and creating criteria for selecting future tools.

The resulting benefits will lead to more equitable AI integration in the classroom and prevent potential disparities arising from scattered innovation deployment.

1.1.1.3 Improvement & Transformation

This section is about identifying areas that can be effectively improved and changed, and scaling up those operations to support the overall education system.The goal is to find points that can be effectively improved and changed, and that have the potential for scaling up to support the education system.However, this must be approached with caution because positive outcomes from AI use do not always materialize. A balance must be struck between the potential efficiency benefits and the time and resources required for staff development, implementation, and continuous evaluation.

1.2 Kingdom of Cambodia

Digital, Media, and Information Literacy (DMIL) Competency Framework Project[35] This project concerns the development of an overarching framework for digital skills and literacy. Its objective is to prepare the nation's populace to become “Digital Citizens”, thereby serving as a fundamental force for the country's transition toward Artificial Intelligence technology.

[35] https://www.unesco.org/en/articles/cambodia-launches-its-first-competency-framework-digital-media-and-information-literacy-empower

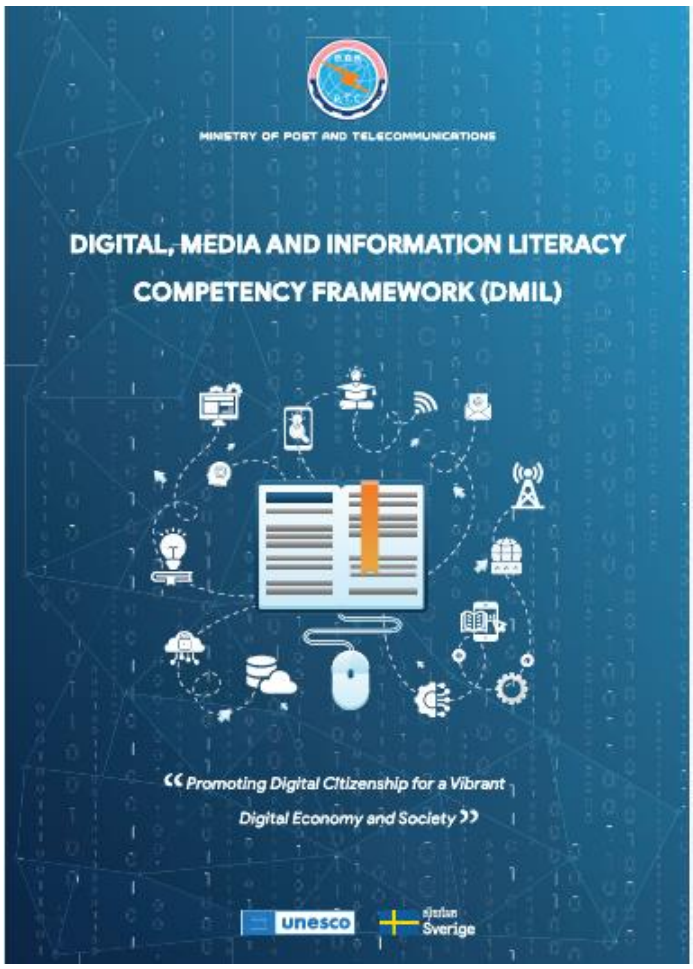

Figure 6: Digital, Media, and Information Literacy (DMIL) Competency Framework, Kingdom of Cambodia

1.2.1 Framework Used in the Study

The Kingdom of Cambodia studied and compared Artificial Intelligence Literacy and Skills frameworks from multiple sources, both regional and global, to be used as a benchmark for developing its Digital, Media, and Information Literacy (DMIL) Competency Framework. This included studying AI Literacy and Skills frameworks from three organizations, namely:

1.2.1.1 The EU Digital Citizenship Framework (DigComp 2.2) emphasizes the digital competencies essential for lifelong learning, covering the knowledge, skills, and attitudes required to use digital tools and technologies effectively. This framework divides competencies into five main areas: (1) Information and data

literacy (2) Communication and collaboration (3) Digital content creation (4) Security (5) Problem-solving

1.2.1.2 UNESCO's Global Framework of Reference on Digital Literacy Skills: Aims to address the digital literacy needs in both developing and developed countries by proposing the division of competencies into 7 broad areas: (1) Devices and software operations (2) Information and data literacy 3) Communication and collaboration (4) Digital content creation (5) Security (6) Problem-solving (7) Career related competencies

1.2.1.3 Singapore's Digital Media and Information Literacy Framework: Focuses on 5 desired outcomes: (1) Awareness of the benefits, risks, and potential of technology (2) Understanding the workings of online and digital platforms (3) Understanding the responsible use of data (4) Knowledge of self-protection in the online world (5) Proficiency in using digital technology safely and responsibly.

1.2.2 Principles

This framework is founded on 7 core principles: (1) Rule of Law (2) Inclusivity (3) Digital Government and Public Participation (4) Digital Cooperation (5) Lifelong Learning (6) Intellectual Property and Copyright (7) Freedom of Expression and Freedom of Information

This framework was developed based on these 8 core essential communication values: (1) Peace and Reconciliation (2) Gender Equality and Equity (3) Freedom and Responsibility (4) Pluralism and Diversity (5) Respect and Understanding (6) Empathy (7) Integrity (8) Discernment

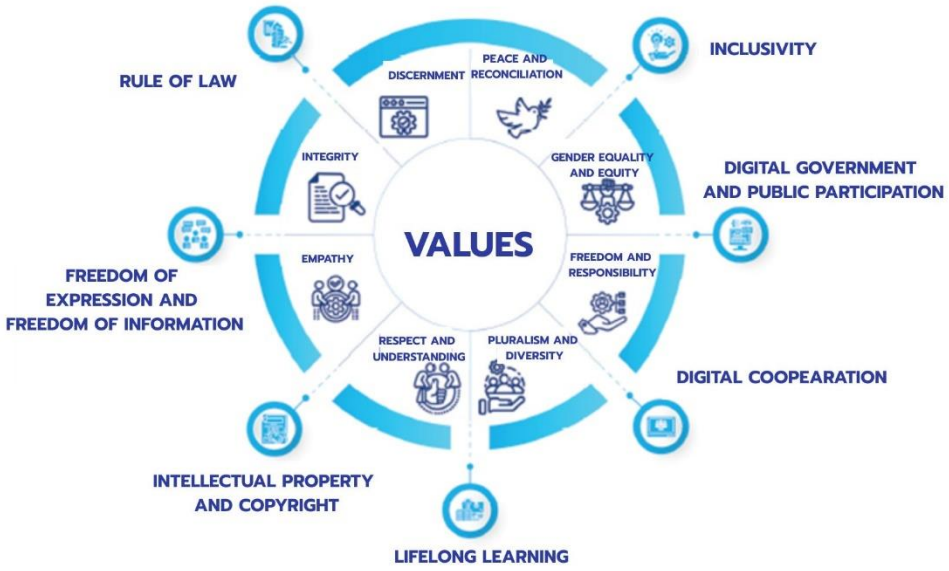

Figure 7: Principles and Communication Values of the Digital, Media, and Information Literacy (DMIL) Competency Framework

1.2.3 Digital, Media, and Information Literacy (DMIL) Competency Framework

The framework consists of 8 core Competency Domains that are essential for Cambodian digital citizens, comprising a total of 114 competencies. These competencies are categorized into 3 proficiency levels: Basic, Intermediate, and Advanced.

Figure 8: Digital, Media, and Information Literacy (DMIL) Competency Framework

The Eight DMIL Competency Domains

1.2.3.1 Information and Data Literacy: The ability to effectively find, evaluate, use, and communicate accurate information in the digital world. This encompasses skills in critical thinking, research, source evaluation, and responsible information sharing.

1.2.3.2 Digital Devices and Software Operations: The ability to effectively use various digital tools and software, including knowledge of the latest technological advancements such as Artificial Intelligence (AI) and Blockchain.

1.2.3.3 Media Literacy: The ability to critically understand and analyze media messages, which is essential for becoming an informed citizen and participating in a democratic society.

1.2.3.4 Communication and Collaboration: The ability to communicate and initiate online collaboration effectively and ethically, in accordance with the requirements and terms of digital systems.

1.2.3.5 Digital Content Creation: The ability to create and share digital content ethically and responsibly, such as respecting intellectual property rights and understanding the use of other creative licenses.

1.2.3.6 Security and Safety: The competence that enables individuals to actively participate in creating a safe and responsible digital environment, allowing them to confidently navigate the online world and protect themselves from harm.

1.2.3.7 Problem Solving: The capability to effectively and creatively identify, analyze, and manage complex challenges. This emphasizes the importance of understanding online risks, strategically utilizing technology, and employing digital skills to create an equitable digital world.

1.2.3.8 Lifelong Learning: The ability to continuously seek knowledge, skills, and experiences throughout an individual's life to develop professional capabilities and skills. This enables rapid adaptation to changes in circumstances and technology.

The DMIL Competency Framework of Cambodia can be applied in 3 main areas to serve as a foundation for developing digital citizens and driving the country's digital economy and society.

Table 3: Cambodia's DMIL Competency Framework

Cambodia's DMIL Competency Framework	Description
Integration into Education (Formal and Non-Formal Systems)	**Formal Education:** Used to review and develop the existing formal education curriculum, develop courses on media and information literacy for students, and enhance the capacity of teachers for integrated, cross-disciplinary instruction. **Non-Formal Education:** Used to review or develop training curricula for various institutions, such as civil servant development programs, courses offered by civil society organizations, and private companies aiming to enhance the capacity of target groups or employees.

Cambodia's DMIL Competency Framework	Description
	Community Engagement: Used to create a shared understanding of the necessary competencies, foster a sense of community spirit and common goals, and encourage active participation in promoting DMIL within their own communities.
Evaluation of Existing Projects and Curricula	**Program Evaluation:** Used to assess and verify various initiatives related to the development of digital competencies, in order to identify areas for improvement and expansion of existing projects. **Development of Measurement Tools:** Used as a basis for developing assessment tools to measure and monitor the competency levels of individuals, educators, government officials, or other target groups. **Creation of Standard Models:** Helps create standard models for measuring the progress of DMIL competency-building programs over a defined period.
Development of Policies and Strategies	(1) Produce Information, Education, and Communication (IEC) materials to raise awareness that aligns with the DMIL competencies. (2) Develop measurable key performance indicators (KPIs) based on the desired competencies. (3) Regularly update and strengthen basic literacy and conduct functional mapping at the national and local levels. (4) Establish a research agenda

Cambodia's DMIL Competency Framework	Description
	for DMIL and identify key issues that require resolution.

1.2.4 Cambodia Digital Skill Development Roadmap 2024-2035[36]

This roadmap serves as the nation's long-term master plan for human resource development, with the objective of transforming the workforce into a highly skilled and productive digital talent pool by 2035 to support the transition toward a robust digital economy. It provides highly structured guidance on digital skill–related learning pathways and offers a comprehensive foundation for curriculum development, ensuring systematic, future-oriented capability building across sectors.

1.2.5 ICT-AI Competency Framework for Teachers[37]

The national framework will clearly articulate the skills and knowledge that educators in Cambodia must possess to effectively integrate digital technologies and artificial intelligence into teaching and learning, while preserving the essential human dimension of education.

1.2.6 Cambodia AI Readiness Assessment (UNESCO RAM, July 2025)[38]

Cambodia is the 4th ASEAN nation to complete this methodology.

[36] https://asset.cambodia.gov.kh/mptc/2024/03/Cambodia-Digital-Skill-Development-Roadmap-2024-2035.pdf

[37] https://www.unesco.org/en/articles/press-release-moeys-and-unesco-advocate-teachers-be-catalysts-ai-transformation-world-teachers-day

[38] https://unesdoc.unesco.org/ark:/48223/pf0000394553_eng

1.2.7 National AI Strategy 2026–2030 (Draft)

Strategic Priority 1 (Human Capital) aims to build an inclusive, future-ready workforce by integrating AI competencies across all levels of education and training, upskilling and reskilling workers at scale, and nurturing a strong pipeline of AI researchers, practitioners, and policy leaders to drive responsible innovation and sustainable growth.

1.2.8 National AI Research Center on Education (RAIE)[39]

Established by the Ministry of Education, Youth and Sport in collaboration with the Ministry of Post and Telecommunications and hosted at the Cambodia Academy of Digital Technology (CADT), RAIE serves as Cambodia's national hub for artificial intelligence in education and operates as the country's first Center of Excellence dedicated to advancing AI-driven learning outcomes, personalized pedagogy, and teacher professional development.

1.2.9 Pentagonal Strategy Phase 1[40]

The "people" is the key priority in Cambodia's Pentagonal Strategy, which refers to Cambodian citizens, focusing on human capital development, job creation, and welfare, as a core priority alongside infrastructure (roads, water, electricity, tech) to achieve national goals like becoming a high-income country by 2050.

1.2.10 Digital Economy and Society Policy Framework 2021–2035[41]

This policy framework sets out five principal goals, one of which is the development of digital citizens, with a focus on fostering digital leadership, cultivating and mobilizing digital talent, and empowering citizens to become a driving force behind the nation's digital transformation.

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[39] https://cadt.edu.kh/innovation/ai-for-education-research-center/

[40] http://cdc-crdb.gov.kh/en/strategy/documents/Pentagonal-Strategy-Phase-I__English__24.08.2023.pdf

[41] https://asset.cambodia.gov.kh/mptc/media/EN-Policy-Framework-of-Digital-Economy-and-Society.pdf

1.2.11 Digital Government Policy 2022–2035[42]

Strategic Objective 3: Building Digital Citizen focuses on Digital Leadership, Digital Talent Pool, and Digital Citizens in both the Public and Private Sectors, as well as at the Local Community Level.

1.3 Republic of Union of Myanmar

Although the Republic of the Union of Myanmar has not yet established a clear or formal AI Literacy Framework like some ASEAN countries, the government and relevant agencies are increasingly aware of the importance of developing Artificial Intelligence (AI) knowledge and skills (AI literacy). This is particularly true in the education sector, where efforts are being made to prepare citizens, youth, and educational personnel to keep pace with the changes in digital technology.

In recent years, the education system in the Republic of the Union of Myanmar has been undergoing reforms and has started to integrate AI-driven learning tools in multiple dimensions. This includes reducing language barriers, creating personalized learning pathways, expanding access to quality education, and increasing learner engagement through interactive technology. Concurrently, government agencies have initiated training sessions to build AI knowledge and understanding for youth and personnel in various universities, marking a crucial starting point for developing AI literacy skills in the country.

However, the AI drive in the Republic of the Union of Myanmar still faces several challenges, such as incomplete internet access coverage, the digital literacy gap, and data security issues. Consequently, the country remains in a phase of learning and laying the groundwork for future development of an AI literacy framework. Nevertheless, current trends and movements indicate that the Republic of the Union of Myanmar is increasingly prioritizing the development of these skills and has the potential to move towards establishing clear AI policies and frameworks in the long term.

[42] https://asset.cambodia.gov.kh/mptc/media/Cambodia_Digital_Government_Policy_2022_2035_English.pdf

1.3.1 Status of Artificial Intelligence Policy and Strategy Operations in the Republic of the Union of Myanmar

1.3.1.1 Policy Dimension

Currently, the Republic of the Union of Myanmar is in the process of drafting the “National Artificial Intelligence Development Policy”, which is scheduled for official announcement in 2026 (B.E. 2569). The main objective of this policy is to encourage citizen participation in AI-related innovation activities, alongside establishing a standardized framework of AI Governance Rules and Regulations.

1.3.1.2 Strategy Dimension

A “(Draft) Myanmar National Artificial Intelligence Strategy” for 2025–2030 (B.E. 2568–2573) has been prepared. This strategy defines the roadmap for implementation through 6 Strategic Pillars: (1) AI Governance (2) AI Infrastructure Development (3) AI Talents Development (4) AI Ecosystem Development (5) AI Research Development (6) AI Industry Development.

1.3.2 The Role of AI in the Educational Context of the Republic of the Union of Myanmar

The education system in the Republic of the Union of Myanmar is undergoing a significant reform, and the integration[43] of AI-powered learning tools is playing a crucial role in the following areas:

1.3.2.1 Reducing Language Barriers: Since the Union of Myanmar is a country with diverse languages and dialects, AI-driven platforms can provide multilingual support, enabling learners to access content in their mother tongue or efficiently practice new languages.

1.3.2.2 Creating Personalized Learning Pathways: AI algorithms analyze learner data to customize lessons, exercises, and feedback, ensuring that learners study content appropriate for their competency level.

1.3.2.3 Expanding Access to Quality Education: Remote and rural areas in the Republic of the Union of Myanmar often face a shortage of qualified

[43] https://talkpal.ai/unlocking-the-future-ai-learning-myanmar-revolutionizes-education/

teachers. AI learning tools help bridge this gap by delivering high-quality, consistent educational content via digital devices.

1.3.2.4 Increasing Engagement: Interactive AI applications can adapt based on the learner's responses, making education more engaging and motivating through gamification and conversational interfaces.

1.3.2.5 Training on AI Skills and Understanding: Training on skills and understanding of Artificial Intelligence is being conducted by the Department of Youth Affairs under the Ministry of Sports and Youth Affairs, providing training and knowledge dissemination at various universities. [44]

1.3.3 Challenges and Solutions for AI Learning Implementation in the Republic of the Union of Myanmar[45]

1.3.3.1 Limited Internet Connectivity: Many regions in the Republic of the Union of Myanmar experience unstable or low-speed internet access, which limits the usability of online AI platforms.

1.3.3.2 Digital Literacy Gap: Some learners and educators may lack the technical skills required to fully utilize AI learning tools effectively.

1.3.3.3 Cultural and Linguistic Diversity: AI systems must be carefully designed to respect and integrate the cultural context and linguistic diversity of the Republic of the Union of Myanmar.

1.3.3.4 Data Privacy Concerns: Ensuring the security and privacy of user data is paramount for building trust and complying with emerging regulations.

1.3.4 The Future of AI Learning in the Republic of the Union of Myanmar[46]

AI learning in the Union of Myanmar is poised for rapid growth as digital infrastructure improves and awareness of AI's educational benefits expands. Emerging trends include:

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[44] https://www.thestar.com.my/aseanplus/aseanplus-news/2025/07/16/myanmar-youth-embrace-ai-to-shape-future#goog_rewarded

[45] https://talkpal.ai/unlocking-the-future-ai-learning-myanmar-revolutionizes-education/

[46] https://talkpal.ai/unlocking-the-future-ai-learning-myanmar-revolutionizes-education/

1.3.4.1 Integration into Formal Education: Schools and universities are expected to increasingly adopt AI tools into their curricula to complement traditional teaching methods.

1.3.4.2 AI-Driven Vocational Training: Skill development programs personalized by AI will cater to the workforce demands of the Republic of the Union of Myanmar's growing economy.

1.3.4.3 The Enhanced Multilingual Learning: AI substantially will facilitate more advanced multilingual education, supporting the Union of Myanmar's diverse population in acquiring new languages and skills.

1.3.4.4 Strategic Collaboration with Government Initiatives and AI Companies: Collaboration can expand the reach and impact of AI learning platforms nationwide.

1.4 Republic of the Philippines

The Republic of the Philippines places great importance on the development of an AI Literacy Framework and the promotion of Artificial Intelligence (AI) literacy across all sectors of society. This is to prepare for the transition to a digital economy and drive sustainable economic growth. The Philippine government recognizes that AI is not only a technology of the future but also a crucial tool that can increase productivity, create job opportunities, and enhance the efficiency of public services.

Furthermore, the Republic of the Philippines has prepared an AI Policy Note to explore the potential of AI in supporting socio-economic development. This document identifies AI projects and collaborations from both the public and private sectors, while also proposing policy directions and priority actions that should be undertaken to address challenges and obstacles in maximizing the benefits of AI integration.

At the same time, the Republic of the Philippines also emphasizes Governance and AI ethics frameworks to balance the utilization of technology with the protection of individual rights. This forms a fundamental basis for creating an AI literacy

framework that comprehensively covers the dimensions of education, the economy, and public services, ensuring the country can use AI responsibly, transparently, and sustainably (Department of Economy, Planning, and Development, 2025).

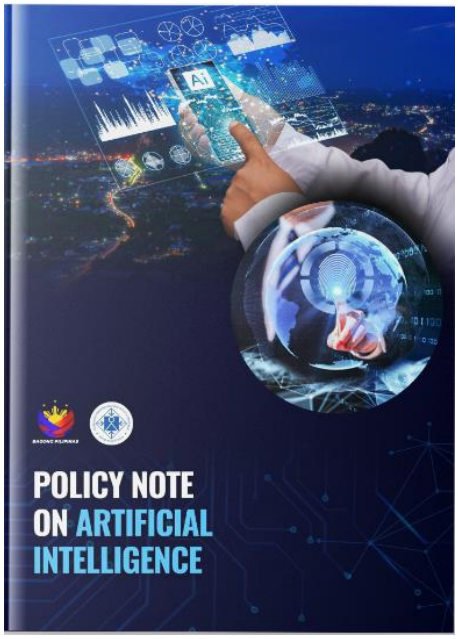

Figure 9: AI Policy Note, Republic of the Philippines

In the 2023 State of the Nation Address, President Marcos Jr. and the Secretary indicated that the Department of Information and Communications Technology (DICT)[47] has emphasized the importance of digital transformation and technological literacy. The Strengthening the Philippine Workforce through Adaptive and Responsive Digital Knowledge (SPARK) program is a DICT initiative that was renamed from the digitaljobsPH program in 2024.

Operating under Republic Act No. 11927, the SPARK program serves as the Philippine government's main mechanism for promoting advanced digital skills to enhance competitiveness, reduce the digital divide, especially in Geographically Isolated and Disadvantaged Areas (GIDAs), and address unemployment, while

[47] The Department of Information and Communications Technology (DICT) does not have a direct Thai equivalent name. However, it can be compared to the former Ministry of Information and Communications Technology. The DICT is a government agency responsible for planning, developing, and promoting Information and Communications Technology (ICT) in the country.

upgrading community capacity for growth in the digital economy. It aims to bridge the digital skills gap through upskilling and reskilling the workforce.

The Inter-Agency Council (IAC) is responsible for implementing policies such as training, establishing shared service facilities, and promoting digital access for vulnerable groups. This is achieved through the use of online courses conducted in partnership with the private sector, such as Google and Coursera, to develop curricula covering diverse areas like Cybersecurity, Data Analytics, UX Design, Project Management, Digital Marketing, Artificial Intelligence, Data Science, and Virtual Assistance (Philippine Information Agency, 2025).

Table 4: Benefits of the SPARK Program to Stakeholders

Stakeholder	Benefits of the SPARK Program
Women	(1) Reduces Gender Inequality in STEM: Increases opportunities for women to enter Information and Communication Technology (ICT) careers, a field where women are still underrepresented. (2) Provides In-Demand Skills: Offers training in high-demand skills like graphic design, enabling women to pursue careers and earn independent income.
Persons with Disabilities (PWDs)	Promotes Independence and Equal Opportunity: The program offers specialized courses, such as "Computer-Eyes," which teaches essential digital skills for the visually impaired using assistive tools like Non-Visual Desktop Access (NVDA), granting access to digital opportunities.
Overseas Filipino Workers (OFWs) Returning to the Country	Provides Readjustment Support: Offers support to help returning workers integrate more easily into the local labor market and provides necessary skills for the current digital job market.

Stakeholder	Benefits of the SPARK Program
Micro, Small, and Medium Enterprises (MSMEs)	Enhances Business Skills: Entrepreneurs receive training in areas crucial for the modern business landscape, such as e-commerce, online payment systems, and digital marketing—key tools for expanding business in the digital market.
Individuals Likely to be Employed in the ICT Industry	Industry-Aligned Training: Provides training directly aligned with industry needs, preparing personnel for job positions in the IT-BPM (Information Technology Business Process Management) sector.
Students	Skill Development in Education: Offers training in various educational institutions, such as teaching on Minecraft Education and Mobile Robotics, helping students, especially in STEM fields, learn new skills in coding and creativity.
General Public	Elevates Digital Knowledge and Skills: Enhances digital literacy through partnerships with leading companies like Google and Coursera. The program offers free online courses in diverse fields such as Cybersecurity, Data Analytics, UX Design, and Artificial Intelligence (AI), increasing national digital capability.

Source: Philippine Information Agency (2025)

1.5 Lao People's Democratic Republic

The Lao People's Democratic Republic (Lao PDR) places the great importance on the development of an AI Literacy Framework and the enhancement of Artificial Intelligence (AI) literacy to drive digital transformation and sustainable socio-economic development. The Ministry of Technology and Communications is the key agency pushing the integration of AI into public sector operations and private industries

in various fields, including labor, education, and media, aiming to increase work efficiency and elevate the quality of life for citizens (ASEAN News Network, 2025).

The current status of AI technology development in Lao PDR remains in the initial stage. According to the Government AI Readiness Index 2024 by Oxford Insights, Lao PDR is ranked 137th out of 188 countries worldwide. In the dimension of education, AI knowledge is still limited to being a partial subject within the computer science curriculum at only a few higher education institutions.

In terms of national strategy formulation, the Lao PDR government began drafting the "Lao National AI Strategy" in 2023, covering a timeframe up to 2035. The document is currently in the final stage of content refinement. The primary objectives of this strategy are to enhance the country's potential and readiness to apply AI technology, alongside establishing measures to mitigate and manage associated risks. It also focuses on seeking new economic opportunities and revenue sources from the AI industry, preserving the national cultural identity (Preserve Lao Identity), and elevating Lao PDR's role in participating in AI governance mechanisms at both the regional and global levels.

Regarding the dimension of international cooperation, Lao PDR has an open policy to build cooperation with the ASEAN community and key strategic partners, including the People's Republic of China, Japan, and the Republic of Korea. The focus is on cooperation in technology research and development, Capacity Building of personnel, and promoting AI application in key national sectors, namely agriculture, public health, transport, and education.

One significant movement is the AI Workforce, Governance, and Ethics Workshop, which is part of the implementation of the UNESCO AI Ethics Readiness Assessment Methodology (RAM). This aims to evaluate the country's readiness and establish an AI governance framework, leading to the development of the National AI Strategy to align the direction of AI development and utilization with national development goals (ASEAN News Network, 2025).

Operationally, the Lao PDR government has launched 37 digital systems for public administration, covering essential services such as the tax collection system,

identity verification system, and the development of the National Digital Identity system, which enhances the efficient linkage of services between the public and private sectors. Furthermore, AI is being applied in several industries, such as in retail to create personalized customer experiences and optimize inventory management, and in the manufacturing sector for predictive maintenance, quality control, and supply chain optimization (ASEAN News Network, 2025).

On the other hand, the media has played a crucial role in educating and raising public awareness regarding the opportunities, risks, and ethical issues associated with the use of AI. Furthermore, the National Assembly of the Lao PDR has discussed the application of AI and digital tools in the legislative process to improve policy evaluation, decision-making, and addressing disinformation (ASEAN News Network, 2025). Through these continuous operations, the Lao PDR is laying a vital foundation for an AI Literacy Framework that is comprehensive in terms of technology, ethics, and governance, aiming to create a modern, sustainable, and competitive digital ecosystem in the Southeast Asian digital economy arena.

On April 27, 2022, the Lao PDR launched the Information and Communication Technologies Competency Standards for Teachers (ICT-CST) for the first time. This standard defines the necessary skills for teachers, aligned with the National Education Policy, covering 11 standards, 47 indicators under 6 areas, and divided into 3 competency levels: Basic, Proficient, and Advanced. This standard serves as the basis for developing competency-based teacher training curricula, and new curricula have been prepared for pre-primary, primary, and secondary school teachers for future implementation, supported by UNESCO Bangkok under the CapED program (UNESCO, 2022).

In addition, there is the Digital Literacy Initiative (DLI)[48], a project related to educating youth to prepare them for the emerging Digital Economy. It begins by emphasizing general digital skills and knowledge, including basic programming fundamentals, the establishment of various Coding Clubs across the country, and

[48] https://www.swisscontact.org/en/projects/digital-literacy-initiative-laos

Digital Entrepreneurship curricula for secondary school students and specialized Technical and Vocational Education and Training (TVET) colleges within the country.

1.5.1 Project Objectives (Digital Literacy Initiative - DLI)

1.5.1.1 Offering Coding Classes and Digital Entrepreneurship Courses: This will strengthen the ICT capacity of teachers in upper secondary schools and Technical Education and Training (TVET) colleges, enabling them to conduct computer coding training and basic programming lessons for students as extracurricular activities. Additionally, Digital Entrepreneurship courses will be offered in TVET colleges to support students in transforming their technological solutions into viable business concepts and operating their own businesses in the future.

1.5.1.2 Establishing "Code Clubs" to Enhance Creativity and Innovation: Code clubs will be established in upper secondary schools and TVET colleges, creating opportunities for youth to enhance and expand their innovative thinking. Code clubs are set up as forums for students to collaborate in small teams and develop their own innovative technological solutions. This will help support youth in enhancing analytical skills, teamwork, and innovative thinking.

1.5.1.3 Promoting and Pushing the DLI Model for Acceptance in the Education Sector: This aims to establish the importance of ICT activities in schools across the Lao PDR by promoting the DLI operational model for coding lessons, digital entrepreneurship, and code clubs as non-formal extracurricular ICT activities certified by the Ministry of Education and Sports (MoES). This will facilitate the replicability of the model elsewhere, and the related educational materials developed under this project will be made public and available for free use.

1.6 Socialist Republic of Vietnam

The Socialist Republic of Vietnam has clearly expressed its commitment to developing Artificial Intelligence (AI) technology through several key policies, such as Decision No. 127/QD-TTg (2021), which outlines the National Strategy on AI Research, Development, and Application until 2030. This strategy emphasizes human resource

development, research promotion, and technology transfer for sustainable economic growth. Furthermore, Decision No. 569/QD-TTg (2022) specifies AI as one of the core technologies of the Economy 4.0 system, alongside Cloud, Internet of Things (IoT), Blockchain, and Virtual Reality. Most recently, Resolution No. 57-NQ/TW, signed by General Secretary To Lam in late 2024, set a target for the Socialist Republic of Vietnam to be among the top 3 in ASEAN and top 50 globally in AI by 2030, while also pushing the development of the Big Data industry (UNDP Vietnam, 2025).

The Vietnamese government still faces multi-dimensional challenges in implementing AI and data projects. Survey results indicate that key obstacles include: legal limitations, with no comprehensive legal framework for data storage and processing, and intellectual property laws that do not yet support AI-generated innovations; funding limitations in accessing capital for AI research and innovation from both the public and private sectors; poor quality, inaccessible data, and concerns regarding security and privacy; and inadequate technological infrastructure, particularly high-performance computing systems and advanced AI technology that are not yet widely accessible. Additionally, there is a shortage of personnel with AI skills, and existing training curricula are not comprehensive or up-to-date with technological changes (UNDP Vietnam, 2025).

The “Digital Development Compass” report by UNDP (2025) currently indicates that the Socialist Republic of Vietnam is in Stage 3 of 5 stages of digital development, with a continuously increasing rate of technology adoption. The Vietnamese government is widely considered to have digital potential ranking among the top 10 globally. In some areas, it has reached Stage 5, representing complete transformation, such as having comprehensive digital skills, centralized strategy, and long-term budgeting. In the E-Government Development Index (EGDI) 2024, the Socialist Republic of Vietnam moved up to 71st globally and 5th in ASEAN, placed in the “Very High EGDI” group. This reflects strategic investments in online public services, telecommunications infrastructure, and digital skill development. Furthermore, Vietnam's internet speeds for both fixed broadband and mobile are higher than the global average, especially in major cities like Hanoi and Ho Chi Minh, while access in

rural areas is continuously improving. The 3G/4G network covers 95%of the population, and efforts are underway to expand the 5G network in urban areas to support the development of digital services. The use of social media in daily life has increased with the smartphone usage rate, with Facebook remaining the most popular platform, followed by Zalo, which has a higher usage rate than YouTube and TikTok, becoming a crucial tool for communicating with consumers.

Given Vietnam's focus on AI technology, The Institute for Policy Studies and Media Development (IPS), in collaboration with the United Nations Development Programme (UNDP) and the Chief Digital Office (CDO), launched the AI Landscape Assessment (AILA) tool to evaluate the readiness of government agencies for ethical AI integration. This focuses on the government's role as a user, an AI ecosystem supporter, and a promoter of ethical AI nationwide. The assessment uses quantitative and qualitative data to support strategic decision-making and investment in AI technology, covering policy, infrastructure, data, and necessary skills, which are key to driving innovation, operational efficiency, and sustainable development in crucial sectors such as education, public health, poverty reduction, and the economy (UNDP Vietnam, 2025).

The AILA report recommends that the Socialist Republic of Vietnam accelerate the development of digital skills and AI capabilities among government officials to effectively apply AI in the public sector, while promoting the development of AI applications that align with the specific needs of each agency rather than just following technological trends. It also actively emphasizes ethical AI governance, prioritizing transparency, accountability, safety, bias reduction, and meaningful inclusive participation to ensure AI benefits all sectors of society, especially marginalized groups. These strategies will enable Vietnam to develop AI sustainably, increase its global competitiveness, and fully utilize AI's potential in public services and citizen participation (UNDP Vietnam, 2025).

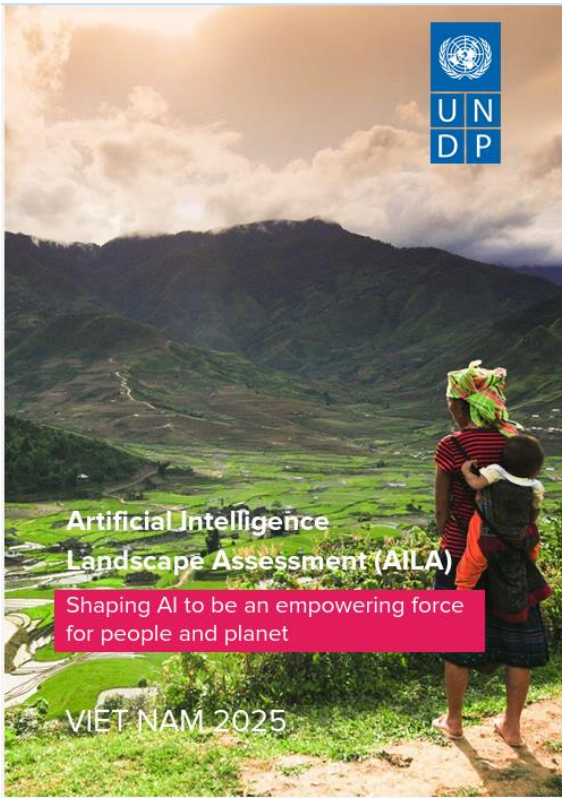

Figure 10: AI Landscape Assessment, Socialist Republic of Vietnam

The AI Landscape Assessment (AILA) aims to evaluate a country's readiness to utilize AI technology effectively and ethically. This tool analyzes 3 key pillars: (1) The role of the Government as an AI User for public service delivery and government operations. (2) The Government as an AI Ecosystem Promoter. (3) The development of Ethical AI Principles at the national level.

The assessment covers multiple dimensions and sub-topics within each pillar, using data from surveys, workshops, key informant interviews, and external indicators to calculate the readiness level, ranging from Basic (below 20%) to Transforming (more than 80%). The main purpose of the report is to provide an in-depth analysis of the Socialist Republic of Vietnam's capacity to adopt AI in a sustainable manner and respond to the challenges of the digital age. It also specifies the scope of assessment within each pillar, describes the data collection and analysis methods, as well as the obstacles encountered in data collection and proposed solutions (UNDP Vietnam, 2025).

Assessment Results

Pillar 1: Government as a User

In the context of AI use by the public sector, the Socialist Republic of Vietnam is in the Differentiating phase with a score of 3.2. This level signifies comprehensive and coordinated efforts to prepare for the deployment and integration of Artificial Intelligence. This level comprises 4 dimensions: (1) Vision (2) Technology (3) Data and (4) Skills.

Table 5: Government as a User AI Adoption Readiness Levels

level	description
Basic	(1) Lack of Necessary Government Structures, Systems, and Policies required for AI deployment and utilization. (2) Limited Technical Skills among personnel.
Opportunistic	There are some efforts to develop the skills, structures, and systems within the government that are necessary for AI utilization and the development of data applications.
Systematic	There is a need for support to develop the necessary skills, structures, and systems within the government.
Differentiating	(1) Formal Guidelines for AI and Data Application: Establishing formal guidelines for the deployment of AI and the application of data. (2) Sufficient Skills, Structures, and Systems: Ensuring that the necessary skills, structures, and systems are in place at a sufficient level for operational purposes.
Transformational	(1) Advanced AI Vision and Operations: The government possesses an advanced vision and implements advanced operations regarding AI. (2) Holistic Structural Support: The entire government system structure is established to support the use of AI,

level	description
	including having a holistic, whole-of-government approach.

Pillar 2: Government as an Enabler

In the role of the government as a promoter of AI development, the Socialist Republic of Vietnam is classified in the Systematic phase with a score of 3.0. This level indicates specific efforts across 4 dimensions:c (1) Data (2) Infrastructure (3) Innovation (4) Skills.

Table 6: Government as an Enabler AI Adoption Readiness Levels

level	description
Basic	(1) Lack of Necessary Government Structures, Systems, and Policies required for AI utilization. (2) Very Limited Technical Skills Readiness.
Opportunistic	There are some efforts to develop the skills, structures, and systems within the government that are necessary for AI utilization and the improvement of data applications.
Systematic	There is a need for support in developing the necessary skills, structures, and systems within the government.
Differentiating	(1) Formal Guidelines in Progress: Formal guidelines for the use of AI and data application are in place and under implementation. (2) Appropriate Level of Skills, Structures, and Systems: The necessary skills, structures, and systems are likely to be at an appropriate level for operational purposes.
Transformational	(1) Advanced AI Vision and Operations: The government possesses an advanced vision and implements advanced operations regarding AI.

level	description
	(2) Formal Holistic System Support: The entire government system structure is established to support the use of AI, including having a formal holistic, whole-of-government approach at the national level.

Pillar 3: Ethical AI

In the area of Ethical AI, the Socialist Republic of Vietnam is classified in the Systematic phase with a score of 2.1. This phase includes 4 dimensions for assessment: (1) Accountability (2) Inclusivity (3) Safety (4) Transparency

Table 7: Ethical AI Readiness Levels for AI Adoption

Level	description
Basic	(1) Lack of Necessary Government Structures, Organizations, Systems, and Policies required for AI utilization. (2) Severe Shortage of Technical Skills.
Opportunistic	There are some efforts to develop skills, structures, and systems within the government that are necessary for AI utilization and data application.
Systematic	There is a need for support in developing the necessary skills, structures, and systems within the government.
Differentiating	(1) Formal Guidelines in Progress: Formal guidelines for the use of AI and data application have been established and are under implementation. (2) Appropriate Level of Skills, Structures, and Systems: The necessary skills, structures, and systems are likely to be at an appropriate level for operational purposes.
Transformational	(1) Advanced AI Vision and Operations: The government possesses an advanced vision and implements advanced operations regarding AI.

Level	description
	(2) Formal Holistic System Support: The entire government system structure is established to support the use of AI, including having a formal holistic, whole-of-government approach at the national level.2.0

In addition, the Socialist Republic of Vietnam has implemented the **AI for All project**[49] a collaboration between Intel and the National Innovation Center (NIC), which operates under the Ministry of Finance of the Socialist Republic of Vietnam. This project aims to promote knowledge and understanding of Artificial Intelligence among the general public. The content covers AI fundamentals, real world examples of systems used in business, ethics, and responsibility in using AI systems. Furthermore, the Inclusive Use of Artificial Intelligence in Vietnamese Education **(IUAIVE) project**[50] is based on the Digital Transformation roadmap in the Socialist Republic of Vietnam from 2025–2030. The IUAIVE project focuses on developing teachers from various regions of the country, equipping them with the specialized knowledge of using Artificial Intelligence tools to further enhance their teaching effectiveness.

[49] https://hanoitimes.vn/intel-helps-promote-ai-literacy-in-vietnam.660830.html

[50] https://www.bcu.ac.uk/research/projects/inclusive-use-of-artificial-intelligence-ineducation-in-vietnam

1.7 Singapore

Singapore places great emphasis on the enhancement of AI literacy to support the growth of the digital economy and drive innovation across all sectors of society.

Status of AI Policy Implementation and Talent Development in the Singapore.

Key Policy and Strategy:

Singapore drives the development of Artificial Intelligence technology based on the National AI Strategy 2.0, which was updated in 2023 (B.E. 2566). This strategy represents Singapore's commitment to realise the benefits of AI, and to create exciting new opportunities. It outlines a vision for Singapore to be a place where AI serves as a force for good, and where AI is harnessed to uplift and empower people and businesses.

Human Capital and Workforce Development

In the dimension of personnel development, the government has set a strategy focusing on nurturing an AI workforce.

Workforce Development

Singapore is focusing on building a future-ready AI workforce to support Singapore's growing digital economy. This includes building up a pipeline of 15,000 AI Practitioners within a 5-year period to develop and deploy AI solutions to support the increasing AI activity across industry; and nurturing an AI-fluent workforce, who will be able to apply essential AI skills to their domains to transform workflows and boost productivity, through upskilling and reskilling efforts.

Supporting Tools

Singapore's Infocomm Media Development Authority (IMDA) has launched Starter Kit for Testing LLM-Based Applications for Safety and Reliability ("Starter Kit"). The Starter Kit provides clear, step-by-step guidance for pre-deployment testing of Generative AI (GenAI) applications. It consolidates emerging best practices from industry and government into practical, voluntary guidelines to help organizations across various sectors identify risks and develop rigorous testing procedures. This in

turn helps to support and facilitate the development of safe and reliable GenAI applications.

Another significant development is the creation of the AI Readiness Index (AIRI) , an industry-focused AI readiness assessment framework developed by AI Singapore (AISG). AISG is a national program supported by the National Research Foundation and hosted by the National University of Singapore.This framework summarizes and distills key success factors for AI adoption.

In strategic collaboration with the World Economic Forum Centre for the Fourth Industrial Revolution, Singapore also developed the Implementation and Self-Assessment Guide for Organisations (ISAGO), in close consultation with industry and with contributions from over 60 organisations. ISAGO serves as a companion guide to IMDA's Model AI Governance Framework. Its goal is to help organizations assess the alignment of their AI governance practices with the core framework. It also provides case studies and guidance from various industries to support the practical implementation of the framework.

From these initiatives, it is evident that the Singapore places tremendous emphasis on building AI literacy and developing a comprehensive AI governance framework. This enables organizations and society as a whole to use AI technology effectively, transparently, safely, and in line with international standards, serving as a crucial foundation for developing a robust and sustainable AI Literacy Framework.

Singapore also operates Certis-SUTD AI Literacy Programme[51], a project where a company providing security systems—such as Intelligent Analytics & Surveillance Systems, IoT Systems Monitoring Systems, and Multi-services Operations & Response Enhancement Systems—collaborates with the Singapore University of Technology and Design (SUTD).The collaboration involves conducting AI literacy courses for security professionals, with a target of training 5,000 people to be proficient in this area by 2027.

[51] https://www.sutd.edu.sg/media-releases-listing/certis-and-singapore-university-of-technology-and-design-forge-strategic-partnership-to-accelerate-ai-literacy-professional-growth/

Lastly, Singapore has initiatives targeted at the general population to build readiness for using GenAI in their daily lives in a safe and educated manner.

The Infocomm Media Development Authority's Digital Skills for Life (DSL) framework outlines the digital skills to enable citizens to carry out day-to-day tasks online and has been enhanced to include GenAI content under the "Explore Information Online" such as how to use Gen AI to curate travel plans, and "Be Safe, Smart and Kind Online" competencies. Users are taught the basics of GenAI, including precautions to take while using GenAI tools, and how to stay safe and smart against AI-generated misinformation. These resources are intended to help citizens with less digital experience to build confidence in using digital skills that are needed in day-to-day living. There is also an array of resources for citizens to learn digital skills based on the DSL framework, which can be easily accessed at the Digital for Life Portal.

Complementing this foundation, the National Library Board (NLB)'s S.U.R.E. (Source, Understand, Research, Evaluate) Programme offers resources on the benefits and risks of technology, including navigating GenAI. Through this programme, members of the public are made aware of the skills needed to be discerning and responsible in the use and interaction with GenAI content and information.

NLB will also be creating experiential showcases at public libraries to allow citizens to experience how GenAI can benefit them in daily lives. The showcases aim to excite citizens to try using GenAI in their daily lives, such as for cooking, travel and family activities, and raise awareness of how to use the technology in a smart and responsible way.

1.8 Kingdom of Thailand

Thailand recognizes the importance of developing an AI Literacy Framework to prepare Thai society for the digital economy era and the transition driven by Artificial Intelligence. These movements are reflected in several dimensions, including the development of a National AI Strategy, the creation of Generative AI guidelines to accommodate rapidly changing technology, and the preparation of AI Upskilling Initiatives to enhance digital skills and AI knowledge for personnel in various sectors, including the public, private, and educational institutions. On October 9, 2568 B.E. (2025 A.D.), the Ministry of Higher Education, Science, Research and Innovation (MHESI) issued the Announcement on Guidelines for Managing Artificial Intelligence (AI) Teaching and Learning in Higher Education Institutions B.E. 2568. Key contents include:

Higher education institutions must comprehensively assess their AI readiness and systematically integrate AI into their curricula to elevate modern learning.

Content or subjects related to AI in each curriculum should comprise at least 6 credits or no less than 2 courses.

There must be capacity development for personnel, supporting lecturers and staff to attend training and participate in developing AI knowledge, and establishing an AI consultation unit to assist with teaching, educational administration and management, and related technology systems[52]

From these efforts, Thailand is currently laying a crucial foundation for creating a comprehensive AI Literacy Framework. This framework aims to enable citizens and organizations to utilize AI effectively, transparently, and in alignment with international standards, which will enhance the country's competitiveness in the future ASEAN digital economy arena.

[52] https://www.facebook.com/whatmcu/posts

1.8.1 National Artificial Intelligence Action Plan for Thai Development (2022 – 2027 A.D.)

"Thailand possesses a complete and integrated ecosystem to promote the development and application of high-efficiency Artificial Intelligence technology, leading to the elevation of the economy and the quality of life of the people by 2027 A.D. (B.E. 2570)".

The action plan has 3 main objectives: (1) Human and Technology Development (2) Economic Growth Generation (3) Social and Environmental Impact Creation

Strategy 1: Preparing the Country in Terms of Society, Ethics, Law, and Regulations for the Application of Artificial Intelligence

The operational approach focuses on establishing laws, standards, and guidelines concerning AI, coupled with communication campaigns to build public awareness. This aims to promote appropriate and ethical usage. The expected outcomes are increased national confidence, enhanced social awareness, and strengthened AI safety systems.

Strategy 2: Developing Infrastructure and Support Systems for Artificial Intelligence for Sustainable Development

The operational approach focuses on creating networks of experts, large data linkage centers, AI research institutes, central platforms, and advanced processing infrastructure to systematically drive AI development. It is expected to result in the establishment of global networks, national AI research centers and service platforms, an elevation of digital competitiveness, and the promotion of AI infrastructure investment in both public and private sectors.

Strategy 3 : Enhancing Personnel Potential and Developing Artificial Intelligence Education.

The strategic operational approach focuses on creating networks of experts, large data linkage centers, AI research institutes, central platforms, and advanced processing infrastructure to systematically drive AI development. It is expected to result in the successful establishment of global networks, national AI

research centers and service platforms, an elevation of digital competitiveness, and the promotion of AI infrastructure investment in both public and private sectors.

Strategy 4: Developing Technology and Innovation to Support Artificial Intelligence Technology.

The operational approach emphasizes the development of skills and AI knowledge at all levels, supporting scholarships and research funding, and building collaboration with international experts to increase the number of qualified personnel, AI curricula, and learning exchange spaces that meet the country's needs.

Strategy 5: Promoting the Application of Artificial Intelligence Technology and Systems in the Public and Private Sectors

The operational approach focuses on promoting the use of AI in the public sector and targeted industries, linking AI to practical applications, and developing regulatory Sandboxes and standards to enhance AI entrepreneurs.

The expected outcomes are an increase in AI Startups and SMEs, the rapid emergence of new businesses and innovations, increased AI adoption in government and private entities, supportive policies for domestic AI technology use, and an elevation of national competitiveness.

Phase 1: Urgent Phase (2022–2023 A.D.)

Implementation: Executed 8 pilot projects focused on developing AI infrastructure. Key Benefits: (1) Establishing mechanisms to promote AI development for the digital industry. (2) Creating AI personnel to supply the digital labor market, helping to drive The New S-Curve. (3) Establishing a network for exchanging knowledge and technology in line with AI ethics guidelines.

Phase 2 (2024–2027 A.D.)

Implementation: Scaling up the application of AI in target groups and building a national AI ecosystem. This involves promoting multi-dimensional data usage, upgrading businesses and services, driving the understanding and utilization of AI in target sectors and the public sector, supporting entrepreneurs, and expanding the digital infrastructure to accommodate AI development.

1.8.2 National AI Development Framework

The Thai government has established a National AI Development Framework with the goal of positioning Thailand as a regional leader in AI. This will be achieved through the creation of necessary innovation and infrastructure, the development of personnel across all ages, and the reform of related laws and regulations to ensure rapid implementation.

The National AI Committee has approved, in principle, the budget expenditure framework for driving the National AI Development Framework for the fiscal years B.E. 2569–2570 (2026–2027 A.D.).

The Committee acknowledged the government's budget for the fiscal year B.E. 2569 (2026 A.D.), including both on-plan and off-plan budgets, as well as funds already invested by state funds, amounting to a total value of not less than 25,000 million Thai Baht.[53]

AI Users	The target is to have at least 10,000,000 people in both IT and non-IT groups who are able to use basic AI, possess AI Literacy knowledge, and can proficiently apply AI through applications.
AI Professionals	The target is to have at least 90,000 professionals in specialized fields such as Law, Medicine, and Liberal Arts who possess in-depth AI knowledge and are capable of extending innovation.
AI Developers	The target is to have at least 50,000 people with advanced technical capabilities in developing AI Models/Systems/ Applications, including advanced AI researchers.

Source: Information from the Public Relations Department News (2568 B.E. / 2025 A.D.) regarding the meeting on May 1, 2568 B.E. (2025 A.D.) at Bhakdi Bodin Building, Government House. Ms. Paetongtarn Shinawatra, Prime Minister, presided over the 1st/2568 Meeting of the National AI Committee.

[53] Information sourced from the Facebook page of the Ministry of Digital Economy and Society (MDES), dated July 30, 2568 B.E. (2025 A.D.), regarding the 2nd/2568 Meeting of the National AI Committee

AI Infrastructure Development: The goal is to support and promote investment in Cloud systems and Data Center establishment, as well as to encourage cloud service providers to further develop services for AI work in both hardware and software formats. Currently, foreign companies from the United States, the People's Republic of China, and Middle Eastern countries, along with a number of Thai joint venture companies, have expressed interest in investing. The total value of this investment is expected to be no less than 500 billion Thai Baht.

Infrastructure Promotion: Promote investment to develop infrastructure such as Cloud systems, Data Centers, GPUs, and the development of Open Source AI Platforms sufficiently to support the expansion of technology application at an affordable price. This also includes the establishment of Data Bank to consolidate data useful for AI development across various sectors.

Application in Key Industries: A mandate to drive the adoption of Artificial Intelligence technology and related tools for development in applied industries, such as the Robotics industry, to further generate revenue for industrial and commercial sectors, especially in industries where Thailand has potential, such as the Medical and Agricultural industries. This is intended to elevate Thai industries to advanced, high-technology industries that use technology to increase efficiency.[54]

The establishment of Thailand's Artificial Intelligence Ecosystem (AI Ecosystem) requires an effective driving mechanism. This involves coordinating cooperation between the government, educational institutions, the business sector, and civil society through policies, support measures, and investment from both public and private sectors.The government should promote the formation of networks in the form of Consortiums and AI Centers of Excellence specific to various sectors. This is to ensure that stakeholders play a leading role in driving change and developing collaboration in trade, finance, technology, and data. This entire effort should be

[54] Information from the Public Relations Department News (2568 B.E. / 2025 A.D.) regarding the meeting on May 1, 2568 B.E. (2025 A.D.) at the Bhakdi Bodin Building, Government House. Chair: Ms. Paetongtarn Shinawatra, Prime Minister, presided over the 1st/2568 Meeting of the National AI Committee.
https://www.prd.go.th/th/content/category/detail/id/33/iid/386161

overseen by the National AI Committee (National AI Committee), which should also be elevated to a committee under the relevant legal framework. This elevation is necessary to ensure that the AI drive is continuous, sustainable, and builds the country's long-term self-reliance.[55]

1.8.3 Guidelines and Regulations Related to Artificial Intelligence in Thailand

1.8.3.1 Generative AI Governance Guideline for Organizations

The various patterns of adopting Generative AI within an organization can be categorized based on the complexity of implementation, ranked from the least to most complex as follows: (1)Adopter: Application with relatively low complexity. (2)Customizer: Application with demonstrable medium complexity. (3) Maker: Application with highest complexity.

The pattern of Generative AI application in within an organization is associated with different technological structures:

(1) Adopter: Organizations using the Adopter pattern should focus on understanding components that are ready-to-use tools (Formal).

(2) Customizer: Organizations using the Customizer pattern should focus on understanding components that are the foundational model, development-supporting platforms, and ready-to-use tools.

(3) Maker: Organizations using the Maker pattern should focus on understanding the related technological structure, ranging from infrastructure, foundational model, and development-supporting platforms.

[55] Information from the News of the Office of the Permanent Secretary, Ministry of Higher Education, Science, Research and Innovation (MHESI), regarding the meeting on July 30, 2568 B.E. (2025 A.D.) at the Command Building 1, Government House. Chair: Mr. Prasert Chanthararuangthong, Deputy Prime Minister and Minister of Digital Economy and Society, presided over the 2nd/2568 Meeting of the National AI Committee https://www.nstda.or.th/home/news_post/national-ai-20250730/

Table 8: Generative AI Governance Guidelines for Application

Generative AI Governance Guidelines for Application	Description
(1) Defining the AI Governance Structure Establishing an organizational structure to support the governance of AI application can be implemented through three main parts: Having an AI Governance Council: Forming a high-level committee responsible for strategic oversight. Defining Roles and Responsibilities: Clearly defining the duties of personnel involved in the application of AI within the organization, covering all dimensions. Competency Building: Enhancing and developing knowledge to ensure the effective application of Generative AI to meet organizational goals.	Details of AI Governance Structure (1.1) Policy and Guidelines: The organization should define a policy and best practices for Generative AI application that aligns with the organizational goals, ethical principles, regulations, and laws. (1.2) Roles and Responsibilities: Define the duties and responsibilities of personnel within the organization and related stakeholders (e.g., users, developers). For example: Users are responsible for verifying the output before use. Users are responsible for reporting errors to their supervisors in the event of failure, etc. (1.3) Competency Development: Develop the knowledge of personnel involved in the usage and governance of Generative AI applications, making it appropriate for their roles and responsibilities. Examples of necessary skills include Prompt Engineering skills and skills for performance enhancement using techniques like

Generative AI Governance Guidelines for Application	Description
	Retrieval-Augmented Generation (RAG), etc.
(2) Defining AI Application Strategy and Managing Risks from AI Application (AI Strategy and Risk Management) A crucial aspect when adopting AI in an organization is the understanding of how the use case can meet the objectives, or how the capabilities of AI will be utilized for the organization. This process is referred to as Responsible AI Strategy. Furthermore, it is necessary to analyze and define guidelines for AI Risk Management to mitigate potential damage or impacts that may arise.	(2.1) After defining the use case and objective for applying Generative AI, the organization should determine the appropriate pattern for Generative AI application. This includes choices such as: Using Off-the-Shelf solutions. Selecting techniques like Retrieval-Augmented Generation (RAG). Choosing methods like Fine-Tuning. Opting for Pre-training, etc. (2.2) Strategy and Risk Measures: The organization should define a clear strategy and establish risk management measures related to Generative AI that are appropriate for the roles and responsibilities, and align with the organization's Risk Appetite. (2.3) Human-AI Collaboration Level: The level of collaboration between humans and Generative AI should be determined (to correspond with the level of risk and potential negative impact).
(3) Governing Operations and Services Related to AI Application (AI Operation)	(3.1) Data Preparation: Organizations should prepare high-quality, up-to-date data in

Generative AI Governance Guidelines for Application	Description
This involves governing the application of AI throughout the AI Development Life Cycle (Governing AI Life Cycle), from solution design, data preparation, model creation, deploying the model for use or service, monitoring and evaluating the AI application, up to the termination of its use if it fails to meet the specified objectives. Additionally, establishing an accountability mechanism for the use of AI Service requires necessary communication and feedback mechanisms regarding the use of the AI system.	an appropriate format to support AI model development, taking into account potential risks that may arise. (3.2) Model/System Design: Generative AI models or systems should be designed with limitations on potential risks or errors to ensure the system operates correctly and safely. (3.3) Continuous Testing: A process should be established for comprehensive and effective continuous testing of the Generative AI model or system, including the resulting outputs. (3.4) Feedback and Improvement: After deployment, a user feedback process should be created to continuously improve the Generative AI model or system, ensuring it meets the expectations of the relevant users.

1.8.3.2 Thailand AI Ethics Guideline

The Thailand AI Ethics Guideline was formally developed by The National Board of Digital Economy and Society Office, BDE, Ministry of Digital Economy and Society, in 2021 (B.E. 2564).

Component 1: Regulator/Policy

This component focuses on comprehensively Evaluating, Regulating, and Monitoring AI development and use.

This group is responsible for establishing regulations and overseeing that the development and use of AI adhere to the ethical framework. Their primary functions are: Evaluate, Regulate, and Monitor (ERM).

Regulator : Such as government agencies or senior executives in private organizations. Their duty is to establish the policy framework and operational guidelines.

Policy : Such as project managers or standard auditing units. Their duty is to ensure that operations comply with the established regulations.

ERM01	AI Ethics Framework Setting and Maintenance
ERM02	Ensure Regional Competitiveness
ERM03	Resource Optimization
ERM04	Risk Optimization
ERM05	Build Trustworthy AI
ERM06	Stakeholder Engagement

Component 2: Researcher/Developer/Service Provider (PDOM)

This group consists of those directly involved in creating and providing Artificial Intelligence systems, spanning from Planning, Development, Operation, and Measurement (PDOM). The primary duties of this group cover the entire AI life cycle.

Researcher	Research organizations or individual researchers who actively discover new knowledge in the field of AI.
Developer	Companies that design and develop AI systems or products.
Service Provider	Companies or entities that bring AI products to provide services to end-users.

PDOM01	Design of AI Ethics Management System
PDOM02	AI Ethics Strategy Management
PDOM03	AI Ethics and Enterprise Architecture Integration
PDOM04	AI Ethics Innovation Management
PDOM05	AI Ethics in Portfolio Management
PDOM06	AI Ethics in Human Resource Management
PDOM07	Stakeholder Relationships Management
PDOM08	AI Ethics in Service Level Agreements
PDOM09	AI Ethics in Quality Management
PDOM10	AI Ethics Impact Assessment
PDOM11	AI Security and Privacy Management
PDOM12	Management of Data in AI
PDOM13	AI Ethics in Programs and Project Management
PDOM14	AI Project Scope Management
PDOM15	AI Solutions Development
PDOM16	AI Ethics in Change Management
PDOM17	AI Ethics in Project Transition Management
PDOM18	AI Ethics Knowledge Management
PDOM19	Configure Ethics in AI Solutions
PDOM20	AI Operational Ethics
PDOM21	AI Ethics Incident Management
PDOM22	AI Ethics Problem Management
PDOM23	AI Ethics in Business Continuity Management
PDOM24	Managing AI Security and Privacy Services)
PDOM25	AI Process Control
PDOM26	AI Ethics Performance and Conformance Measurement
PDOM27	AI Ethics Compliance Management
PDOM28	AI Ethics Audit

Component 3: Users (Aware, Utilize, and Feedback - AUF)

This group consists of individuals who interact with and use AI systems. Their primary functions revolve around Awareness, Utilization, and Feedback.

Users are responsible for studying and understanding how the AI they use works, evaluating its trustworthiness, and being aware of their own responsibility in its application. They must also provide suggestions or report any problems encountered back to the Service Provider.

AUF01	Educate and Raise AI Awareness
AUF02	Evaluate AI Reliability
AUF03	Understand User Accountability
AUF04	Provide Feedback
AUF05	Ensure Rules and Regulations Compliance

1.8.3.3 Thailand's AI Readiness Status under the UNESCO RAM Framework

In 2023, UNESCO developed and published the Readiness Assessment Methodology (RAM) to serve as a tool to help individual countries evaluate their AI readiness status and formulate concrete action plans. The methodology focuses on achieving results that are fair, sustainable, and inclusive. Currently, the project has been implemented in over 70 countries worldwide.

The RAM assessment covers 5 dimensions:

(1) Legal and Regulatory Dimension

(2) Social and Cultural Dimension

(3) Scientific and Educational Dimension

(4) Economic Dimension

(5) Technical and Infrastructural Dimension)

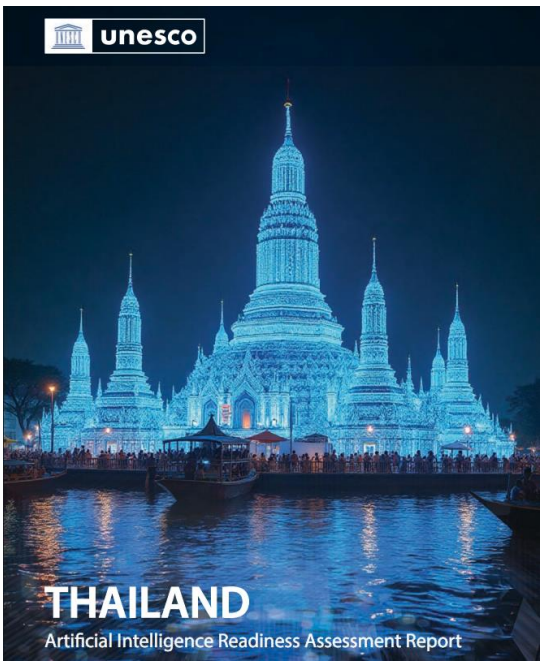

Figure 11: Thailand AI Readiness Assessment Report

In 2025 (B.E. 2568), Thailand underwent an assessment under the RAM framework. This allowed Thailand to identify its strengths in existing digital and technological infrastructure, as well as policy challenges that require urgent action. The insights gained from this assessment will serve as a crucial foundation for defining clear policies that directly address AI development, enabling Thailand to keep pace with the changes in the international digital economy.

According to the UNESCO report which published in 2025, the evaluation results for the relevant dimensions are as follows:

(1) Legal and Regulatory Dimension of Thailand concerning AI

Although Thailand possesses several digital laws, such as the Personal Data Protection Act (PDPA), the Cybersecurity Act, the Royal Decree on Digital Platform Service Business, and Government Open Data Laws, these are merely foundational and cannot yet manage the risks specifically arising from AI. The analysis shows:

(1.1) The Personal Data Protection Act (PDPA B.E. 2562): While providing basic data rights, the PDPA does not grant citizens the right to object

to automated decision-making. This limits the protection available to individuals affected by AI.

(1.2) Data Sharing: Despite the Government Open Data Laws, Thailand still lacks a clear and enforceable framework for secure and rights-respecting data sharing between the public and private sectors.

(1.3) The Royal Decree on Digital Platform Service Business: This decree mandates platforms to disclose algorithmic parameters, but there is still a lack of a broader legal mechanism for AI risk classification, algorithmic accountability, and redress for damages.

(1.4) The Government Procurement: The existing law does not mandate ethical or human rights scrutiny for AI systems intended for use in public services.

(1.5) Copyright Law: There is no clarity on whether using data to train AI constitutes a copyright exception, nor is there a defined protection framework for AI-generated intellectual property. This creates uncertainty for researchers and developers.

In summary: Although Thailand's existing digital laws are progressive, there is a lack of specific legal protection measures for AI.

(2) Scientific and Educational Dimension (AI Skill and Knowledge Development at all Levels). While Thailand's high e-government infrastructure and internet connectivity provide a good foundation for inclusive AI development, inequality persists. Key issues include:

(2.1) Vulnerable Groups: Rural communities, ethnic groups, the elderly, people with disabilities, and low-income individuals still face systemic barriers to accessing, utilizing, and benefiting from AI.

(2.2) Language and Accessibility Barriers: Most government AI tools are developed only in Central Thai, and the design often fails to consider those with literacy limitations or those who require special accessibility, such as people with disabilities.

(2.3) Public Service AI Use: The public does not participate, and there is no mandate to inform service users when AI is used in public services.

(2.4) Cultural Preservation AI Use: The use of AI for cultural preservation, such as digital heritage or ethnic languages, remains ad hoc projects and is not systematically implemented.

(2.5) Environmental Issues: Environmental aspects are largely overlooked, with limited oversight of AI infrastructure use and promotion of Green Data Centers.

Conclusion for this dimension: To enable AI to truly support society, the concepts of equity and public participation must be integrated into every stage of system design.

(3) Scientific and Educational Dimension (Economic Section - Note: This section appears to be a continuation of the Scientific Dimension focus on capabilities) Thailand has made progress in creating AI-related curricula and research institutions, reflecting investment in building domestic capabilities. Past progress includes:

(3.1) National initiatives such as "Super AI Engineer" and "AI for All" promote AI capabilities in the public sector.

(3.2) Leading universities like Chulalongkorn University and CMKL University[56] have launched interdisciplinary programs such as Digital Humanities, Technology Law, and AI Governance.

(3.3) In 2022, STEM graduates accounted for 29% of all higher education graduates, which is higher than countries like the UK and Australia.

Significant challenges in National AI Readiness for Thailand (Scientific/Educational Focus):

[56] Thailand's first AI university resulted from a collaboration between King Mongkut's Institute of Technology Ladkrabang (KMITL) and Carnegie Mellon University (CMU) in the United States. It focuses on programs in Computer Engineering and Artificial Intelligence (AI).

Challenge 1 Research & Development (R&D) Budget: The R&D budget consistently remains low, at only a marginal 1.21% of GDP, falling below global innovation standards.

Challenge 2 Data Science Capability: Thailand's data science capability and global research output ranking are not high.

Challenge 3 Public Sector Technical Personnel: Technical personnel in government agencies are a very small proportion (only 0.5%), and digital training does not cover ethics.

Challenge 4 Curriculum Integration: Education curricula still lack integration of AI ethics and an interdisciplinary perspective.

Challenge 5 Open Science/Industry Link: Support for Open Science and academic freedom is limited, and the link between research and industry remains weak.

These challenges restrict the country from fully developing locally relevant and ethically grounded AI technologies.

(4) Economic Dimension

Thailand's national economy is continuously transitioning into the digital era, with the following strengths and opportunities:

(4.1) High-tech product exports account for 16.7% of total exports, placing Thailand 8th in the world.

(4.2) The government has projects promoting AI use in target industries such as healthcare, logistics, agriculture, and tourism.

(4.3) AI adoption in the private sector shows a positive trend, with 18% of companies already using AI solutions and another 74% currently preparing for adoption.

Challenges in AI Readiness for Thailand (Economic Focus):

Challenge 1: Severe High-Level AI Skill Shortage: A severe shortage of high-level AI skills is anticipated, with an estimated deficit of 80,000 personnel, posing a major obstacle to innovation expansion.

Challenge 2: Intellectual Property (IP): IP laws still lack clear guidelines for the commercialization of state-funded research.

Challenge 3: Training Quality: Training programs lack rigorous governance and do not align with labor market demands.

Challenge 4: Domestic Private R&D Investment: Private sector investment in AI R&D and training remains limited. In 2022, the computer programming and consulting businesses spent only 47.5 million Baht.

(5) Technical and Infrastructural Dimension

Thailand has high readiness in internet connectivity, which is a key foundation for AI development, with the following strengths and opportunities:

(5.1) High Connectivity: Internet access exceeds 89%, and mobile phone usage is high, at 169 subscriptions per 100 people.

(5.2) Low Digital Divide: The speed of fixed broadband internet and internet access show a low gender and urban-rural divide.

(5.3) Digital Platforms: Digital platforms like data.go.th and the Government Data Exchange (GDX) exist to support data sharing between agencies.

Primary challenges in National AI Readiness for Thailand (Specific Technical/Infrastructural Focus):

Challenge 1 Data Center Gap: Thailand has only 0.59 certified data centers per million people, and most are concentrated in Bangkok. However, in 2024 alone, investment promotion applications for data center and cloud services submitted to the BOI amounted to 240,000 million Baht.

Challenge 2 Data Quality: Inter-ministerial data is outdated, unlabeled, non-standardized, and has insufficient metadata.

Challenge 3 Lack of Clear Frameworks: There is no clear framework for AI testing, auditing, benchmarking, or certification.

Challenge 4 Lack of NQI for AI: Thailand lacks a National Quality Infrastructure (NQI) system specifically designed for AI, which is essential for assessing model safety, fairness, or explainability.

1.8.3.4 Action Plan for Ethical and Inclusive AI Governance in Thailand

To ensure that AI development in Thailand is responsible, inclusive, and aligned with international standards, national efforts must shift from high-level strategy to tangible implementation. This action plan summarizes the critical strategic issues for shaping the overall policy direction as follows:

(1) Legal and Regulatory

(1.1) Trusted Data Pooling: Establish a national framework for data sharing and Trusted Data Pooling in strategic sectors.

(1.2) Algorithmic Accountability: Enhance the protection of human rights and Algorithmic Accountability.

(1.3) Risk Assessment: Develop a risk assessment framework for high-risk AI systems in critical sectors.

(1.4) Ethical Procurement: Enforce ethical procurement guidelines for the public sector's acquisition of AI systems.

(2) Institutional and Governance Framework

(2.1) Monitoring & Evaluation (M&E):

Establish a formal national Monitoring and Evaluation mechanism to systematically assess the AI strategy.

(2.2) National Quality Infrastructure (NQI):

Strengthen the National Quality Infrastructure (NQI) for AI readiness and create specialized testing centers.

(2.3) Coordination:

Improve coordination through a National AI Governance Center and cross-sectoral working groups.

(3) Capacity Building

(3.1) AI Literacy and Ethics: Integrate basic AI knowledge and Ethics (AI Literacy and Ethics) into the National Education Curriculum, from K-12 up to the tertiary level.

(3.2) Workforce Incentives: Create workforce incentives for Upskilling and Reskilling, supported by public-private partnerships.

(3.3) Public Sector Training: Develop AI training programs to enhance the skills and knowledge of public sector personnel regarding AI.

(4) Inclusivity and Well-being

(4.1) Universal Design: Promote Universal Design and accessibility for vulnerable groups, rural communities, and ethnic minorities.

(4.2) Marginalized Digital Literacy: Elevate digital literacy for marginalized groups through targeted education and capacity building.

(4.3) Cultural Preservation: Preserve cultural and linguistic diversity with AI projects that digitize local languages and cultural heritage.

(4.4) AI for Social Good: Promote ethical AI for social benefit, focusing on challenges such as healthcare, education, and sustainability.

(4.5) Community Co-creation: Develop AI community co-creation platforms to serve as a hub for turning community members into active co-designers.

(5) Investment Ecosystem

(5.1) National AI Consultancy:

Establish comprehensive a National AI Consultancy and Support Program to assist SMEs with design, technical training, and funding for AI solutions.

(5.2) Infrastructure Investment:

Promote critical investment in AI related infrastructure, prioritizing Hyperscale and Modular Data Centers.

(5.3) Data Pooling Investment:

Strengthen investment in Data Pooling by developing sector-specific dataspaces for analysis and public-private collaboration.

(5.4) Green Data Centers and Energy:

Utilize clean energy for sustainable data center expansion and support Direct Power Purchase Agreements (PPAs) and Third-Party Access (TPA) to allow private energy producers to supply power directly to data centers.

(6) Research & Development and Innovation (R&D and Innovation)

(6.1) Copyright Exceptions:

Establish copyright exceptions for Text and Data Mining (TDM) and strengthen patent guidelines for AI.

(6.2) Regulatory Sandbox:

Create a Regulatory Sandbox for testing AI applications in a controlled environment.

(6.3) Inter-Institutional Collaboration:

Promote advanced scientific research and strategic inter-institutional collaboration for interdisciplinary AI development.

1.8.4 Generative AI Governance Guideline for Organizations (AI Ethics Guideline)

Due to the rapid increase in Generative AI usage across many industries, caution is required regarding the inherent risks, especially concerning privacy, data security, and potential impacts on employees and society as a whole. Therefore, it is essential to establish proper planning and governance guidelines for the application of this technology, considering its long-term effects. The Ministry of Digital Economy and Society (MDES), specifically the Electronic Transactions Development Agency (ETDA), through its AI Governance Center (AIGC), has developed an extension of Thailand's existing AI Governance Guideline. This extended framework is called the "Generative AI Governance Guideline for Organizations" Generative AI. This guideline serves as a framework for executives and related personnel to apply in establishing clear governance over the use of Generative AI at the organizational level, ensuring alignment with their goals.The key content areas include: (1) Understanding Generative AI (2) Benefits and Limitations of Generative AI (3) Risks of Generative AI (4) Guidelines for Applying Generative AI (5) Considerations for Generative AI Application

Figure 12: Generative AI Governance Guideline for Organizations

Each pattern of Generative AI application in an organization is associated with different Generative AI technological structures, as follows: (1) Adopter: Organizations using the Adopter pattern should focus on understanding components that are ready-to-use tools. (2) Customizer: Organizations using the Customizer pattern should focus on understanding components that include the foundational model, development-supporting platforms, and ready-to-use tools. (3) Maker: Organizations using the Maker pattern should focus on understanding the related technological structure, ranging from infrastructure, foundational models, and development-supporting platforms.

Therefore, having a clear understanding and selecting the appropriate Generative AI application pattern will lead to a better approach for the ethical governance of Generative AI applications within the organization.

Generative AI Governance Guidelines for Application

(1) Defining the AI Governance Structure

Establishing an organizational structure to support the governance of Artificial Intelligence (AI) application can be executed through three parts:

(1.1) AI Governance Council: Formally forming a committee to determine policies, directions, and oversee the use of AI to comply with ethical principles and organizational goals.

(1.2) Defining Roles & Responsibilities: Clearly and granularly defining the duties and responsibilities of personnel involved in the AI application within the organization, covering all dimensions, from executive level to operational staff.

(1.3) The Competency Building Initiative: Strengthening and developing knowledge to ensure personnel have sufficient potential and understanding to effectively apply Generative AI to meet organizational goals.

(2) Defining AI Application Strategy and Managing Risks from AI Application (AI Strategy and Risk Management)

A crucial consideration when applying AI in an organization is understanding how the Use Case can meet the objectives, or how the capabilities of AI will be utilized for the organization. This is termed the Responsible AI Strategy. It is also necessary to analyze and define guidelines for AI Risk Management to mitigate potential damage or impacts that may arise.

(3) Governing Operations and Services Related to AI Application (AI Operation)

This involves governing the application of AI throughout the AI Development Life Cycle (Governing AI Life Cycle)—from solution design, data preparation, model creation, model deployment or servicing, monitoring and evaluating the AI application, up to the termination of its use if it fails to meet the specified objectives. Furthermore, establishing an accountability mechanism for the

use of AI Service requires necessary communication and feedback regarding the use of the AI system.

1.8.5 Key Projects for Preparing Thai Society for the Digital Economy Era

The development of the AI Literacy Framework to prepare Thai society for the digital economy era has involved the implementation of four key projects, namely:

1.8.5.1 THAI Academy – AI in Education[57]

This project is a collaboration between the Ministry of Education (MOE), the Ministry of Higher Education, Science, Research and Innovation (MHESI), and Microsoft (Thailand) Co., Ltd. The objective is to create equality in access to education for people across the country. The project's initial phase targets covering over 60,000 secondary school students nationwide. It features a diverse and comprehensive curriculum, ranging from beginner levels, such as the "AI Skills for Everyone" course, to courses that prepare personnel for Artificial Intelligence system development, such as the "Azure AI: Zero to Hero" course.

1.8.5.2 AI for All Thais[58]

This is a Microsoft project established to support the overall workforce development of the country, preparing for the Digital Economy and the numerous technological investments occurring in the nation, driven significantly by both public and private sector investment. The project offers more than 200 courses, which cover content related to various technologies, including data, Cloud systems, security systems, and various aspects of Artificial Intelligence technology. The curricula cover skills from fundamental to professional levels, and approximately 80 percent of the courses are in the Thai language.

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[57] https://news.microsoft.com/source/asia/2025/06/09/ministry-of-education-mhesi-and-microsoft-join-forces-to-transform-thai-education-with-ai/

[58] https://news.microsoft.com/th-th/2024/08/29/microsoft-unveils-ai-for-all-thais-vision-empowering-thais-with-ai-through-skills-scale-and-secure/

1.8.5.3 Future Skills Readiness Project for Digital Transition.

This project is implemented by The National Board of Digital Economy and Society Office (BDE) under the ASEAN cooperation framework. BDE conducted studies and comparisons of professional standards in Information Technology and Artificial Intelligence across ASEAN and international bodies, such as the United Kingdom, the European Union, Japan, and South Korea. Brainstorming sessions were organized with experts from both the Thai and ASEAN public and private sectors. The feedback gathered will be used to develop the ASEAN regional professional standard framework for Artificial Intelligence. The project was also presented to the Asia-Pacific Economic Cooperation (APEC) at The Symposium on APEC ICT Skill Standards for Artificial Intelligence (AI) on May 2, B.E. 2566 (2023). This operation was conducted under an activity endorsed by APEC on July 23, B.E. 2564 (2021). BDE submitted the operational results and reported to APEC at The Third Senior Officials' Meeting and Related Meetings (SOM3) on August 11, B.E. 2566 (2023), in Seattle, Washington, USA.

The National Board of Digital Economy and Society Office (BDE) has continuously studied and developed the ASEAN ICT Skill Standard since B.E. 2555 (2012). This initiative has successfully completed five phases aimed at developing and revising ICT professional skill standards within ASEAN. The resulting deliverables include definitions of ICT professional skills and a standard mapping table, which define three levels of skill proficiency:

Level 1 (Basic): Refers to having sufficient fundamental knowledge and professional skills to perform assigned tasks under the supervision of a manager.

Level 2 (Intermediate): Refers to having the knowledge and professional skills to perform assigned tasks independently, and the ability to supervise and advise others. This level includes understanding differences in managing problems within their field and effectively applying them when necessary.

Level 3 (Advanced): Refers to having comprehensive knowledge and professional skills in both technical aspects and the management of less experienced personnel.

The completed ASEAN ICT Professional Skill Standard comprises 10 core skills: (1) Software Development (2) ICT Project Management (3) Enterprise Architecture Design (4) Network and System Administration (5) Information System and Network Security (6) Cloud Computing (7) Mobile Computing (8) Social Business (9) Big Data and (10) Internet of Things (IoT)

1.8.5.4 The Competency Development Project to Support Work in Artificial Intelligence Literacy (AI Literacy).

This project is conducted by the Thailand Professional Qualification Institute (Public Organization). Its Key Purpose is to prepare the nation by enhancing the potential of Thai citizens, enabling them to apply Artificial Intelligence for sustainable development. The Key Role is to promote competencies in the use of Artificial Intelligence to support work. The Key Functions are: (1) Knowledge and Awareness of Artificial Intelligence, (2) Application of Artificial Intelligence for Work, and (3) Advanced Application of Artificial Intelligence for Work. The Thailand Professional Qualification Institute (Public Organization) issues certification documents for work-supporting competencies in Artificial Intelligence usage.

The Characteristics of Outcomes are as follows: Individuals possess knowledge and skills in the effective use of Artificial Intelligence, capable of evaluating the results of AI application. They can utilize Artificial Intelligence to support work in Word Processing, Spreadsheets, Presentation, and Information Search. They develop the technical skills of Artificial Intelligence, apply AI tools for specialized tasks, and adhere to the AI Governance Framework regarding risk management. Furthermore, they comply with international laws and standards related to Artificial Intelligence (Law and Standard)

Table 9: Competency Levels Supporting Work in Artificial Intelligence Usage for General Users (AI Literacy for General Users)

Key Function	Unit of Competency	Level 1	Level 2	Level 3
Knowledge and Awareness of Artificial Intelligence	7001 Understand basic fundamentals of Artificial Intelligence	/		
	7002 Explain the working principles of Artificial Intelligence	/		
	7003 Evaluate limitations and social and ethical impacts of Artificial Intelligence	/		
Application of Artificial Intelligence for Work	7004 Utilize Artificial Intelligence effectively		/	
	7005 Develop technical skills related to Artificial Intelligence		/	
	7006 Adhere to the AI Governance Framework for the use of Artificial Intelligence		/	
	7007 Explain technologies related			/

Key Function	Unit of Competency	Level 1	Level 2	Level 3
	to Artificial Intelligence			
	7008 Analyze the performance of Artificial Intelligence models			/
Advanced Application of Artificial Intelligence for Work	7009 Apply policies, laws, and standards related to Artificial Intelligence			/

1.9 Republic of Indonesia

The Republic of Indonesia has laid important policy foundations through the creation and dissemination of two main documents: the AI Road Map White Paper and the Concept Domain Ethical Artificial Intelligence/AI Ethics Guideline. Both documents serve as the fundamental framework concept that will be further developed into a draft Presidential Regulation concerning the Artificial Intelligence Roadmap and Ethics, to be enforced for national-level governance.

Regarding the Artificial Intelligence Road Map (AI Road Map) for 2025–2029, it has been designed to align and interconnect with Indonesia's long-term National Strategic Plan for 2025–2045, focusing on driving progress through key strategic pillars, which consist of Talent Investment (Investment in Human Capital Development), the development of technological infrastructure, and the promotion of research and development. In addition, it mandates the inclusion of Quick Win Programs to generate rapid results, accelerating the application of Artificial Intelligence technology in sectors with urgent significance, such as Food Security, public health, and education.

In the dimension of ethics, the AI Ethics Guideline establishes an ethical value framework to be used as a standard for governance, covering key issues such as promoting Inclusivity and non-discrimination, respect for Humanity, maintaining Security, ensuring Transparency and inspectability, as well as prioritizing Personal Data Protection.

Furthermore, the Republic of Indonesia places great importance on developing an AI Literacy Framework and enhancing knowledge and understanding of Artificial Intelligence (AI literacy) to prepare its citizens and all sectors to cope with the digital technological transformation in the 21st century. This commitment is clearly reflected through the establishment of the Indonesia National Strategy for Artificial Intelligence 2020–2045, which is a comprehensive policy framework that sets the direction for the development, application, and governance of AI technology at the national level.

This strategy aligns with the Republic of Indonesia's Vision for 2045 under the concept of “Indonesia that is Sovereign, Advanced, Just, and Prosperous”, aiming for the country to become a significant global AI player while emphasizing the development of AI that is ethical, inclusive, and beneficial to all sectors of society (The Digital Watch newsletters, 2025), as follows:

Issue 1 : AI Human Resources Development (Talent Development) Integrating AI learning across all educational levels, from primary and secondary to higher education, to create personnel with AI knowledge and skills according to international standards.

Issue 2 : Building a Knowledge and Innovation Society Promoting AI research and development in collaboration with the government, private sector, universities, and civil society to support innovation creation in diverse fields such as medicine, education, food security, smart cities, and bureaucratic reform.

Issue 3: Digital Infrastructure Development Investing in cloud computing, Big Data, and establishing the “Satu Data Indonesia” system to consolidate national-level data into a single unified system.

Issue 4: Emphasis on AI Ethics and Governance Establishing a National AI Ethics and Data Council to oversee the development and application of AI in line with the Pancasila values and the 1945 Constitution.

Issue 5: International Cooperation Advancing cooperation with global partners in AI research and innovation to elevate the nation's technological capabilities.

From this strategy, the Republic of Indonesia aims not merely to use AI to improve economic and social efficiency, but also emphasizes the creation of a widespread AI-literate society, enabling citizens and organizations to utilize AI technology efficiently, responsibly, and sustainably. Thus, Indonesia's AI Literacy strategy is considered a crucial foundation for driving the country toward leadership in innovation and the digital economy in the Southeast Asian region.

One practical example effort aligning with the National Strategy for Artificial Intelligence of the Republic of Indonesia is the Road to AI Center[59] project by Udayana University. This project aims to educate the public about Artificial Intelligence technology, tested in the city of Bali, a cultural center and global tourism destination, enabling local people to effectively use technology for their livelihoods and work in various fields.

In the education sector, starting from the 2025–2026 academic year, the Republic of Indonesia has begun integrating Artificial Intelligence (AI) learning and Coding into the primary, secondary, and vocational curricula. Study hours are allocated from 2 hours per week at the primary and lower secondary levels, up to 4–5 hours per week at the upper secondary level, based on voluntary enrollment. This operation aligns with the international framework of UNESCO and focuses on developing skills in Computational thinking, systemic problem-solving, and algorithmic logic, rather than solely emphasizing technical skills. The Indonesian government has employed flexible teaching strategies appropriate for local contexts, including the development of "Unplugged" curricula for schools lacking infrastructure, while also cooperating with the private sector, such as Microsoft and Canva, to develop AI programs for education, train teachers, and create interactive learning experiences, with the goal of enhancing

[59] https://en.antaranews.com/news/376493/ministry-pushes-for-ai-utilization-for-cultural-affairs-and-tourism

the AI literacy of both teachers and students, preparing youth to be future technology leaders (GovInsider, 2025).

1.10 Federation of Malaysia

According to the results of the Government AI Readiness Index 2024, the Federation of Malaysia is ranked 24th globally and 2nd in the ASEAN region, reflecting its high potential and readiness. In the dimension of policy and governance, the government established the National AI Office in 2024 to serve as the main agency for driving the initiative, where the country's digital operations align with and reference the Digital Economy Blueprints and the National Fourth Industrial Revolution Policy. For the AI Ethics and Governance Framework (AIGE), the Federation of Malaysia has developed the AI Ethics and Governance (AIGE) Guideline, which was developed by referencing international standards from the Organisation for Economic Co-operation and Development (OECD) and the United Nations Educational, Scientific and Cultural Organization (UNESCO), blended with the nation's fundamental principles, or “Rukun Negara”. This guideline consists of five main components: (1) Maximizing AI Benefits (2) National AI Roadmap Support (3) 7 AI Principles (4) To Build Trustworthiness in AI and (5) Risk Management.

The seven key principles established are:

(1) Fairness (2) Reliability Safety and Control (3)Privacy and Security (4)Inclusiveness (5)Transparency (6) Accountability and (7) Pursuit of Human Benefit and Happiness.

Furthermore, principle number 7 is emphasized as a unique and distinctive characteristic of Malaysia, adhering to the philosophy that any Artificial Intelligence technology or initiative must “Put Humanity First” as the core objective of development.

The AIGE framework also focuses on the roles of three key stakeholder groups within the AI development and usage ecosystem: (1)End Users, both at the individual and organizational levels (2) Policy Makers, covering various government and

strategic planning agencies at both national and local levels and (3) Developers, Designers, Technology Providers.

For the future direction, the current AI roadmap is set to be replaced by the "National Artificial Intelligence Strategic Plan 2026–2030" under the concept of "Towards AI Nation", which will focus on driving progress across three main dimensions: Governance, Economy, and Society.

The Federation of Malaysia places great importance on developing an AI Literacy Framework to elevate the knowledge, understanding, and skills related to Artificial Intelligence (AI literacy) among its citizens, government agencies, the private sector, and society as a whole. The goal is for Malaysia to transition from being an AI consumer of technology to a full-fledged AI producer and developer. This commitment is clearly reflected through the establishment of the National AI Office (NAIO) under the supervision of the Ministry of Digital, which serves as the central body for setting the direction and driving the country's AI strategy (Adams, 2025).

Under the operations of the NAIO, the Federation of Malaysia has set out an AI strategy that covers the creation of a regulatory framework, the promotion of technology development, and the acceleration of AI innovation in all dimensions, with 7 key components (Adams, 2025) as follows:

Component 1: AI Technology Action Plan 2026–2030, a strategic action plan to increase competitive capabilities and build confidence among foreign investors.

Component 2: AI Adoption Regulatory Framework, the development of legal frameworks and policies to support the ethical and sustainable use of AI.

Component 3: Acceleration of AI Technology Adaptation, the rapid expansion of AI application across all sectors of the economy.

Component 4: AI Code of Ethics, the creation of ethical guidelines for AI to ensure responsible usage.

Component 5: AI Impact Study for Government, the assessment of the impact of AI use on government operations.

Component 6: National AI Trend Report, a report overviewing the trends and readiness of the AI market in various sectors.

Component 7: Building a comprehensive AI ecosystem that supports participation from the government, private sector, and public to create a society with AI knowledge and skills.

Additionally, research results from the consulting firm Kearney (2024) forecast that AI will contribute up to $1 trillion USD to the economic value of Southeast Asia by 2030, and the Federation of Malaysia has the potential to benefit by as much as $115 billion USD. To achieve this goal, the Malaysian government places importance on developing AI literacy skills at all levels of society to prepare the new generation and the workforce across all sectors to cope with change, drive innovation, and build competitiveness in the digital economy (Adams, 2025).[60]

One of the examples of practical efforts aligned with the National Artificial Intelligence Strategy of the Federation of Malaysia is the AI Class ASEAN[61] project, which was initiated by the ASEAN Foundation and supported by Google.org. This project is part of the AI Ready ASEAN program, which received US$5 million in funding support from Google.org. The AI Class ASEAN project provides an e-Learning Platform in Malaysia, developed in collaboration with local organizations: Universiti Teknologi Petronas – ASEAN Student Association (UTP-ASEAN Student Association) and Kolej Tingkatan Enam Tun Fatimah (KTETF), to train the general public and those involved in education on AI skills and knowledge for the responsible use of artificial intelligence systems. This also emphasizes the ASEAN philosophy focused on equitable access to services and various technologies for citizens in ASEAN.

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[60] Adams. L. (2025). Malaysia's AI Literacy Landscape - Defining Programs and Future Plans. https://blog.stackademic.com/malaysias-ai-literacy-landscape-defining-programs-and-future-plans-eaec57e467e0.

[61] https://cilisos.my/asean-foundation-launched-ai-class-asean-in-malaysia-supported-by-google-org/ This is the AI Class ASEAN project but it is being implemented in the Federation of Malaysia. AI Ready ASEAN is the flagship digital empowerment project of the ASEAN Foundation, which runs from 2024 to 2026, supported by $5 million in funding from Google.org. The project aims to build a transformation-ready future for the ASEAN region through the enhancement of AI literacy and ethical awareness, utilizing a multi-pronged approach that covers research, policy dialogue, comprehensive training, and regional awareness campaigns, with the goal of inspiring over 5.5 million people across Southeast Asia to explore and learn about AI. The project also aims to train 2,000 trainers to deliver in-depth, locally relevant AI literacy training to 800,000 youths, parents, and teachers, especially in underserved communities, across all 10 ASEAN Member States.

1.11 Democratic Republic of Timor-Leste

Strategy and Readiness Assessment for the advancement of AI initiatives in the Democratic Republic of Timor-Leste have been designated as essential components under the Timor Digital 2032 Master Plan and the Strategic Development Plan (SDP) for the period 2011-2030. Regarding the assessment of readiness status, the government has integrated cooperation with the United Nations Educational, Scientific and Cultural Organization (UNESCO) to implement the Readiness Assessment Methodology (RAM) in 2025.

Pillars and Development Guidelines: The outcomes of the aforementioned assessment have led to the definition of three strategic pillars to promote the responsible application of Artificial Intelligence, comprising (1) Inclusive Governance (2) Ethical Foundation and (3) Cultural Relevance, which emphasizes local context and the Tetum language.

Capacity Building and Legal Framework involve investment in the Nationwide Digital Skills Program, targeting civil servants and young leaders to build knowledge and understanding of AI Ethics and Applications, alongside the acceleration of the legislative process for key security-related laws and policies, namely the Cyber Security Policy, Cybercrime Law, and Data Protection and Privacy Law.

2. Overview of AI Literacy and Skills Development in ASEAN Countries

ASEAN regional countries have established various policies, strategies, activities, and projects concerning the development of skills and understanding related to the use of Artificial Intelligence technology. These countries are actively moving to create societies ready to cope with AI technology, with a clear direction for skill development that focuses not only on technical aspects but also encompasses the dimensions of ethics, responsibility, and participation from all sectors to create sustainable and inclusive economic and social growth.

From the literature review, the overview of Artificial Intelligence Literacy (AI Literacy) development to support the growth of the ASEAN region can be summarized as follows:

Table 10 Overview of the ASEAN AI Skills Framework

Key Issue	Description
Status and Progress in Policy Implementation	All ASEAN countries recognize the critical importance of AI as a driver of the digital economy, but there are clear differences in the progress of policy and framework formulation. They can be divided into 4 groups[62] (1) Leader Group: The Singapore is the most advanced, having fully released policies and guidelines in all 5 areas: National AI Strategy, AI Guidelines, Gen AI Guidelines, and Upskilling Initiatives. (2) Active Developers Group: The Federation of Malaysia, the Socialist Republic of Vietnam, Thailand, the Republic of Indonesia, and The Kingdom of Cambodia are in the stage of discussion and formulation of various strategies and guidelines. The Republic of Indonesia is the country that has already officially implemented AI Guidelines. (3) Action-Oriented Group: The Philippines, although lacking a clear strategy, places strong emphasis on AI Upskilling Initiatives for direct workforce development. (4) Foundational Stage Group: The Lao People's Democratic Republic, and the Republic of the Union of Myanmar are in the initial phase, focusing on building foundational Digital Literacy before developing more specific AI skills frameworks in the future.
Diverse Target Groups and Development Approaches	AI skills development projects in ASEAN are designed to cover various target groups. (1) Youth, Educators, and General Public: Projects such as “AI Ready ASEAN” in Brunei Darussalam and the

[62] The grouping based on the project team's opinions, analyzed from the data studied in the project.

Key Issue	Description
	Federation of Malaysia, and “AI for All Thais” in Thailand, aim to build widespread awareness and understanding. (2) Education Sector: Many countries focus on integrating AI into the education system, such as the “AI Guidance for Schools Toolki” project in Negara Brunei Darussalam, the release of ICT competency standards for teachers by the Lao People's Democratic Republic, and the introduction of AI into the national education curriculum by the Republic of Indonesia. (3) Workforce and Industry: The “SPARK” project in the Republic of the Philippines directly aims to develop digital workforce skills, while the Singapore has the “Skills Pathway for Cloud” program to create specialized AI personnel. (4) Government Sector: The Socialist Republic of Vietnam prioritizes assessing the readiness and developing the skills of government officials through the AI Landscape Assessment (AILA) tool.
Skills Framework, Key Principles, Ethics, and Responsibility	Although the approaches differ, most skills frameworks share common components, often starting from basic digital skills up to advanced AI skills, such as in the DMIL framework of the Kingdom of Cambodia, which covers 8 areas ranging from information literacy and tool usage to problem-solving and security. What all countries highly prioritize is “AI Ethics and Governance” to ensure that the technology is used responsibly and does not create negative impacts. For example, Brunei Darussalam has issued an AI handbook with 7 key principles, such as transparency, fairness, and human-centricity, while

Key Issue	Description
	the Republic of Indonesia emphasizes developing AI in line with the “Pancasila Values”, and the Federation of Malaysia is in the process of developing an “AI Code of Ethics.”
Role of Multi-Sectoral Collaboration	Driving AI skills development in ASEAN is not solely a government mission but involves collaboration from multiple parties. Most projects in every country start with government organizations and receive support from private sector organizations related to Artificial Intelligence technology, such as projects in the Singapore, the Kingdom of Thailand, and the Socialist Republic of Vietnam. In the Singapore, collaboration with the private sector extends to allowing trainees to both intern and take up actual employment. Skills development focuses on skills and knowledge for teachers, secondary school students, and the public, such as: (1) Regional Organizations: The ASEAN Foundation plays a vital role in implementing the “AI Ready ASEAN” project. (2) Global Private Sector: Leading technology companies, such as Google.org, Microsoft, and Intel, support various projects through both funding and curriculum development. (3) Educational Institutions and Local Organizations: Universities and local organizations in each country serve as primary partners in implementing projects appropriate to their own contexts.
Common Challenges	(1) Despite high enthusiasm, many ASEAN countries still face similar challenges, especially the Republic of

Key Issue	Description
	the Union of Myanmar, which clearly reflects these issues. These include incomplete internet access infrastructure, a digital skills gap where a large portion of the population lacks basic digital literacy—which hinders learning advanced AI skills—and the absence of clear laws and regulations regarding data protection and privacy. (2) “The language used to interact with Artificial Intelligence systems” is treated as a second or third language that citizens should know. This is a crucial concept because the extent to which the AI system can assist human work significantly depends on the method and language users employ for asking and responding to the system (emphasizing this language is a direction set in projects originating in the Singapore and the Kingdom of Thailand).

Outcomes of the Workshop organized for representatives of member states in the Southeast Asian region (ASEAN) to provide feedback and recommendations regarding the study results.

The execution of the Workshop is considered a crucial step in elevating the study's outcomes to regional standards. It focuses on conducting a Workshop to provide representatives of member states in the Southeast Asian region (ASEAN) with the opportunity to participate in verifying, critiquing, and providing feedback on the knowledge and tools developed by the project team. This covers the study results from 3 main activities: Activity 1: Development of the AI Literacy Framework, Activity 2: Preparation of the AI Skill Checklist & Taxonomies, and Activity 3: Development of the AI Readiness Assessment Tool. The essence of the content presented at this Workshop was not merely preliminary study results, but outcomes that had already undergone refinement and revision through three Focus Group meetings. The purpose of this process was to ensure that the various tools and frameworks could be practically applied and gain acceptance from member states.

The 1 st Workshop was conducted in the Bangkok Metropolitan Area via an online system (Hybrid) on Thursday, September 25, 2025.

The 2 nd Workshop was conducted in the Bangkok Metropolitan Area via an online system (Hybrid) on Wednesday, October 15, 2025.

The 3rd Workshop was conducted from Wednesday, November 26, 2025, to Friday, November 28, 2025, in a Hybrid format (both offline and online) in the Eastern region, in Bangkok-Chonburi province, Thailand.

The Outcomes of the Workshop

A key principle that differentiates the Artificial Intelligence Transformation Innovation Framework (AITIF) project when compared to other standard frameworks is the recognition of the rapidly changing dynamics of Artificial Intelligence technology and its diverse components, where the scope of interest is not limited solely to Large Language Models (LLMs) or Generative AI (GAI), which are currently popular.

In this regard, the framework presented guidelines for the application of Hybrid AI Systems, which integrate the working models of two main types of Artificial

Intelligence: (1) Knowledge-driven AI, such as Rule-based Systems; and (2) Data-driven AI, such as Analytic AI or Machine Learning technology.

Development of the Artificial Intelligence Literacy Framework to support future development under the International Cooperation Framework (AI Literacy Framework) (AI Literacy Framework)

The AI Literacy Framework (ALF) has been designed to support the capacity development of skilled labor in the ASEAN region. It is a comprehensive set of Competencies that enables individuals to understand, evaluate, and apply Artificial Intelligence technology safely and ethically, covering both the context of daily life and work performance within organizations.

The key design principles of the AI Literacy Framework focus on four main components:

Firstly, it is the coverage of the Practical Application Level.

Secondly, it is the integration of the Hybrid AI Approach, which combines both Knowledge-driven and Data-driven systems.

The third principle is prioritizing Inclusiveness, considering linguistic diversity and differences in digital infrastructure within the ASEAN region to align with the ASEAN Digital Masterplan 2025 (ADM 2025) in creating a Digitally Inclusive Society.

The final principle is Full Customizability, allowing for flexible modification to suit different contexts, roles, and job natures, to accommodate the rapid dynamics of changing essential competency sets.

Regarding the target groups and competency levels under the Artificial Intelligence Transformation Innovation Framework (AITIF), the main target groups are classified into 4 levels, arranged by complexity of skills from basic to advanced, similar to a pyramidal structure, as follows:

The first level is the General Public, which focuses on the ability to Utilize AI.

The second level is the Worker within organizations, which focuses on the skills of adaptation and application (Adapt AI).

The third level is the Developer, which focuses on engineering and system design skills (Engineer AI).

The fourth level is the Leader/Management executives, which focuses on the ability to manage (Manage AI).

The AI Literacy Framework has categorized competencies into 3 main groups to cover all dimensions of learning: Technical Skills, which is a set of specific skills defined by the roles and responsibilities of each job position; AI Core Knowledge, which reflects the Hybrid working approach, covering important topics such as Agent AI, Knowledge Representation, Reasoning, Planning, and Machine Learning; and Human-Related Attributes in the Context of AI, which focuses on the interaction and collaboration between humans and AI, ethics and responsibility, application within organizations, as well as issues of inclusiveness and sustainable development.

The AI Readiness Assessment Tool (AIRAT) has been designed and developed to serve as a Self-Assessment tool at the organizational level, with the objective of measuring the overall readiness level for applying Artificial Intelligence technology. The development process of this tool involved systematically gathering data and surveying the opinions of approximately 10 senior executives from leading organizations to ensure that the assessment criteria align with the context of actual business operations.

In determining the structure and main components of the tool, guidelines from the Singaporean standard framework were significantly applied and influenced the definition of the Six Pillars and the prioritization of indicators. The AIRAT assessment structure is classified into Six Pillars, covering 15 questions, consisting of: (1) Leadership Stewardship (2) Value Investment (3) People (4) Trust Governance (5) Data Quality and (6) Reliable Infrastructure.

Key Features of the AI Readiness Assessment Tool

The AIRAT (AI Readiness Assessment Tool) for the ASEAN region possesses a unique identity that distinguishes it from general assessment tools by integrating the following key components:

1. Business Process Analysis: This tool includes 2 questions focused on analyzing and improving operational processes, which reflects the significant empirical evidence indicating that over 80% of senior executives recognize business process

improvement as a critical factor that must be addressed before applying Artificial Intelligence technology.

2. ASEAN Inclusiveness and Responsible AI: 3 questions are defined to ensure that projects prioritize user groups who may have limited access to the system, aligning with ASEAN's strategic goal of moving toward an Inclusive Digital Society.

3. Organizational Readiness Measurement Criteria: The criteria are classified into 4 Stages, starting from the level of those interested but not yet commencing AI initiatives, progressing to the stage of initiating Pilot Projects, the stage of applying Turnkey Solutions, and the highest-level being organizations capable of In-house AI Development.

The AIRAT is designed to be a Generic Tool or preliminary guideline, with a recommendation that organizations customize it, including setting specific weightings and attributes, to best suit their industry context, organization size, and business model. Furthermore, since readiness level data is sensitive and constitutes business secrets which most organizations prefer not to disclose publicly, this tool is designed with a system for displaying Anonymously Comparative Results to maintain user privacy and trust.

The Workshop outcomes reflected diverse perspectives and key issues in driving the Artificial Intelligence Transformation Innovation Framework (AITIF), which can be summarized into 4 main points:

1. Dynamics of Skills Standardization and Modernization: The criteria for defining skills in the framework use a Reverse Engineering method, benchmarking against international standards to synthesize common attributes and dividing competency levels into 3 stages (Basic, Intermediate, Advanced). To align with the rapid changes in technology, especially Generative AI, a guideline was set for continuously reviewing and updating the skill sets every 3-4 months.

2. Integration of the Inclusivity Dimension: The issue of inclusiveness and accessibility is a core principle that has been formally integrated into the structure of the AI Readiness Assessment Tool (AIRAT). This is embedded within various assessment pillars, such as checking service policies for users with limitations, measuring staff

awareness of vulnerable user groups, and the readiness of infrastructure to support usage in restricted areas.

3. Guidelines for Applying the Assessment Tool: The readiness assessment tool is designed as a voluntary measure primarily for organizations to conduct a Self-Assessment. Although the measurement is at the organizational level, the results reflect the reality at the operational level, which government agencies can utilize for overall planning to expand deployment to the local level.

4. Further Development to Align with Real-World Usage: Based on the feedback gathered, there is a necessity to continuously update the tool to be more current with the present context. This includes adding a measure for Prompting Skills, which are essential for the current use of Generative AI. Additionally, there is a concept to develop an Admin Version system to allow regulatory bodies to access an overview of assessment results, enabling them to efficiently analyze the strengths and weaknesses of domestic industries.

The results and recommendations from the discussion will be synthesized to improve the Innovation Framework (AITIF) and the Assessment Tool (AIRAT), making them more accurate and responsive to real-world usage at the regional level.

The focus is primarily on integrating modern skills, such as “Prompting Skills” into the assessment system, and accelerating the development of the Admin Version function to facilitate data analysis, coupled with establishing a mechanism for reviewing the skill sets every 3-4 months to ensure the tools remain up-to-date and flexible enough to accommodate the constantly changing dynamics of Artificial Intelligence technology.

The National Board of Digital Economy and Society Office

Address: 120, Moo 3, 3rd and 5th floor,
Government Complex Chaengwattana (Building C),
Soi Chaengwattana 7, Chaengwattana Road,
Thung Song Hong Subdistrict, Lak Si District,
Bangkok 10210, Thailand
Tel: +668 0072 7072
Email: saraban@bde.go.th

https://www.bde.go.th/