Policymaking for a more resilient world: leveraging the World Risk Poll for more effective digital, labour, and industrial policies

POLICY BRIEFS: EXECUTIVE SUMMARIES (DRAFT FOR DISCUSSION)

JULY 2025

About this booklet

This booklet brings together **executive summaries** of the policy briefs developed as part of the "*Policymaking for a more resilient world: leveraging the World Risk Poll for more effective digital, labour, and industrial policies"* project, funded by **Lloyd's Register Foundation**. The project is led by Cambridge Industrial Innovation Policy, in partnership with UNIDO, and uses data from the **Lloyd's Register Foundation World Risk Poll** to tackle critical global safety and policy issues, focusing on Southeast Asia. By analysing global perceptions of risk related to artificial intelligence, personal data usage, and workplace hazards, the project aims to shape future digital technology, industry, and labour policies, contributing to more resilient and inclusive economies worldwide.

Executive summaries of the following policy briefs are presented:

- Advancing workplace safety in Southeast Asia
- Manufacturing a more resilient world: the role of industrial policy in mitigating socio-economic risks in Southeast Asia
- Perceptions of AI risks and the role of AI governance in Southeast Asia
- Rising risks and digital trade policy in Southeast Asia

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Cambridge, United Kingdom | 2025

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Advancing workplace safety in Southeast Asia

JENNIFER CASTAÑEDA-NAVARRETE, JIAQI LI, HANLIN ZHANG, AND ZOI ROUPAKIA

1. Advancing workplace safety in Southeast Asia

Authors: *Jennifer Castañeda-Navarrete, Jiaqi Li, Hanlin Zhang, and Zoi Roupakia*

This policy brief draws on data from the Lloyd's Register Foundation World Risk Poll (WRP) to examine recent trends in occupational health and safety (OSH), focusing on the role of international conventions in addressing these challenges. It forms part of a broader series exploring evidence-based policy options to reduce risk and enhance health and safety outcomes across Southeast Asia, funded by Lloyd's Register Foundation.

Ensuring safe working conditions is fundamental to fostering decent employment and sustainable economic growth. Yet, across the world, workers continue to face hazardous conditions, with many exposed to risks of injury, illness, or even death. According to data from the WRP, between 2021 and 2023 nearly 18% of the global workforce, approximately 667 million adults, reported experiencing serious work-related harm.[1]

While Southeast Asia faces workplace harm rates similar to the global average, the region's rapid industrialisation and labour market shifts often outpace the development of adequate OSH systems.

Key messages

Southeast Asia has low rates of reporting workplace harm and participation in OSH training

Reporting workplace harm is essential for improving OSH, as it enables policymakers and employers to identify risks, implement preventive measures, and ensure worker protection.[2] However, under-reporting remains a significant challenge.

In Southeast Asia, only 48% of workers reported the harm they experienced between 2021 and 2023, placing the region among the lowest in reporting rates. This contrasts sharply with regions like Australia and New Zealand and North America, where reporting rates are 80% or higher, and it falls below the global average of 51%.[3]

Reporting workplace harm is essential for understanding how workers are exposed to risks and hazards. However, preventive measures are also needed to reduce workplace harm. A key example is OSH training, which gives workers the knowledge and skills to prevent accidents and injuries.

Despite the importance of OSH training, only a third of workers globally reported taking part in such training in 2022 and 2023. Participation rates are even lower in Southeast Asia (21%) than regions

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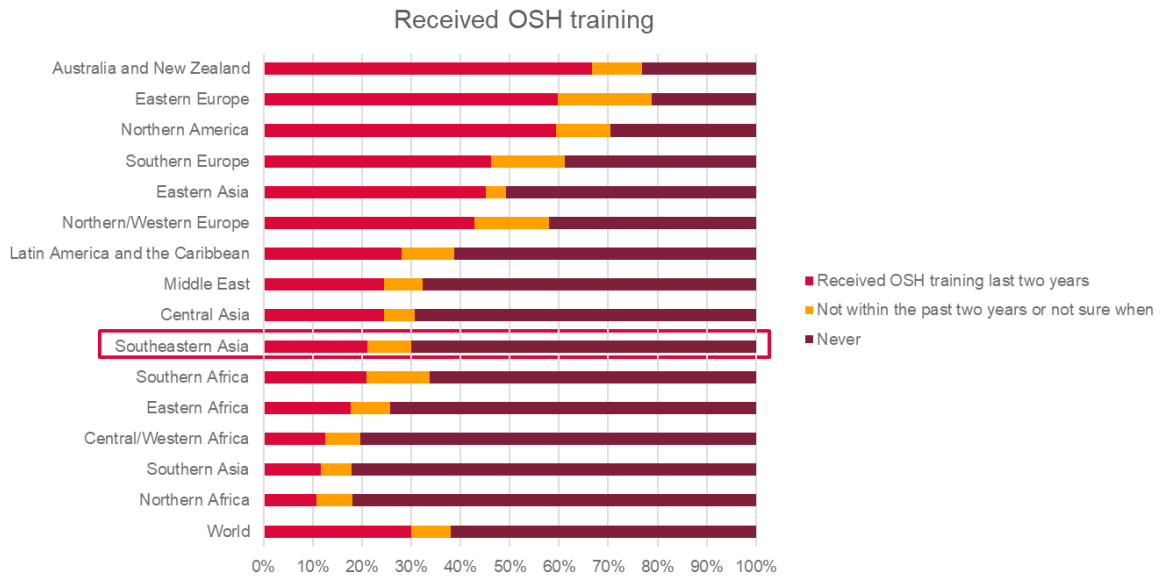
[1] World Risk Poll (2024). *Report Engineering safer workplaces: Global trends in occupational safety and health*. https://doi.org/10.60743/X8MD-V972

[2] Pransky, G., Snyder, T., Dembe, A. and Himmelstein, J. (1999). Under-reporting of work-related disorders in the workplace: a case study and review of the literature, *Ergonomics*, 42:1, 171–182, DOI: 10.1080/001401399185874

[3] Lloyd's Register Foundation (2024). *World Risk Poll 2023*.

such as Australia and New Zealand (67%), Eastern Europe (59%), and Northern America (59%) (Figure 1.1).[4]

FIGURE 1.1: SOUTHEAST ASIA LAGS BEHIND IN OCCUPATIONAL SAFETY AND HEALTH TRAINING



Note: Response to the questions "Have you ever had any health and/or safety training about any risks associated with your work? Did you receive health and/or safety training for work in the past two years?"

Source: Lloyd's Register Foundation (2024). *World Risk Poll 2023*.

Women are less likely to report workplace harm and to participate in OSH training

Compared to global trends, women in Southeast Asia are less likely than men to report workplace harm. Only 43% of women who experienced workplace harm reported it, compared to 48% of men. This gap is particularly significant in Cambodia, Thailand, and the Philippines, where men report workplace harm at rates more than 20% higher than women. In comparison, women are more likely to report harm than men in Malaysia and Indonesia (Figure 1.2).

A gender gap in OSH training participation was also observed. In Southeast Asia, only 25% of women and 34% of men took part in OSH training. Countries with the largest gender gaps include: Thailand, Malaysia, the Philippines, Cambodia, and Myanmar.[5]

These gender gaps are particularly concerning given that occupational risks for women have historically been understudied. Safety regulations, equipment, and risk assessments are typically designed around male bodies and work patterns, making women more vulnerable to injury and long-term health issues.[6]

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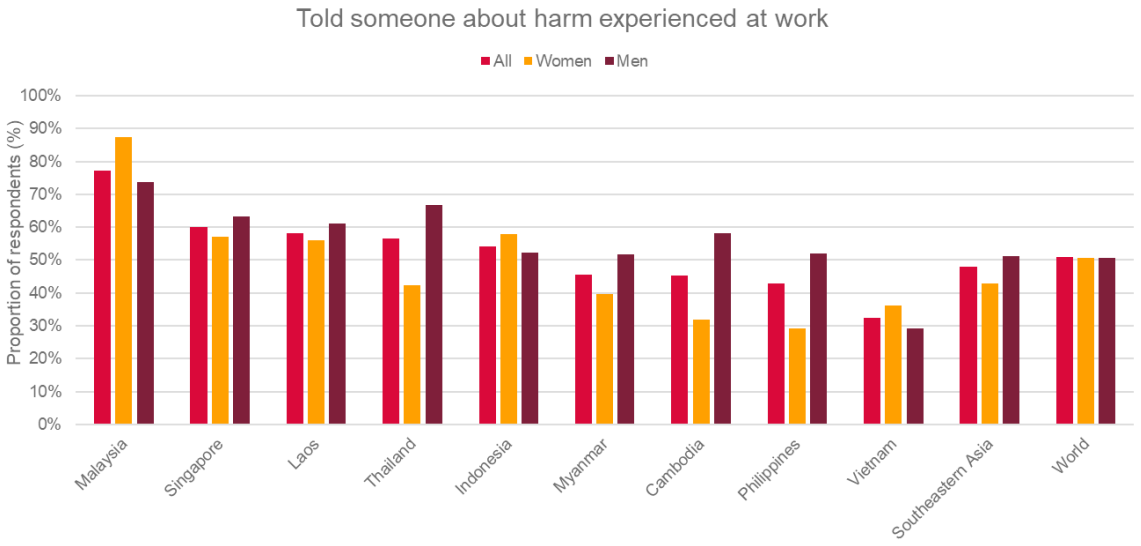
[4] Lloyd's Register Foundation (2024).*World Risk Poll 2023*.

[5] Ibid.

[6] Criado Perez, C. (2019). *Invisible women: Exposing data bias in a world designed for men*. Chatto & Windus.

FIGURE 1.2: WOMEN IN SOUTHEAST ASIA ARE LESS LIKELY THAN MEN TO REPORT WORKPLACE HARM



Note: Response to the question "Please think about the serious harm you personally experienced from working. Did you tell someone who is responsible for safety or health at your work, such as your supervisor, manager, or the health or social services, about your injury or illness?"

Source: Lloyd's Register Foundation (2024). *World Risk Poll 2023*.

Early ratifiers of ILO Conventions show better OSH outcomes

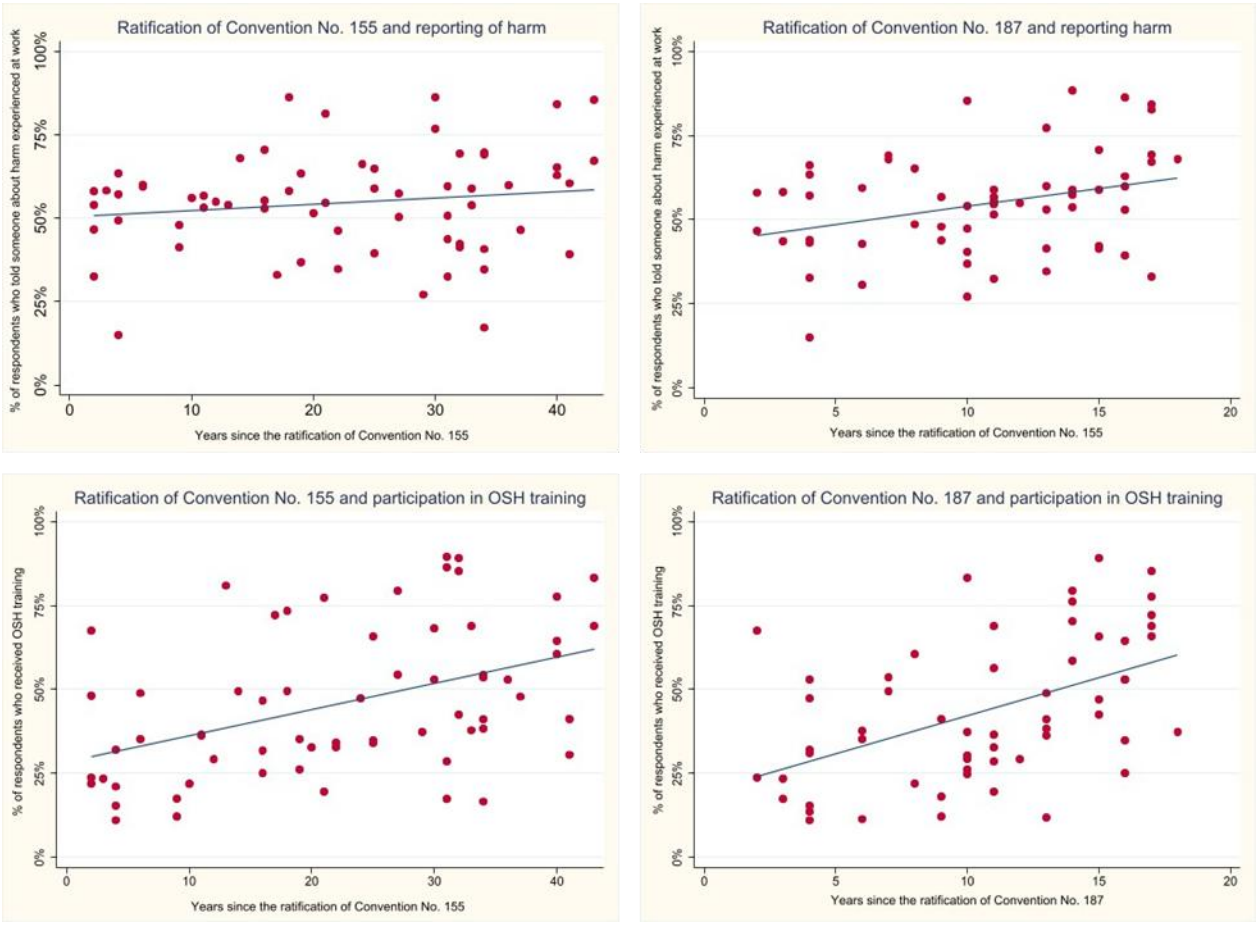
Since its founding in 2019, the International Labour Organization (ILO) has led international efforts to promote safe and healthy working environments. Through Conventions Nos. 155 and 187, the ILO provides a foundation for national policies, supported by a wider ecosystem of international labour standards, codes of practice, and technical guidelines.[7]

Our findings indicate that early ratification is associated with better workplace safety. Workers in countries that ratified these conventions earlier are less likely to report workplace harms or express concerns about occupational risks.

Positive associations were also identified between ratifying conventions and reporting workplace harm/participating in OSH training. Workers in countries that ratified these conventions earlier were more likely to report workplace harm and participate in health and safety training (Figure 1.3).

[7] ILO (2023). *Implementing a safe and healthy working environment: Where are we now?* Geneva.

FIGURE 1.3: RATIFYING ILO CONVENTIONS 155 AND 187 IS ASSOCIATED WITH REPORTING WORKPLACE HARM AND PARTICIPATING IN OSH TRAINING



Source: Lloyd's Register Foundation (2024). *World Risk Poll 2023*; ILO (2024). NORMLEX - Information System on International Labour Standards.

Policy recommendations

Evidence from regional and global trends highlights six key opportunities to strengthen institutional frameworks and enhance occupational health and safety (OSH) across Southeast Asia:

1. *Promote ratification of key ILO Conventions*
   Increasing the ratification of ILO Conventions, particularly No. 155, is a critical step in reinforcing national commitment to OSH. Countries that have yet to ratify the Convention may be supported by awareness-raising and technical assistance.

2. *Strengthen national tripartite bodies*
   Active national tripartite bodies are essential for ensuring inclusive, coordinated OSH governance. Countries where such bodies are absent or inactive could prioritise establishing or revitalising them, encouraging dialogue among government, employers, and workers.

3. *Update and align national OSH policies and programmes*
   Outdated or missing OSH policies and programmes hinder effective implementation. These frameworks should be regularly reviewed and revised, ensuring alignment with international standards and emerging risks.

4. *Develop robust national recording and notification systems*
   Reliable data on occupational injuries and diseases is fundamental to evidence-based policymaking. Regional cooperation could contribute to developing standardised systems for recording and notifying OSH incidents, with mechanisms for regular data collection and public reporting.

5. *Integrate gender-responsive approaches in OSH*
   Gender gaps in the reporting of workplace harm and participation in OSH training underscore the need for a gender-responsive approach in OSH policies and programmes. This may include conducting gender-sensitive risk assessments, promoting inclusive training, and ensuring women's representation in OSH decision-making bodies.

6. *Leverage global initiatives, including the Manifesto for Global Industrial Safety*
   Southeast Asian countries can benefit from engaging with global initiatives such as the Manifesto for Global Industrial Safety.[8] Aligning national strategies and business practices with these frameworks offers valuable access to international good practices, technical expertise, and opportunities for cross-border collaboration.

By addressing these areas, countries across the region can build stronger, more resilient OSH systems that safeguard workers' health, enhance productivity, and contribute to sustainable economic development.

[8] Global Initiative for Industrial Safety (2025). *Manifesto for Global Industrial Safety*.

Manufacturing a more resilient world: the role of industrial policy in mitigating socio-economic risks in Southeast Asia

MATEUS LABRUNIE, NIELS KUNZ, HAITIAN XIA, HAOYU ZHONG, CARLOS LÓPEZ-GÓMEZ, MARCO KAMIYA

2. Manufacturing a more resilient world: the role of industrial policy in mitigating socio-economic risks in Southeast Asia

Authors: *Mateus Labrunie, Niels Kunz, Haitian Xia, Haoyu Zhong, Carlos López-Gómez, and Marco Kamiya*

This policy brief examines the critical role that industrial capabilities, particularly in manufacturing, play in bolstering socio-economic resilience in an era of overlapping global shocks. Our analysis integrates data from the Lloyd's Register Foundation World Risk Poll (WRP) with complementary quantitative indicators (e.g. UNIDO's Competitive Industrial Performance Index, ASEAN disaster-frequency statistics) and case studies of six Southeast Asian industrial policies. By combining quantitative resilience profiling with concrete policy examples, we identify pathways for governments to safeguard livelihoods, secure supply chains, and sustain growth.

Over the past 5 years, a convergence of crises – most notably the COVID-19 pandemic, ongoing armed conflicts, accelerating climate impacts, and renewed geopolitical tensions such as the China–US trade war and fresh tariff hikes – has exposed profound vulnerabilities in global value chains and domestic economies. The pandemic triggered unprecedented supply chain breakdowns and financial stress, particularly for micro-, small-, and medium-enterprises. Armed conflicts disrupted energy and food markets, driving inflation and compounding economic instability in import-dependent nations. Meanwhile, intensifying climate extremes – typhoons, floods, droughts – have repeatedly damaged infrastructure, derailed production, and forced costly rebuilding efforts. Geopolitical frictions have injected further uncertainty into international trade, prompting businesses to re-evaluate sourcing strategies.

Key messages

The manufacturing sector can be both a shock absorber and an engine of transformation

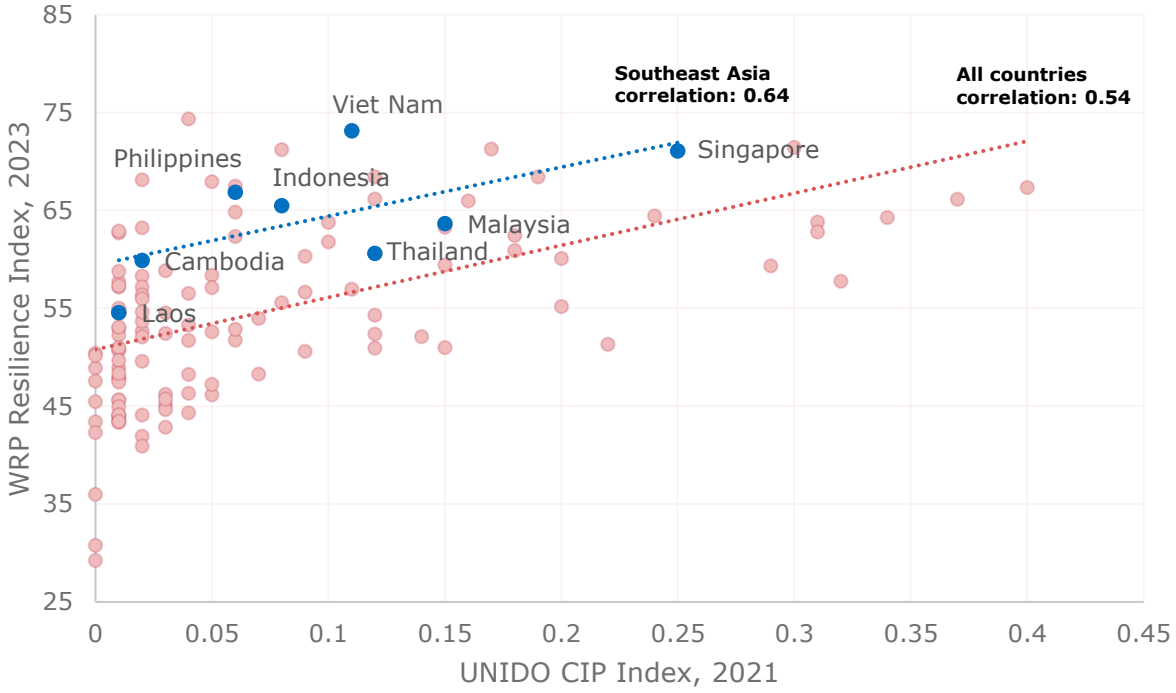
Manufacturing underpins resilience in three main ways:

- **Producing critical goods:** Ensuring local availability of essentials (food, medicines, fuel, clothing) and infrastructural assets (machinery, components, and engineering services vital for transportation, energy, and communications networks) when imports are disrupted.
- **Tackling emergencies:** Producing specialised items (field hospitals, water-purification units, personal protective equipment (PPE), vaccines, and treatments) to address specific crisis needs. For example, during COVID-19, nations with strong domestic manufacturing infrastructures rapidly retooled production lines to supply PPE, ventilators, and critical medical inputs, bridging global shortages.
- **Recovery and growth:** In addition to historically being a key sector for economic growth and high-quality job creation, some manufacturing industries have endured economic crises and offered "pockets of resilience" for national economies.

Industrial performance is correlated with resilience levels

The World Risk Poll (WRP) Resilience Index combines four dimensions – individual, household, community, and societal – to measure a population's capacity to withstand, adapt to, and recover from shocks. UNIDO's Competitive Industrial Performance (CIP) Index measures countries' capacity to produce and export goods, technological sophistication, and overall impact on global industries. As shown in Figure 2.1, there is a positive correlation between these indices, which highlights the link between industrial performance and resilience.

FIGURE 2.1: CORRELATION BETWEEN THE WRP RESILIENCE INDEX AND UNIDO'S CIP INDEX



Source: Own elaboration based on Lloyd's Register Foundation (2024). *World Risk Poll 2023 - Resilience Index,* and UNIDO (2024). *CIP index*.

Workers in Southeast Asia and abroad see the manufacturing sector as a source of social and financial resilience

A thriving manufacturing sector delivers not only macroeconomic stability but also tangible social and financial gains at the individual level:

- **Workplace safety:** Global WRP data shows that manufacturing workers report some of the lowest rates of serious physical harm among sectors. Strict occupational health regulations and investments in automation have reduced accident rates, contributing to safer work environments.
- **Continuous safety improvements:** Over 40% of manufacturing employees now feel safer than they did 5 years ago. This is partly a result of new technologies – autonomous vehicles for heavy transport, drones for hazardous inspections, and advanced monitoring systems – that automate high-risk tasks and enforce safety protocols.

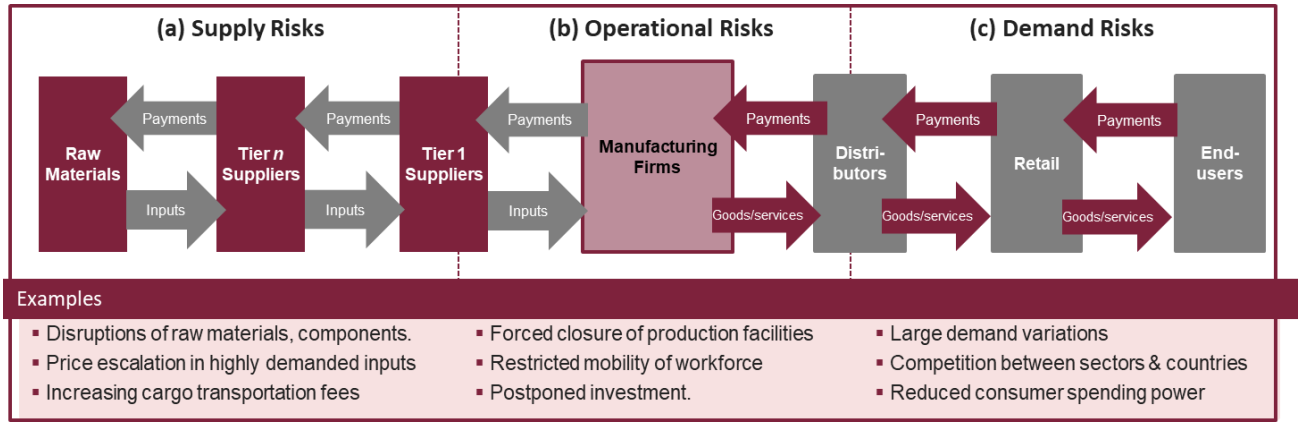
- **Non-discrimination:** Manufacturing firms, bound by rigorous labour standards, report fewer incidences of discrimination than sectors such as education, healthcare, or public administration. Inclusive recruitment and standardised safety training help to create equitable workplaces.
- **Mental health:** The stability, formal contracts, and clear career pathways offered by manufacturing roles correlate with a reduced share of workers reporting serious mental health issues, compared to utilities or non-market services sectors, where informal work and high stress levels are more prevalent.
- **Financial security:** With higher wages and formal benefits, manufacturing employees are better positioned to deal with income shocks. In Southeast Asia, 64.7% of manufacturing workers reported they could cover their household's basic needs for over 3 months without income, a rate much higher than most other sectors, and agriculture and construction.

The manufacturing sector faces mounting disruptions and technological risks

Despite these strengths, the manufacturing sector faces different mounting risks (Figure 2.2), particularly related to:

- **Supply chain disruptions:** The rising incidence of extreme weather events in Southeast Asia – for example typhoons increasing by over 20% since 2012 – threatens complex, multi-tier supply networks, resulting in production delays and cost spikes.
- **Technological risks:** The adoption of AI, the industrial internet of things (IIoT), additive manufacturing, and smart robotics boosts productivity but also introduces new risks, from cybersecurity threats to worker mental health risks. World Risk Poll data shows mixed public perceptions of AI: 36.7% believe it will help, while 30.2% fear harm.

FIGURE 2.2: DIAGRAM OF MANUFACTURING RISKS



Source: Diagram adapted from Manuj, I. and Mentzer, J.T. (2008). Global Supply Chain Risk Management. *Journal of Business Logistics*, 29(1).

Industrial policies can enhance resilience by encouraging localisation, resource efficiency, and the green transition

Six Southeast Asian examples illustrate how targeted industrial policies can translate resilience theory into practice.

TABLE 2.1: INDUSTRIAL POLICIES PROMOTING RESILIENCE IN SOUTHEAST ASIA

Policy goals	Examples from Southeast Asia
Policies seeking to localise industrial production	**Indonesia's nickel export controls:** A comprehensive ban on raw-ore exports (2014, reinstated 2020) propelled domestic smelting capacity from 2 to 29 facilities, attracted foreign direct investment, particularly from China, and generated new downstream industries (ferronickel, stainless steel), boosting employment and foreign-exchange earnings. **Singapore's "30×30" food vision:** By 2030, the city-state aims to produce 30% of its nutritional needs locally through vertical farms, indoor hydroponics, and alternative proteins. The Singapore Food Agency's R&D grants, certification schemes ("SG Fresh Produce"), and talent-development programmes encourage innovation despite high land and energy costs.
Policies seeking to make more efficient and sustainable use of industrial resources	**Philippines' e-waste management:** Launched in 2017 and expanded in 2024 by UNIDO and the Philippines Department of Environment and Natural Resources (DENR), pilot centres formalise recycling, give informal workers safety equipment, and create cooperatives that recover valuable metals, reducing environmental hazards and feeding a nascent circular economy. **Vietnam's eco-industrial parks:** Since 2015, nine parks have achieved annual savings of 22,000 MWh electricity, 140 TJ fuel, 600,000 m^3 water, and 32 kt CO_2 emissions, through shared utilities, waste symbiosis, and green infrastructure, proving the model's environmental and economic dividends.
Policies seeking to adapt the production base to the green transition	**Malaysia's EV transition:** With the 2021 Low-Carbon Mobility Blueprint and 2023 Energy Transition Roadmap, Malaysia leverages its electrical–electronics base to host BYD's assembly plants and Proton's e.MAS 7 launch, while TNB and private partners are scaling charging networks towards 10,000 stations by 2025. **Thailand's low-emission rice project:** supported by German IKI funds, the Thai Rice Nationally Appropriate Mitigation Action (NAMA) project combines laser land levelling, site-specific nutrient management, and Good Agricultural Practices standards to lower rice-sector greenhouse gas emissions by over 30%, while smallholder outreach and financial incentives tackle adoption barriers.

Policy recommendations

Effective industrial policy can help Southeast Asian governments to build dynamic, adaptive economies capable of withstanding future shocks. Building from the findings presented in this policy brief, a few policy recommendations can be made:

1. *Owing to its role in ensuring socio-economic resilience, policymakers should develop policies to grow and strengthen the manufacturing sector*
   Manufacturing is often overlooked in national strategies, and its public image does not tend to accurately reflect the benefits it offers to workers and the economy. As this policy brief has highlighted, the manufacturing sector generates high-paid, safe, non-discriminatory jobs, and continuously seeks to improve itself. Promoting the growth of the manufacturing sector should be a priority for governments around the world, including in Southeast Asia.

2. *Promote localisation, redundancy, and industrial diversification to mitigate disruption risks*
   Owing to increasing risks of supply chain disruptions, policymakers should consider a range of mitigation approaches. These can include incentivising localisation, redundancy, stockpiling, trusted partnerships, sourcing from nearby countries, and international collaboration. As risks continue to evolve, periodic supply chain risk reviews and continuous monitoring of risks in critical sectors and products should be undertaken.

   Governments should also pursue industrial diversification strategies. This includes supply chain diversification, ensuring a diverse set of suppliers of key products, components, and raw materials, and diversifying the country's production structure, reducing the concentration of activities in a limited number of economic sectors.

3. *Monitor and regulate manufacturing to ensure it delivers high-quality, safe jobs, even in the face of technological changes*
   Manufacturing can be done in different ways – the WRP shows that, while in high-income countries it is mostly done in a safe way, in low- and middle-income countries safety issues remain a concern. Strong regulations, which are enforced, are thus crucial to ensuring the sector delivers high-paying, safe, and fulfilling jobs.

   With the advent of new technologies, risks will continue to change. Policymakers should be mindful of these new risks and develop appropriate policies to ensure new technologies are introduced that benefit everyone. For example, robust regulation and worker training are needed in digital security protocols.

4. *Spur manufacturers towards greener production*
   Greening practices, such as implementing circular economy models or investing in energy efficiency, not only bring financial benefits but also potentially increase resilience, as they reduce input needs and localise their provision. Incentivising manufacturers towards greener production is an important step for more resilient manufacturing sectors.

Perceptions of AI risks and the role of AI governance in Southeast Asia

ZOI ROUPAKIA, HANLIN ZHANG, JIAQI LI
AND JENNIFER CASTAÑEDA-NAVARRETE

3. Perceptions of AI risks and the role of AI governance in Southeast Asia

Authors: *Zoi Roupakia, Hanlin Zhang, Jiaqi Li, and Jennifer Castañeda-Navarrete*

Southeast Asia is at a critical juncture in its AI journey. With projections suggesting AI could contribute up to USD950 billion to the region's GDP by 2030 – equivalent to 10%–18% of national output in several countries[9] – ASEAN nations are racing to harness AI's economic potential through ambitious national strategies and regional frameworks. But this technological transformation also introduces systemic risks that could undermine public trust and reinforce inequalities if governance fails to keep pace.[10]

Public perception of these risks offers a crucial but often overlooked dimension of effective AI governance. While technical standards and legal instruments provide essential guardrails, they must ultimately align with the lived concerns of citizens to ensure legitimacy and public trust. This policy brief explores how public perceptions of AI risks align with governance approaches across ASEAN countries.

Drawing on data from the Lloyd's Register Foundation World Risk Poll (WRP),[11] the brief analyses regional patterns in concerns about AI harm, data security, and privacy. It asks: How do Southeast Asian citizens perceive AI risks? How do these perceptions vary by country and gender? And to what extent do existing governance frameworks address these concerns?

The analysis integrates WRP findings with data from leading AI governance indices and monitoring frameworks, including the OECD AI Incidents and Hazards Monitor, the Government AI Readiness Index,[12] the Network Readiness Index,[13] the Artificial Intelligence and Democratic Values Index,[14] the Global Index on Responsible AI,[15] and the AI Global Surveillance Index.[16] The brief applies an inclusive AI policy analysis framework[17] to assess how effectively Southeast Asian countries address risks through their national policies, ethical principles, and data protection laws.

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[9] Putra, B.A. (2024). *Governing AI in Southeast Asia: ASEAN's Way Forward*. Frontiers in AI.

[10] US–ASEAN Business Council (2023). *AI Governance in Southeast Asia.*

[11] Lloyd's Register Foundation (2021). *World Risk Poll.*

[12] Oxford Insights (2023). *Government AI Readiness Index.*

[13] Portulans Institute (2023). *Network Readiness Index.*

[14] Center for AI and Digital Policy (2023). *AI and Democratic Values Index.*

[15] Global Center on AI Governance (2024). *Global Index on Responsible AI*.

[16] Carnegie Endowment for International Peace (2022). *AI Global Surveillance Index.*

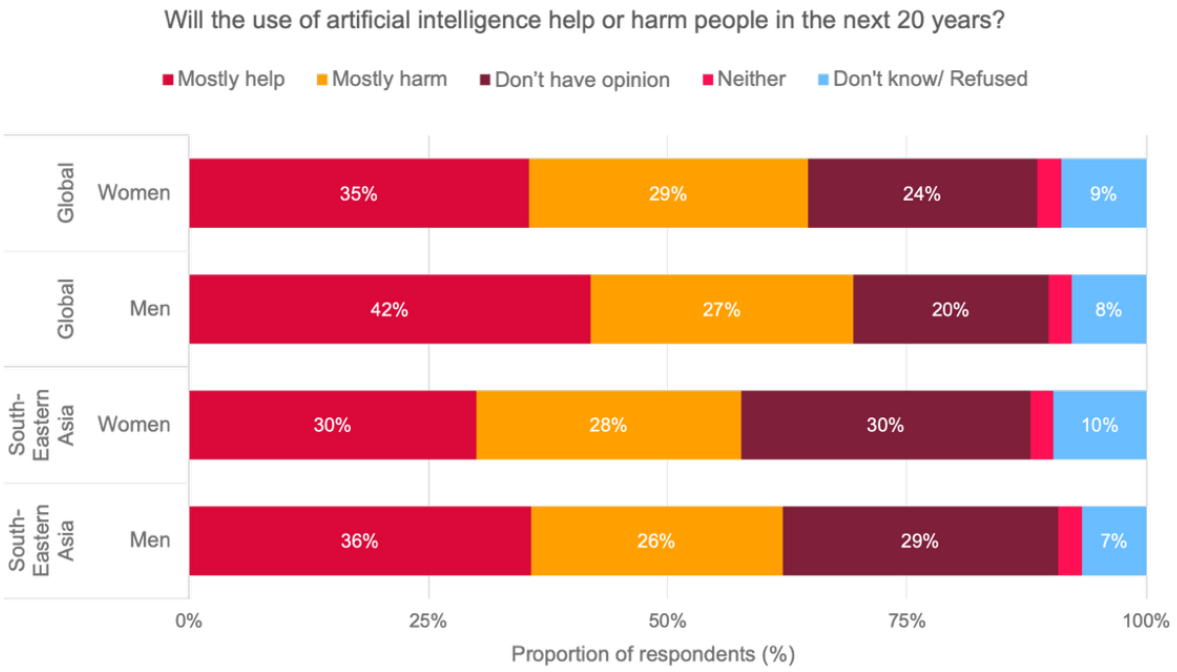
[17] Roupakia, Z. and Castañeda-Navarrete J. (2025). Feminist principles for an inclusive and transformative Artificial Intelligence. *Canadian Journal of Communication.*

Key messages

Southeast Asian citizens view AI with caution, with only 33% believing AI will mostly help society – below the global average of 39%. This sentiment varies by country: Malaysia, Cambodia, and Indonesia show more concern than optimism, while Vietnam, Thailand, and Singapore are more confident about the benefits of AI. These findings highlight the importance of tailoring governance approaches to national contexts.

Women across Southeast Asia are less optimistic about AI than men, especially where digital inclusion is limited. Globally, 42% of men and 35% of women believe AI will mostly help society in the next 20 years. In Southeast Asia, optimism drops: only 36% of men and 30% of women express confidence in AI's benefits (Figure 3.1). Countries with poor digital inclusion, such as Cambodia, demonstrate the widest gender gaps in AI optimism. These findings underscore the need for AI governance to address not only technical risks but also structural barriers to participation and representation.

FIGURE 3.1: WOMEN GLOBALLY AND ACROSS SOUTHEAST ASIA ARE LESS OPTIMISTIC THAT AI WILL HELP IN THE NEXT 20 YEARS

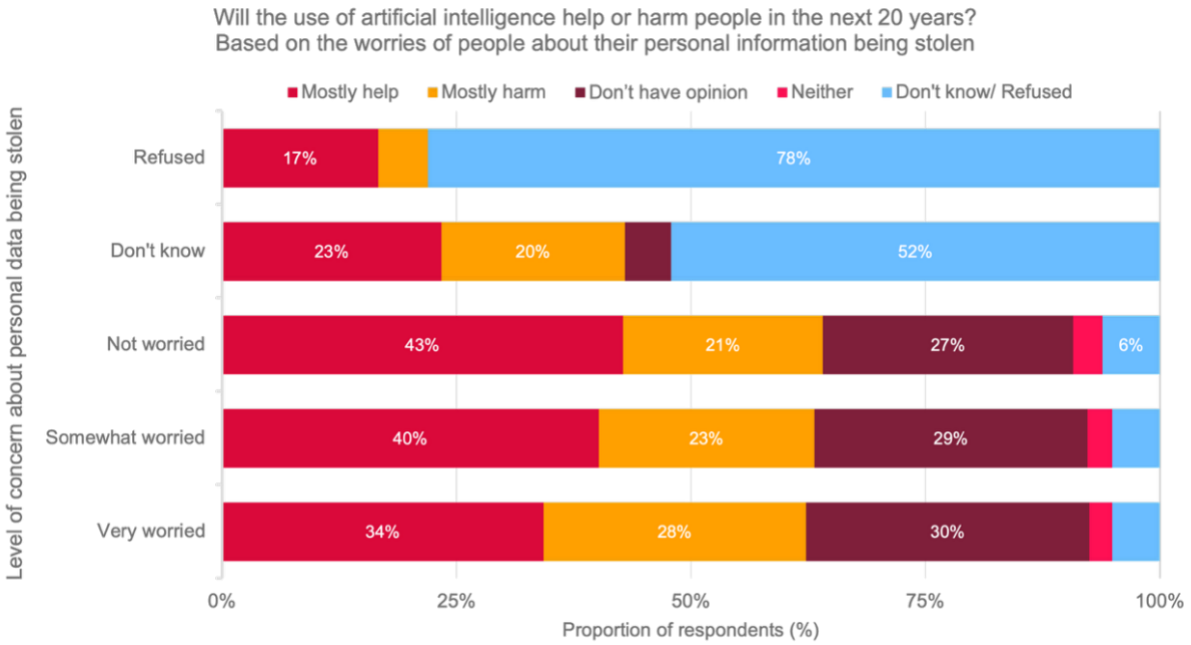


Note: Response to the question "These days, there are machines or robots that can think and make decisions on their own, often known as artificial intelligence. Do you think artificial intelligence will mostly help or mostly harm people in this country in the next 20 years?" Values less than 5% are not displayed.

Source: Lloyd's Register Foundation (2021). *World Risk Poll 2021*.

Data security is a widespread concern across the region, with Southeast Asia ranking globally among the most concerned regions about data theft. These concerns appear to be linked to AI perceptions: individuals most worried about data security tend to be less optimistic about AI. This emphasises the importance of robust data governance in building public trust in AI systems (Figure 3.2).

FIGURE 3.2: IN SOUTHEAST ASIA, PEOPLE WHO ARE "VERY WORRIED" ABOUT THEIR PERSONAL DATA BEING STOLEN ARE LESS OPTIMISTIC ABOUT AI

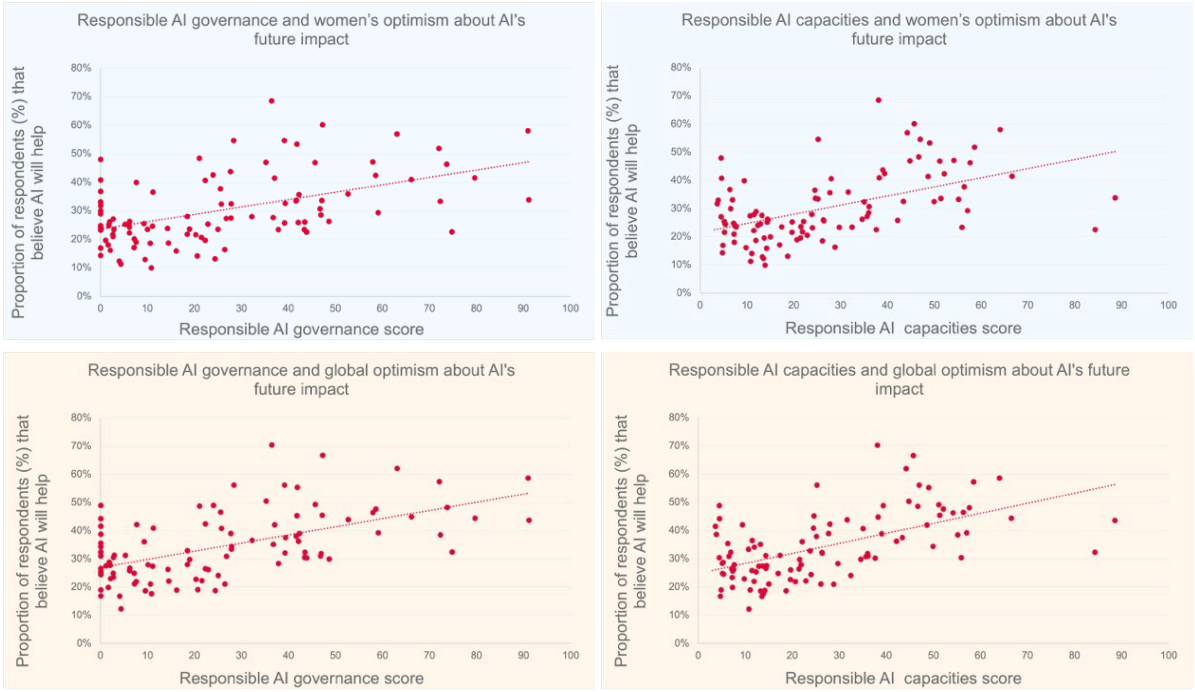


Note: Response to the question "These days, there are machines or robots that can think and make decisions on their own, often known as artificial intelligence. Do you think artificial intelligence will mostly help or mostly harm people in this country in the next 20 years?" and "When you use the internet or social media, how worried are you that the following things could happen to your personal information?"

Source: Lloyd's Register Foundation (2021). *World Risk Poll 2021*.

Countries with responsible and inclusive AI governance frameworks and stronger implementation capabilities show higher levels of optimism in AI's benefits. This correlation is particularly pronounced where efforts extend beyond a clear strategy and sound regulation to include accessible infrastructure, inclusive frameworks, representative data practices, and practical oversight mechanisms (Figure 3.2). Public trust is built not through strategy and regulation alone, but through demonstrable capacity and accountability.

FIGURE 3.3: GLOBAL AND WOMEN'S OPTIMISM ABOUT AI IS HIGHER IN COUNTRIES WITH STRONGER RESPONSIBLE AI GOVERNANCE AND CAPACITIES

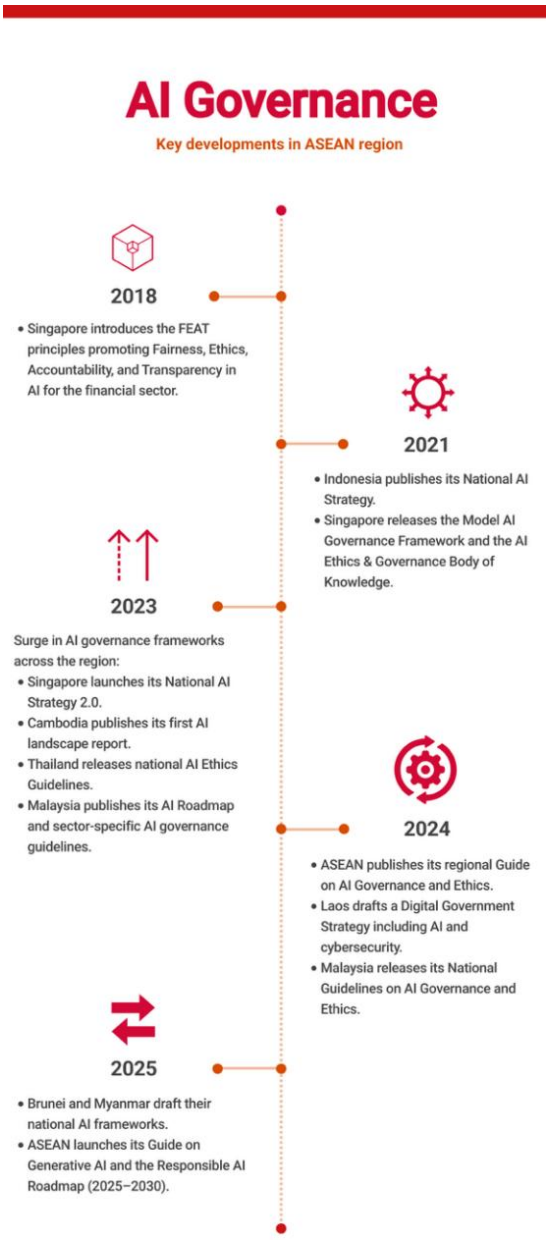


Note: Scatterplots show the relationship between women's AI optimism (top row) and global AI optimism (bottom row) and national scores in responsible AI governance (first column) and AI capacities (second column).

Source: Lloyd's Register Foundation (2021). *World Risk Poll 2021*; and Global Center on AI Governance (2024). *Global Index of Responsible AI.*

Regional and national AI policies in the ASEAN region promote responsible governance, but implementation remains uneven and largely voluntary, with few enforceable safeguards. Regional AI frameworks provide a forward-looking vision, including commitments to sustainability and inclusion, but they remain non-binding. National policies often prioritise human-centric values, and progress is evident in areas like transparency and adaptation to local contexts. However, several critical sdimensions of governance remain underdeveloped. Opportunities exist in developing mechanisms for overriding, repairing, or decommissioning problematic systems. Efforts to ensure that AI is inclusive are identified, but these remain focused on data representation, with limited attention on team diversity or public participation. Other opportunity areas include addressing environmental impacts and establishing legal boundaries for high-risk AI applications – such as mass surveillance or social scoring – which are essential to building public trust and defining the limits of responsible AI deployment.

FIGURE 3.4: KEY DEVELOPMENTS IN AI GOVERNANCE IN THE ASEAN REGION



Source: Cambridge Industrial Innovation Policy.

Most ASEAN countries have adopted data protection laws but differ in how they address the specific risks AI poses to privacy and accountability. Data protection plays a critical role in shaping how AI systems are governed, particularly as these systems increasingly rely on personal, biometric, and other sensitive data. While a few countries have introduced more targeted provisions for biometric data, many legal frameworks remain general and do not fully address the unique challenges AI presents. Few explicitly require privacy impact assessments for automated decisions, and in some jurisdictions, public sector data practices fall outside core oversight mechanisms. These differences highlight the need, and opportunity, for greater regional alignment to support consistent safeguards and build trust in cross-border AI deployment.

Policy recommendations

1. Foster inclusive, context-sensitive AI capacity and governance

- Support the development of sovereign AI initiatives in ASEAN countries with lower AI readiness, drawing on the experience of projects like ThaiLLM (Thailand) and Project Moonshot (Singapore).[18]
- Provide dedicated funding for localised AI models in under-represented languages across the region.
- Adopt a gender-responsive governance approach drawing on international practice, such as UNESCO's *Women for Ethical AI: outlook study on artificial intelligence and gender* and the Global Partnership on AI's recommendations.[19]
- Advance inclusive capacity building, including interdisciplinary training and participatory design processes involving marginalised communities.

2. Strengthen legal and institutional foundations for responsible AI

- Encourage ASEAN Member States to translate regional guidance – such as the *ASEAN Guide on AI Governance and Ethics (2024)* and the *ASEAN Responsible AI Roadmap (2025–2030)* – into national legal frameworks with enforceable safeguards for high-risk AI systems, particularly in public services.
- Establish clear legal boundaries prohibiting AI uses that are incompatible with fundamental rights – particularly mass biometric surveillance and social scoring – in line with UNESCO's *Recommendation on the Ethics of AI*.
- Expand engagement with UNESCO's Readiness Assessment Methodology (RAM) and support the adoption of Ethical Impact Assessments (EIAs) as a tool to evaluate risks before deployment.
- Create independent oversight bodies with enforcement powers and require human-in-the-loop safeguards for consequential public sector AI.

3. Advance regional harmonisation of data protection laws

- Accelerate alignment of all ASEAN national data protection laws with best practices, building on progress achieved in countries such as Indonesia, Malaysia, the Philippines, Thailand, and Singapore.
- Prioritise harmonisation in key areas such as automated decision-making provisions and biometric data governance, with special attention on public sector applications.
- Strengthen enforcement and redress mechanisms across all Member States.

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[18] Corinium Intelligence. (2025). *Shaping ASEAN's AI Future: Paving the Way for Responsible Innovation.*

[19] GPAI (2024). *Transformative AI Policy for Gender Equality*; UNESCO (2024). *Women for Ethical AI Outlook Study on AI and Gender.*

4. Accelerate the implementation of AI governance through regional and international cooperation

- Translate the ASEAN Responsible AI Roadmap (2025–2030) into national action plans with clear benchmarks, dedicated institutional leadership, and defined periodic reviews.
- Establish knowledge-sharing mechanisms between countries with advanced AI ecosystems and those in the earlier stages of development to address uneven implementation capacity.
- Leverage the Digital Economy Framework Agreement to establish interoperability standards for cross-border AI deployment and data sharing.
- Expand regional initiatives with shared AI auditing tools and joint regulatory sandboxes.
- Strengthen engagement in international cooperation initiatives, such as the Global Partnership on AI (GPAI), to build institutional capacity and align ASEAN efforts with evolving global governance norms.

5. Pioneer environmental impact measurement for AI in Southeast Asia

- Building on international practice,20 develop a measurement framework to create ASEAN-specific standards for tracking AI systems' environmental impacts.
- Promote reporting of energy use, carbon impact, and resource intensity of AI in public procurement and regulatory compliance.
- Establish an ASEAN working group on AI sustainability to develop regional benchmarks and best practices for green AI development.

[20] OECD and GPAI (2024). *Measuring the environmental impacts of AI compute and applications: The AI footprint.*

Rising risks and digital trade policy in Southeast Asia

KARISHMA BANGA AND DEEP MEHTA

4. Rising risks and digital trade policy in Southeast Asia

Authors: *Karishma Banga and Deep Mehta*

This policy brief draws on data from the Lloyd's Register Foundation's World Risk Poll (WRP) to explore public perceptions of digital risks – particularly those related to data privacy and AI – and how these concerns influence digital trade policy. As digital technologies and digital trade become more widespread, concerns about their socio-economic effects have also increased. In response, this brief seeks to:

i. understand the core challenges facing digital trade in the ASEAN region
ii. analyse how perceptions of digital risk shape digital trade policy
iii. analyse the fragmented landscape of digital trade policies, and
iv. identify actionable lessons and priorities for ASEAN economies.

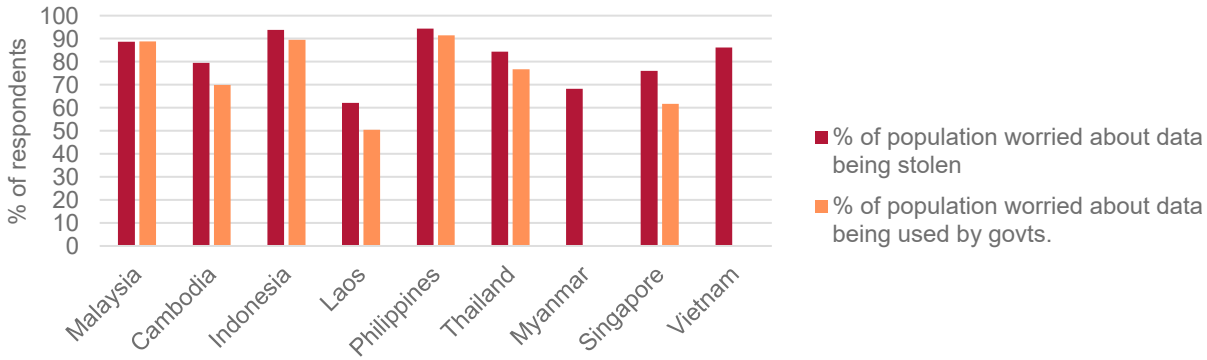
To inform these goals, we draw on data from the WRP, which captures perceptions of risk from over 125,000 respondents across low-, middle-, and high-income countries. We contribute fresh insights by integrating data on AI and data privacy risks with relevant databases on digital trade frameworks.

Key messages

There are significant but varied concerns about AI and data risks globally and within the ASEAN region

According to the WRP, over 80% of respondents in Malaysia, Indonesia, the Philippines, Thailand, and Viet Nam are concerned about their data being stolen. In Malaysia, Indonesia, and the Philippines, a similar proportion also fears government misuse of personal data. These concerns are compounded by increasing cyber threats, such as data breaches and fraud, which erode trust in digital transactions and hinder the growth of digital trade. The lack of harmonised data protection laws across ASEAN exacerbates these issues, creating regulatory uncertainty for businesses operating across the region.

FIGURE 4.1: PERCENTAGE OF POPULATION WORRIED ABOUT THEIR PERSONAL INFORMATION



Source: Lloyd's Register Foundation (2021). *World Risk Poll 2021*.

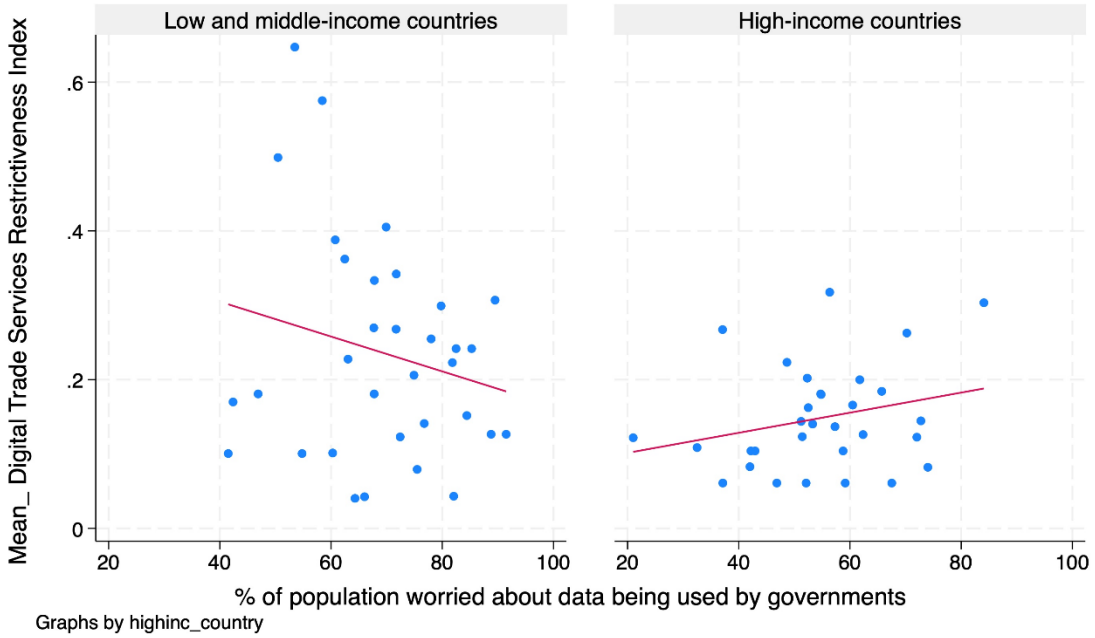
Attitudes towards AI vary significantly by income level and country. While over 45% of respondents in high-income countries believe AI will mostly help in the next 20 years, this figure drops below 35% in lower- and upper/middle-income nations. In Southeast Asia, countries like Thailand, Singapore, and Viet Nam seem relatively optimistic, with a majority expecting AI to be beneficial. Conversely, Cambodia and Indonesia are more cautious, with a larger share of the population fearing AI will do more harm than good over the next 2 decades.

Digital trade policy responses to rising digital risks tend to vary across the development levels of countries, with high-income countries responding by restricting trade in digital services

Countries facing higher perceived data and AI risks tend to have higher Digital Services Trade Restrictiveness Index (DSTRI) scores, which measures the openness of the economy to digital services trade. A higher score indicates more restrictions on digital trade in services.

However, looking across income levels, this relationship is observed for the sample of high-income countries but not for the sample of low- and middle-income countries. In the latter, higher data and AI risks are negatively correlated with the DSTRI. There are several possible reasons for this, including different levels of country dependence on foreign technologies, prioritising digital security according to national agendas, varying levels of trust in institutions, and differences in regulatory enforcement, digital advocacy, and public engagement in policymaking.

FIGURE 4.2: DIGITAL SERVICES RESTRICTIVENESS INDEX, BY INCOME LEVEL



Notes: Digital Trade Services Restrictiveness Index values (Y-axis) are represented as average values of the years 2019–2021.

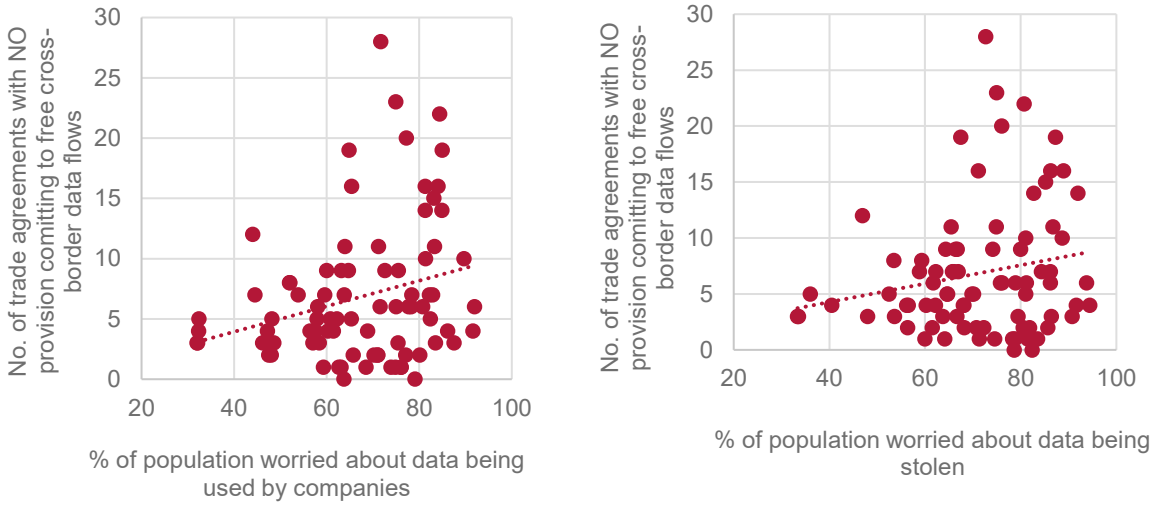
Source: Authors, based on Lloyd's Register Foundation (2021). *World Risk Poll 2021*; OECD (2025). *Digital Services Trade Restrictiveness Index*.

Countries with higher digital risks tend to preserve more policy space on data governance in digital trade agreements

Countries with higher perceived data risks are found to have higher participation in trade agreements that include a provision on digital trade or e-commerce provisions. These tend to be focused on data privacy, e-trade facilitation, and consumer protection.

Despite stronger digital trade regulation, these countries often avoid committing to free cross-border data flows or banning data localisation. There is a positive correlation between countries' digital risks and participation in trade agreements that have NO provision committing to free cross-border data flows and NO bans on data localisation, meaning the country retains some flexibility to impose data localisation rules. Higher public concern over data misuse is positively linked to retaining flexibility in trade agreements, reflecting priorities around data sovereignty and economic security.

FIGURE 4.3: CROSS-BORDER DATA COMMITMENTS AND DATA RISKS



Source: Lloyd's Register Foundation (2021). *World Risk Poll 2021*; and Burri et al. (2022). *TAPED dataset*.

ASEAN is fast progressing towards digital regulation, but there is a significant divergence in terms of data governance, cybersecurity, and e-commerce regulation

ASEAN is yet to implement any regulation or agreement concerning artificial intelligence in digital trade, but almost all ASEAN members have a conditional flow regime when it comes to data, safeguarding privacy, and personal data protection. There is a lack of harmonised cross-border data flow policies; the Philippines and Singapore allow a free flow of data across borders with minimal regulatory requirements, while Indonesia and Vietnam have a restrictive approach, completely or partially restricting cross-border data flows for national and public security reasons.

Policy recommendations

1. Embed a risk-based approach in digital trade agreements

ASEAN has the opportunity to integrate risk considerations – such as public concerns around data misuse and AI harms – into the design of digital trade agreements. This includes creating flexible, tiered provisions for data governance and AI regulation that reflect varying national capacities and public risk perceptions, while still promoting regional harmonisation where feasible.

Cross-border policies that are less informed about the workings of generative AI technologies may not regulate AI and data-related trade efficiently, potentially increasing the risk of data privacy violations and international legal disputes. Therefore, it is important for trade agreements to involve collaborations between countries on understanding AI-related developments and ethical concerns, to improve and evolve the terms of their agreements.

2. Foster regional cooperation on AI standards and capacity building

While the Digital Economy Framework Agreement could position ASEAN countries to develop an AI governance framework soon, a common regulatory framework on AI will be challenged by the existing digital divide between ASEAN members. Leading East Asia, Singapore had an AI readiness score of 84.2 in 2024, while Myanmar, Cambodia, and Lao PDR scored less than 40.[21] This implies that their policy prerogatives regarding AI will be different.

Given the digital divide within ASEAN, it is essential to support less digitally advanced members (e.g. Cambodia, Lao PDR, Myanmar) through regional initiatives focused on AI readiness. This can include shared technical standards, resource-sharing platforms, and ASEAN-wide capacity-building programmes to align national AI governance frameworks over time.

3. Strengthen the ASEAN Guide on AI Governance and Ethics with actionable implementation tools

The *ASEAN Guide on AI Governance and Ethics*, drafted in 2024, is a "practical guide" for organisations in the region that wish to design, develop, and use AI technologies. It provides guiding principles that would help to ensure trust in AI and designing, developing, and deploying ethical AI systems. Guidelines for monitoring, auditing, and accountability in AI systems in the *ASEAN Guide on AI Governance and Ethics* should address the needs and perspectives of AI actors and potential users in ASEAN countries.

To enhance its impact, ASEAN can supplement the guide with practical implementation tools such as monitoring frameworks, auditing guidelines, and country-level roadmaps. Incorporating context-informed methods like public consultations and landscape assessments will ensure the guide reflects the diverse needs of Member States.

4. Promote inclusive dialogue and collaboration on emerging technologies in trade policy

In regulating AI, a common approach has been to adopt technical standards on AI as part of digital trade agreements, such as the Digital Economy Partnership Agreement between Chile, New

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[21] Oxford Insights (2024). AI readiness report 2024. Available at: https://oxfordinsights.com/ai-readiness (Accessed: 25 March 2025).

Zealand, and Singapore (2020); the Australia–Singapore Digital Economy Agreement (2020); and the more recent UK–Singapore Digital Economy Agreement (2022).

ASEAN may establish a standing digital policy forum or working group to facilitate ongoing, multi-stakeholder dialogue on emerging technologies like generative AI. This forum would help to align trade policies with evolving technological realities, grow trust through transparency, and reduce the risk of cross-border legal disputes through informed cooperation.

Policymaking for a more resilient world

The “Policymaking for a more resilient world” project is led by Cambridge Industrial Innovation Policy, in partnership with UNIDO and funded by Lloyd's Register Foundation. It draws on the Lloyd's Register Foundation World Risk Poll and interconnected data sets to examine perspectives on AI, digital, labour, and industrial policy, focusing on the Southeast Asia region. The project aims to inform policies that ensure a safer and more sustainable future for all.

Cambridge Industrial Innovation Policy

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This report was delivered through IfM Engage, the knowledge transfer arm of the IfM, University of Cambridge.

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