

Policy Brief

Key Messages:

- ASEAN's labour market is facing unprecedented transformation driven by three intersecting megatrends: digitalisation, the green transition, and the gig/freelance economy. These trends present new opportunities but also introduce significant risks of exclusion and mismatch.
- In response to the scale, speed, and complexity of these changes, ASEAN Member States must pursue coordinated and inclusive reskilling and upskilling strategies that are scalable, flexible, and responsive to shifting employment demands.
- Meeting ASEAN's human capital goals requires a multi-pronged skills development strategy capable of enabling rapid workforce adaptation in the face of unpredictable economic conditions.
- Relying solely on traditional higher education pathways is no longer sufficient. ASEAN must invest in lifelong learning, promote flexible upskilling models, and mainstream micro-credentials as a central element of workforce development.
- International good practices – such as *SkillsFuture* in Singapore and *Kartu Prakerja* in Indonesia – demonstrate that combining digital training platforms, micro-credentials, and financial incentives can yield inclusive and adaptive skills ecosystems.
- Integrating micro-credentials into ASEAN's regional skills agenda offers a high-potential avenue to scale up workforce readiness. However, successful implementation will require strong political will, regulatory innovation, and thoughtful programme design to ensure effectiveness and equity.

Scaling Workforce Resilience and Adaptability: Toward Inclusive Lifelong Learning Systems in ASEAN

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*ASEAN's workforce is undergoing profound disruption driven by digitalisation, the green transition, and the rise of the gig economy – trends that are exposing substantial skills gaps across key demographic groups. While regional initiatives like the ASEAN HRD Roadmap represent important starting points, they often fall short of aligning with evolving labour market needs. Scalable solutions such as micro-credentials, backed by data-driven governance and targeted financial assistance, can help bridge this divide. Notable national programmes, including Indonesia's *Kartu Prakerja* and Singapore's *SkillsFuture*, illustrate how adaptive and inclusive workforce strategies can address these emerging challenges. To foster resilience and competitiveness, ASEAN governments must elevate digital training, enhance public-private coordination, and design inclusive funding mechanisms aimed at closing skills gaps and preparing workers for an increasingly dynamic economy.*

Labour Market Challenges in ASEAN

Amongst the numerous forces reshaping ASEAN's labour markets, the proliferation of digital technology, the green transition, and the rise of the gig and freelance economy warrant particular attention from policymakers. The widespread adoption of digital technologies and the shift toward greener economies are opening new employment opportunities, but they also demand rapid workforce transformation to ensure that skills align with emerging roles. In the case of digitalisation, although automation is projected to create more jobs than it displaces, nearly two-thirds of youth are not receiving adequate digital skills education in schools – with especially limited exposure in countries such as Lao PDR and Myanmar (UNICEF East Asia and Pacific Regional Office, 2021). Similarly, the green transition – anticipated to generate 30 million new jobs in Southeast Asia by 2030 (Asian Development Bank, 2023) – will require workers to develop the specialised skills demanded by low-carbon industries. Without widespread access to reskilling initiatives, many individuals currently employed in non-renewable energy sectors risk losing their livelihoods.

Additionally, the talent-on-demand or gig/freelancing economy is emerging as one of the fastest-growing labour market segments, with an estimated 154–435 million online gig workers globally (Fazio et al., 2025). A review of Google Trends data reveals increasing interest

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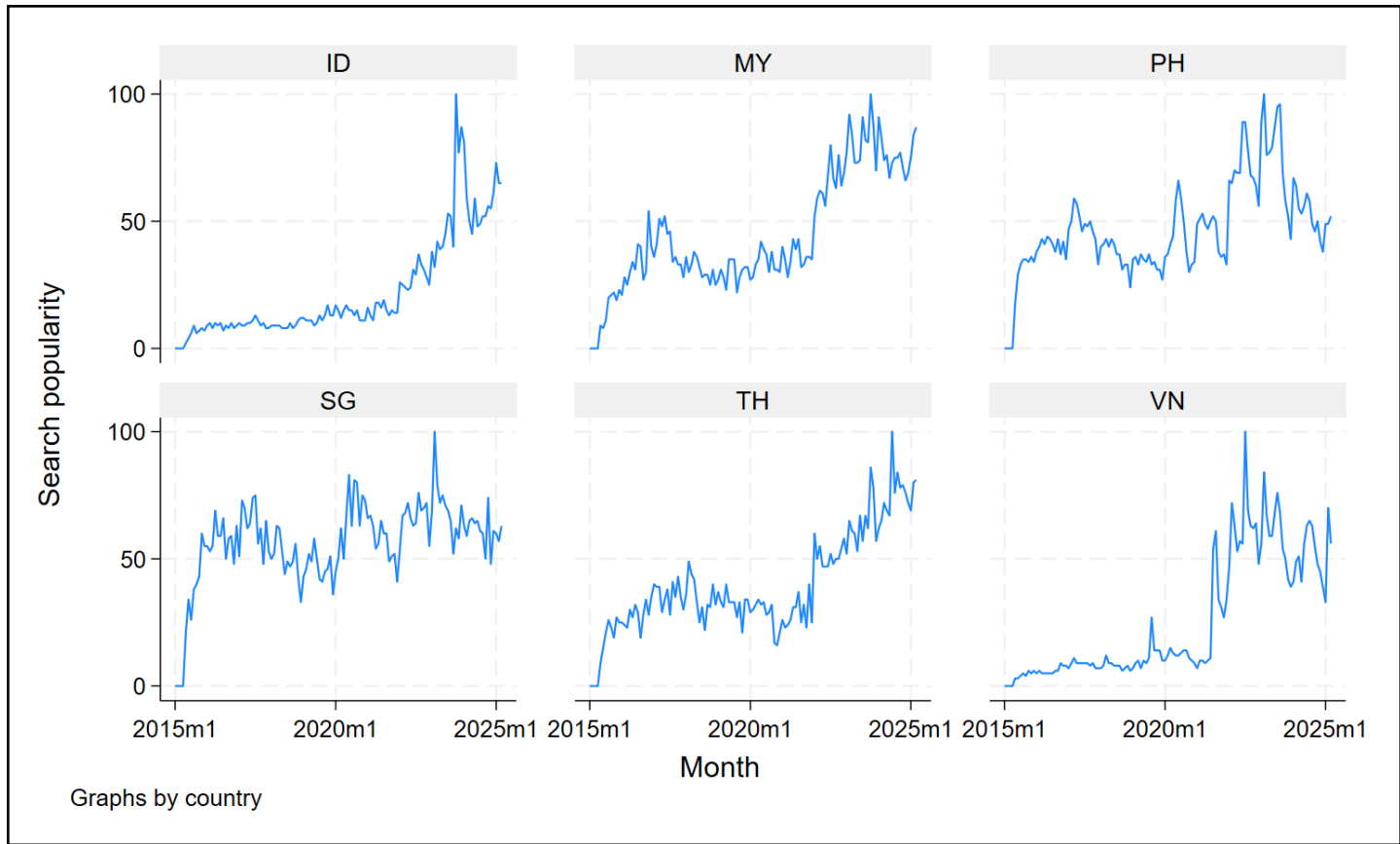
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in freelancing across ASEAN, as reflected by rising search activity for 'Upwork,' one of the world's leading freelancing platforms – particularly in the aftermath of the COVID-19 pandemic (Figure 1). Freelance knowledge work facilitated by online platforms offers flexible, global employment

opportunities for skilled individuals. With the right investment in skill development, ASEAN's 'digital native' youth can broaden their employment prospects beyond domestic labour markets and tap into the global digital economy.

Figure 1. Search Popularity for the Word 'Upwork' (2015-2025)



Note: Google Trends data shows how frequently a particular search term is entered into Google over time, reflecting public interest or attention on that topic. The values are calculated by taking the number of searches for a term relative to the total number of Google searches in a given region and time period, then scaling this number from 0 to 100—where 100 represents the peak popularity of the term.

ID = Indonesia, MY = Malaysia, PH = Philippines, SG = Singapore, TH = Thailand, VN = Viet Nam.

Source: Authors' analysis of Google Trends data (<https://trends.google.com/trends/>).

Given the speed, scale, and complexity of labour market changes, ASEAN Member States must adopt a proactive and coordinated approach to inclusive, scalable reskilling and upskilling programmes that can support employment transitions and foster sustainable economic growth. A survey of global employers operating in ASEAN – focused

on workforce trends, employer expectations, and transformation strategies for 2025–2030 – shows that regional employers increasingly recognise the importance of government support in reskilling and upskilling efforts to improve talent availability, with expectations in ASEAN surpassing the global average (Table 1).

Table 1. The Upskilling and Reskilling Outlook of Selected ASEAN Member States in 2024

Employer Survey Responses	World Average	ASEAN Average	Indonesia	Malaysia	Philippines	Singapore	Thailand	Viet Nam
<i>A. Upskilling and reskilling outlook</i>								
The share of employees estimated to be upskilled in their current role or redeployed (%)	48	50	52	45	55	56	47	45
<i>B. AI Strategy</i>								
The share of employers surveyed planning to implement reskilling and upskilling their existing workforce to better work alongside AI (%)	77	85.8	94	72	96	82	89	82
<i>C. Transformation barriers</i>								
Employers rank skills gaps in the labor market as one of the main barriers to organizational transformation (rank)	1st	1st	1st	1st	1st	2nd	1st	1st
<i>D. Public policies that has the greatest potential to improve talent availability</i>								
Provision of reskilling and upskilling (%)	52	54	62	55	52	44	57	n.a.
Funding for reskilling and upskilling (%)	55	57.1	56	70	48	47	63	59

Source: World Economic Forum (2025).

Recognising these challenges, ASEAN has already initiated several strategic efforts to strengthen workforce development, particularly through vocational education and training. The ASEAN Digital Masterplan 2025 and the ASEAN Declaration on Human Resources Development for the Changing World of Work serve as key regional frameworks, guiding skills development and the integration of digital transformation into national education systems. In addition, the forthcoming ASEAN Economic Community Strategic Plan 2026–2030 outlines a range of strategic measures that reaffirm ASEAN's commitment to advancing human capital development through initiatives aimed at improving labour mobility, expanding access to lifelong learning and reskilling opportunities, and promoting inclusive participation in a rapidly evolving economy.

These efforts place strong emphasis on digital literacy, lifelong learning, and training aligned with industry needs – ensuring that ASEAN's workforce remains competitive in a technology-driven global landscape. To promote cross-border recognition of skills, the ASEAN Qualifications Reference Framework (AQRf) is currently being revised to better reflect digital transformation trends, including the incorporation of micro-credentials and online learning certifications. Nevertheless, identifying and implementing the most effective, context-specific

solutions for today's dynamic labour market continues to pose a significant challenge.

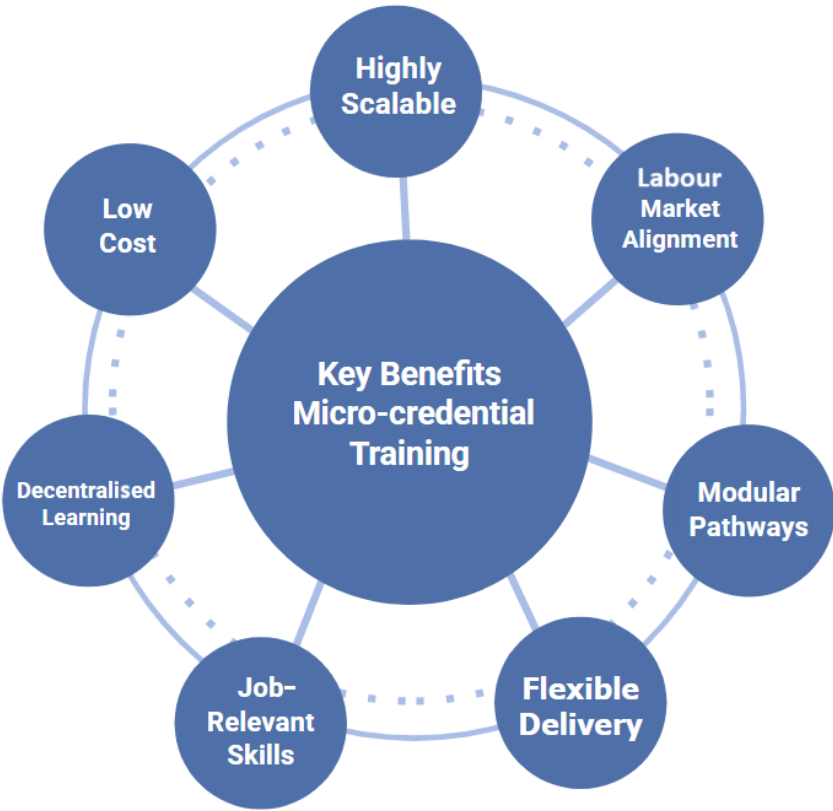
Towards Adaptable and Inclusive Skill Development Strategies for Preparing ASEAN's Workforce

To meet ASEAN's ambitious development goals, a multi-pronged skill development strategy is essential to ensure rapid and responsive workforce transformation. This strategy must be capable of adapting swiftly to evolving economic conditions. The conventional approach, which relies heavily on higher education pathways, is no longer adequate. While universities remain vital for imparting foundational knowledge, traditional degree-based models are increasingly ill-suited to keep pace with the fast-moving technological and industrial landscape. In many sectors – such as artificial intelligence, cybersecurity, renewable energy, and digital services – employers are prioritising practical, job-specific skills over formal academic qualifications. As such, modular and competency-based learning approaches, including micro-credentials and stackable certifications, have emerged as critical tools for helping workers stay competitive.

Unlike conventional degree programmes, micro-credentials offer focused, industry-relevant certifications that validate specific job skills (OECD, 2020), enabling individuals to respond quickly to labour market shifts without the long-term commitment of a full degree. By targeting particular competencies rather than broad academic domains, micro-credentials effectively bridge the divide between formal education and employment outcomes (Cedefop, 2021). Typically issued by private training providers, online education platforms, and leading firms such as Amazon and Google, these programmes are designed to be rapidly deployable, highly adaptable, and tailored to specific workforce demands.

For individuals, micro-credentials offer an affordable and flexible means of enhancing employability. They facilitate career mobility and support lifelong learning by allowing learners to build skills incrementally, outside of traditional academic settings. Furthermore, empirical research has shown that micro-credentials function as strong labour market signals to employers, reducing uncertainty in the hiring process and improving overall job market efficiency (Carranza et al., 2022). Figure 2 summarises the primary benefits of micro-credential training programmes.

Figure 2. Key Benefits of Micro-credential Training Programme



Source: Authors' compilation.

Evidence indicates that short, stackable credentials – particularly when aligned with labour market demands and pursued within a coherent field of study – can lead to stronger employment outcomes and increased earnings. Workers who complete industry-recognised training programmes report notable wage gains and improved job stability (Katz et al., 2022). A compelling case is El Salvador's online entrepreneurship training initiative, which has successfully expanded freelancing opportunities for remote workers through micro-credentialing (Fazio et al., 2025), highlighting its broader potential across the ASEAN region. In the United States, individuals who accumulated multiple credentials achieved higher employment rates and earned an additional US\$570 in quarterly wages compared to those with only one credential (Meyer, Bird, and Castleman, 2020). These findings suggest that micro-credentials can be particularly effective when learners are motivated and supported with clear progression pathways.

Nevertheless, while the advantages of micro-credentials are well-documented, several challenges persist. A major issue is the absence of universal standards, resulting in wide disparities in terms of content, duration, delivery methods, and assessment practices. This inconsistency can weaken employer confidence and hinder the portability of credentials across sectors, institutions, and borders. Moreover, access barriers remain for disadvantaged groups, including financial limitations, insufficient digital infrastructure, and low awareness. Participation in micro-credential programmes often skews toward more privileged populations, which may exacerbate existing inequalities if not addressed through equitable funding models and targeted outreach efforts. Therefore, unlocking the full potential of micro-credentials for workforce development necessitates policy frameworks that amplify their benefits while addressing structural limitations.

Ongoing Lifelong Learning Initiatives

ASEAN governments must identify and adopt global best practices in integrating micro-credentials as a core component of continuous workforce development strategies. The European Union's Centre for the Development of Vocational Training

(Cedefop) has undertaken initiatives exploring how micro-credentials can support employment-oriented education and training, especially within targeted sectors and through collaboration with companies or professional associations. South Korea's National Institute for Lifelong Education (NILE) has implemented the Korea Massive Open Online Course (MOOC) and the Online Lifelong Learning Portal to broaden access to flexible learning. Meanwhile, the UK's Skills Bootcamp model delivers short-term, employer-led training programmes designed to prepare workers for immediate employment opportunities.

Several ASEAN Member States have also introduced government-supported lifelong learning initiatives, such as Indonesia's Kartu Prakerja and Singapore's SkillsFuture programme. Launched in 2020, Kartu Prakerja provides financial assistance for vocational and digital learning, including practical micro-credential training. It allows participants to choose courses aligned with their career aspirations and industry demands, offering on-demand flexibility. A defining feature of the programme is its end-to-end digital model, which enables widespread access across the Indonesian archipelago and particularly benefits youth, informal workers, and displaced employees (World Bank, 2023). As a result, the programme has achieved significant reach, supporting over 18.9 million workers, with 89% of participants reporting enhanced job prospects and a 17%–21% increase in monthly income (Presisi, 2022). Another notable strength of Kartu Prakerja is its public-private partnership model, which engages more than 500 training providers to deliver high-quality, industry-relevant learning. Additionally, its AI-driven job recommendation system helps match participants with training and employment opportunities aligned with their skills. The programme demonstrates how digital training vouchers, flexible delivery formats, and employer-aligned content can form a scalable and inclusive upskilling model, offering a replicable blueprint for other ASEAN countries.

Similarly, Singapore's SkillsFuture, launched in 2015, is a national strategy aimed at fostering lifelong learning and workforce adaptability, ensuring that

the country's labour force remains competitive amidst evolving economic and technological demands. The programme offers structured training pathways, industry-recognised certifications, and financial incentives to support continuous learning. A central feature is the SkillsFuture Credit scheme, which provides government-subsidised learning vouchers to all Singaporeans aged 25 and above, allowing them to enrol in accredited courses aligned with national industry transformation roadmaps. Recognising the importance of mid-career transitions, the programme also extends additional financial support to individuals aged 40 and above, enabling them to pivot into high-growth sectors. A critical advantage of SkillsFuture is its data-driven model, which harnesses real-time labour market intelligence to monitor skills demand and inform adaptive training programme design.

Recommendations for an Effective Micro-Credential-Based Lifelong Learning Programme

Integrating micro-credentials into ASEAN's workforce strategy presents a powerful opportunity to accelerate large-scale upskilling and reskilling. To fully realise this potential, however, governments must address barriers related to access, recognition, and system alignment, while embedding equity and digital inclusion into the core of programme design. A well-structured micro-credential framework should focus as much on the method of delivery and accessibility as on the skills and knowledge it imparts. Tailoring global best practices to each country's unique economic structure, labour market profile, and institutional capacity is essential for successful implementation.

First, micro-credential programmes must be positioned as a central pillar of national skills development strategies. High-level political and strategic commitment is critical for effective coordination across relevant government agencies, including ministries of education, labour, and economic development. Second, governments must establish regulatory frameworks to support and govern the implementation of micro-credentials. This involves updating existing education and training policies to include micro-credential

programmes. Traditional frameworks developed for formal, institution-based education may not be sufficient, as micro-credentials demand more flexible and responsive regulatory approaches.

Third, appropriate programme design is fundamental to maximising the benefits of micro-credentials. Research indicates that success depends on thoughtful design, precise targeting, and seamless implementation, with strong emphasis on relevance and quality (Escudero et al., 2018). Key enabling features include clear quality assurance mechanisms, nationally recognised qualification systems, and hybrid, modular delivery formats that cater to diverse learner needs. Digital platforms and flexible modes of delivery – whose use was significantly expanded during the COVID-19 pandemic – are particularly effective in reaching underserved populations such as women, informal workers, and those in geographically remote areas. Moreover, strong collaboration amongst government agencies, private sector employers, and training providers is critical to ensure alignment between workforce training initiatives, national development goals, and evolving global trends.

The essential elements of a robust national micro-credential framework are built on principles that ensure transparency, quality, and recognition across varying education and training systems (Figure 3). These include digital portability for ease of access and transferability across institutions and borders; stackability to allow micro-credentials to contribute toward full qualifications; well-defined learning outcomes and workloads; active employer involvement in developing curricula; and rigorous assessment and validation processes. The framework should also support modularity and flexibility, enabling learners to advance at their own pace and customise their learning journeys to match industry requirements and individual career aspirations. Furthermore, integration with national qualifications frameworks enhances the credibility and labour market relevance of micro-credentials.

Inclusivity must be a central policy consideration in the design and deployment of micro-credential systems. When thoughtfully developed, micro-credentials can deliver scalable workforce training

Figure 3. National Micro-credential Design Frameworks



Source: OECD (2021), adapted by the authors.

solutions to traditionally underserved groups, including informal workers, women, older adults, and populations in rural or marginalised areas. The use of digital platforms can eliminate geographic and institutional barriers, expanding access to quality training. Programmes such as Indonesia's Kartu Prakerja and Singapore's SkillsFuture demonstrate how government subsidies combined with micro-credential models can improve access to lifelong learning. Features like subsidised tuition, flexible enrollment windows, and on-demand course availability are especially important in enabling participation by individuals who might otherwise be excluded from conventional training opportunities.

References

- Asian Development Bank (2022), Implementing a green recovery in Southeast Asia. Asian Development Bank.
- Carranza, E., R. Garlick, K. Orkin, and N. Rankin (2022), 'Job search and hiring with limited information about workseekers' skills', *American Economic Review*, 112(11), pp.3547–83.
- Cedefop (2018), European inventory on validation of non-formal and informal learning 2018 update: Final synthesis report.
- Cedefop (2021), 'Microcredentials: A labour market megatrend', *Skillset and Match: Cedefop's Magazine Promoting Learning for Work*, (22), May 2021.
- Escudero, V., J. Kluve, E. López Mourelo, and C. Pignatti (2018), 'Active labour market programmes in Latin America and the Caribbean: Evidence from a meta-analysis', *The Journal of Development Studies*. Advance online publication.

- Fazio, M.V., R. Freund, and R. Novella (2025), 'Do entrepreneurial skills unlock opportunities for online freelancing? Experimental evidence from El Salvador', *Journal of Development Economics*, 172, 103363.
- Katz, L.F., J. Roth, R. Hendra, and K. Schaberg (2022), 'Why do sectoral employment programs work? Lessons from WorkAdvance', *Journal of Labor Economics*, 40(S1), S249–S291.
- Meyer, K., K. Bird, and B. Castleman (2020), *Stacking the Deck for Employment Success: Labor Market Returns to Stackable Credentials*, Brown University, Providence.
- OECD (2020), *The emergence of alternative credentials* (OECD Education Working Paper No. 216). OECD Publishing.
- OECD (2021), 'Micro-credential innovations in higher education : Who, What and Why?', OECD Education Policy Perspectives, No. 39, OECD Publishing, Paris,
- Presisi Indonesia (2022), *Impact evaluation of Kartu Prakerja as a COVID-19 recovery program*.
- UNICEF East Asia and Pacific Regional Office (2021), *Digital literacy in education systems across ASEAN: Key insights and opinions of young people*. UNICEF.
- World Economic Forum (2025), *The Future of Jobs Report 2025*.
- World Bank (2022), *Kartu Prakerja: Indonesia's Digital Transformation and Financial Inclusion Breakthrough*

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