ASCC platforms programme

Participation of the Private Sector and Communities on Human Resources Development for the Future

ASEAN Socio-Cultural Community Trend Report No. 5 (2024)

ASCC Research and Development Platform on the Future of Work

asean

one vision
one identity
one community

ASEAN Socio-Cultural Community Trend Report

ASCC Research and Development Platforms Programme

The ASEAN Secretariat

Jakarta

The Association of Southeast Asian Nations (ASEAN) was established on 8 August 1967. The Member States are Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Viet Nam.

The ASEAN Secretariat is based in Jakarta, Indonesia.

For inquiries, contact:
The ASEAN Secretariat
Community Relations Division (CRD)

70A Jalan Sisingamangaraja
Jakarta 12110, Indonesia
Phone: (62 21) 724-3372, 726-2991

Fax: (62 21) 739-8234, 724-3504

E-mail: public@asean.org

Catalogue-in-Publication Data

ASEAN Socio-Cultural Community (ASCC) Trend Report, Jakarta, ASEAN Secretariat

Classification Number:

331.0601

1. ASEAN – Labour – Research and Development

2. Digital Technology – Global Value Chains – Sustainable Development

ISSN: 22986 - 4224
Vol. 5 (2024)

ASEAN: A Community of Opportunities for All

AKCF ASEAN-KOREA COOPERATION FUND 한-아세안 협력기금

This trend report was made possible with the support of:
ASEAN-Korea Cooperation Fund

Editorial Committee of the ASCC Research and Development Platforms Programme

This report is a publication of the ASEAN Socio-Cultural Community Department of the ASEAN Secretariat. The views expressed in this publication are those of the authors, and do not necessarily reflect the views of ASEAN, ASEAN Member States, the ASEAN Secretariat, or ASEAN Dialogue Partners. For more information about the ASCC Research and Development Platforms Programme contact the ASCC Analysis Division at ASCCAD@asean.org.

Table of Contents

List of Figures

List of Abbreviations

4IR	Fourth Industrial Revolution
ADB	Asian Development Bank
AI	Artificial Intelligence
AKCF	ASEAN-Korea Cooperation Fund
ASEAN	Association of Southeast Asian Nations
AMS	ASEAN Member State
ASCC	ASEAN Socio-Cultural Community
ACCMSME	ASEAN Coordinating Council for Micro, Small, and Medium Enterprises
CRI	Global Climate Change Risk Index
ERIA	Economic Research Institute for ASEAN and East Asia
ESG	Environmental, Social, and Governance
EU	European Union
EV	Electric Vehicles
FTA	Free Trade Agreement
GHG	Greenhouse Gas
GDP	Gross Domestic Product
GVC	Global Value Chains
ILO	International Labour Organization
IoT	Internet of Things
IP	Intellectual Property
ITU	International Telecommunications Union
MNC	Multinational Corporation
MSME	Micro, Small, and Medium Enterprises
NGO	Non-Governmental Organisation
NUS	National University of Singapore
OLP	Online Labour Platform
PPPs	Public-Private Partnerships
R&D	Research and Developmen
RTD	Round Table Discussion
SME	Small and Medium Enterprises
WEF	World Economic Forum

Acknowledgements

The ASCC Research and Development Platforms Programme serves as a proactive response of the ASEAN Socio-Cultural Community (ASSC) to understand, analyse, and formulate strategic responses to multifaceted challenges in the region. The ASCC R&D Platforms span diverse sectors crucial to the socio-cultural fabric of the ASEAN community, with one such platform focusing on the Future of Work.

The ASCC R&D Platform on the Future of Work aims to develop a robust body of research outputs and identify and develop a pool of experts who are better sensitised to ASEAN context. The primary objective of this initiative is to proactively incorporate external perspectives to gain a better understanding of blind spots, identify gaps and trends, and facilitate intense policy and advocacy engagement across multi-sectoral issues. The ASCC R&D Platform on the Future of Work received support from the Government of Korea through the ASEAN-Korea Cooperation Fund (AKCF).

This report, as part of the ASCC R&D Platform on the Future of Work, aims to examine the relevant megatrends that are shifting the nature of jobs and employment, as well as to facilitate the co-creation of future-proof policies and robust advocacy strategies for a more inclusive and dynamic ASEAN workforce.

This report was developed and made possible through the technical expertise and knowledge shared by many individuals and organisations who we thank:

- The ASEAN Senior Labour Officials Meeting (SLOM) and the Senior Officials Committee for the ASEAN Socio-Cultural Community (SOCA) focal points from ASEAN Member States for their guidance and insights;

- The ASEAN Secretariat under the leadership of H.E. Ekkaphab Phanthavong, Deputy Secretary-General for ASEAN Socio-Cultural Community; Ms. Rodora T. Babaran, Director of Human Development Directorate; Dr. Benjamin Loh, Head of ASCC Monitoring Division; Dr. Erica Paula Sioson, Ms. Idin Virgi Sabilah, and Ms. Pricilia Putri Nirmalasari of ASCC Analysis Division; Ms. Mega Irena, Head of the Labour and Civil Service Division, and her team members, Mr. Carl Rookie O. Daquio and Mr. Alvin Pahlevi, for their facilitation, feedback, and support during development of this publication;

- The Independent Consultants Network, Co., led by Dr. Leonardo with support from Ms Aji Espinoza, Nicolas Espinoza, and Douglas Candano for their expertise and advisory services;

- The resource persons who shared their time and provided valuable input to the consultants during the report development process, including Dr. Nuwong Chollacoop, Ms. Sofia Shakil, Mr. Francis Macatulad, Ms. Hannah Najar, Ms. Yen Hoang, Dr. Rashesh Shrestha, Ms. Jamie Ko, Mr. Pyo Daebum, Mr. Suphot Sukphisarn, Mr. Suroj Sangsnit, Mr. James Villafuerte, Ms. Marija Ralic, and Dr. Paryono; and

- Mr. Christian Razukas for copyediting this report.

We invite readers to engage with the findings and analysis presented in this publication. We believe this research offers valuable insights for policymakers, educators, businesses, practitioners, and individuals alike, as we collectively navigate the evolving landscape of work in ASEAN.

Participation of the Private Sector and Communities on Human Resources Development for the Future

ASEAN Socio-Cultural Community Trend Report No. 5 (2024)

ASCC Research and Development Platform on the Future of Work

Dr. Leonardo Lanzona (Ateneo de Manila University, Philippines), **Aji Espinoza, Nicolas Espinoza** (The Independent Consultant's Network, Co.)

Executive Summary

The ASEAN region is navigating a delicate post-pandemic economic recovery, amid ongoing economic and geopolitical uncertainties, extreme weather, and trade-restrictive measures. Disruptions to global value chains (GVCs) due to the COVID-19 pandemic have reinforced calls for greater self-sufficiency and reshoring production. Brenton, et al. (2022), however, states that these calls might be counterproductive for certain countries and contribute to a significant rise in global poverty. Alternatively, increased economic integration and strengthening GVCs might also spur resilient economic growth. It is necessary to establish goals for ASEAN's recovery, not just to increase gross domestic products (GDPs), but also to ensure that the benefits of the recovery are sustainable and are equally shared. Due to the fragility of the recovery, multinational companies are starting to consider location resiliency as a criterion for choosing where to invest (Calabrò, et al., 2022).

In an effort to accomplish three goals–efficiency, inclusivity, and sustainability–this research paper considers three accelerating and simultaneous megatrends that will have a major impact on the economy and the Future of Work (FoW): digitalisation, the reconfiguration of GVCs, and the greening of the economy. These megatrends are driven by complex and interconnected factors, making it a challenge to redirect or alter them directly. While these trends are not new, their anticipated trajectories have been changed by the pandemic–offering policymakers an opportunity to change their responses and best achieve their goals.

The first megatrend is digitalisation, a source of innovation and advanced technologies that can lead to the development of new sectors and ways of production needed to reshape economies. However, accelerating digitalisation can result in labour-saving production methods, thus displacing or eliminating manual and routine jobs, as well as middle-skilled occupations, in developing countries (Autor & Dorn, 2013).

The second megatrend is the reconfiguration of GVCs, especially in the context of increasing globalisation and regional integration. GVCs refer to interrelated economic activities in the production of goods and services that are spread across multiple countries and firms. Prior to the pandemic, GVCs were important employment drivers in ASEAN, contributing up to 60% of manufacturing jobs. GVCs were also a mechanism for poverty reduction in low- and middle-income countries (ADB, 2023). The effects of pandemic lockdowns and disruptions on GVCs have continued, along with supply-side constraints and high unemployment. The pandemic exposed the vulnerability of industries in low- and middle-income countries whose exports were limited to a few products. The post-pandemic recovery may be served by reconfiguring GVCs as way to ignite growth and support poor developing countries during the recovery. A crucial issue is the restoration of micro, small, and medium-scale enterprises (MSMEs) that were distanced from GVCs during the pandemic.

The third megatrend is the global effort to enhance green sectors of the economy. Sustainable development encompasses the other megatrends due to the broad negative effects of climate change. Various strategies and initiatives aimed at creating more sustainable and environmentally responsible economies includes adopting green technologies and conservation practices, and promoting clean and renewable energy sources to realise cost efficiencies for GVCs. As an offshoot of ASEAN's comparative advantage, this must be redefined to reflect concerns for greater inclusivity and resiliency. When advanced economies prioritise sustainability goals, they can be expected to begin enforcing similar requirements on their supply chains (Shrestha 2023).

The interplay between digitalisation and GVC reconfiguration is evident in three aspects.

First, digitalisation drives GVC restructuring. It has revolutionised GVC management through advanced analytics, enhanced supply chain visibility, and real-time data sharing. This transformation has enhanced efficiencies and adaptability in responding to market changes and supply chain disruptions.

Second, GVC reconfiguration actively contributes to the green economy, as companies integrate

sustainable practices into their GVCs. This includes adopting renewable energy sources; fostering sustainability in distribution, production, and sourcing; minimising carbon emissions; and reducing waste.

Third, digitalisation facilitates the green economy by enabling efficient monitoring and the management of environmental impacts. Technologies such as the Internet of Things (IoT) sensors and data analytics allow real-time tracking of resource consumption and emissions, helping organisations make sustainable choices. Digital platforms also can connect consumers with eco-friendly products and stimulate the demand for environmentally conscious alternatives.

These megatrends offer opportunities and challenges that ASEAN must acknowledge to strengthen its post-pandemic recovery and catch up with higher income countries. By strategically combining and investing in digital transformation, GVC reconfiguration, and green initiatives; ASEAN Member States (AMS) can position themselves for a more productive, inclusive, and resilient economic future. Accordingly, the private sector will play a pivotal role in enhancing the resiliency of supply chains, driving innovation and investment in technology to improve efficiency and adaptability, building stronger relationships for greater efficiency, and creating new tasks and more quality jobs. The participation of the private sector in the design of training programmes is essential for ensuring that skills supply and demand are properly aligned.

Collaboration between the private sector and governments will be instrumental in realising these changes. As enablers, governments can provide incentives, infrastructure support, and a favourable business environment to encourage private sector initiatives. Community organisations also have a particular role to play. These non-government organisations (NGOs) can raise awareness about the impact of GVCs on local communities, advocate for responsible business practices, highlight issues related to labour rights, and provide support to local entrepreneurs and small business looking to integrate with GVCs. In summary, these organisations can be intermediaries between communities and the private sector, helping to ensure that the megatrends benefit businesses as well as the welfare of workers and the communities involved.

National responses to the megatrends will depend on a country's future plans for its workforce. Preparing workforces to meet changing economic demands is essential; the future of work in every country depends on the skills the workers bring to market. Investments in education and skills can raise the ability of workers and employers to respond effectively to trends. With governments acting as enablers, the private sector can invest in training and skills development for their workforce to meet the megatrends, including training in digital skills, supply chain management, and sustainability practices.

This paper argues that the best training can be achieved only when the private sector takes the lead. This ensures that training will be relevant to technologies adopted by firms, and that firm-specific skills can be developed. Further, firms are likely to engage in training programmes that feature incubation, a highly effective way to develop firm-specific skills for young workers with limited educational backgrounds. By tailoring programmes to meet a company's specific needs, providing hands-on experience, offering mentorships, and exposing the workforce to company-specific tools and practices, less experienced participants can be equipped with the skills required to excel in a specific firm or industry.

However, private-public partnerships (PPPs) are necessary to achieve these goals. Firms are unlikely to invest in general skills, as the returns from training investments may not be recovered if their workers move to other firms. The paper explains the types of PPPs that should be created to meet these challenges, and the systems that governments can develop to induce the private sector to engage in these partnerships.

In conclusion, this trend report calls for active participation by the private sector as ASEAN engages with the megatrends during the post-pandemic recovery. While there are opportunities, so too are there challenges creating impediments to the best possible outcomes. It is necessary for every AMS to design a unique strategy to mitigate these challenges. While daunting, AMS must learn how to simultaneously enhance productivity, sustainability, and employment in labour-intensive industries or sectors. This means adopting an effective industrial policy where governments undertake a close collaboration with firms to remove constraints to their expansion in exchange for more productive and resilient employment.

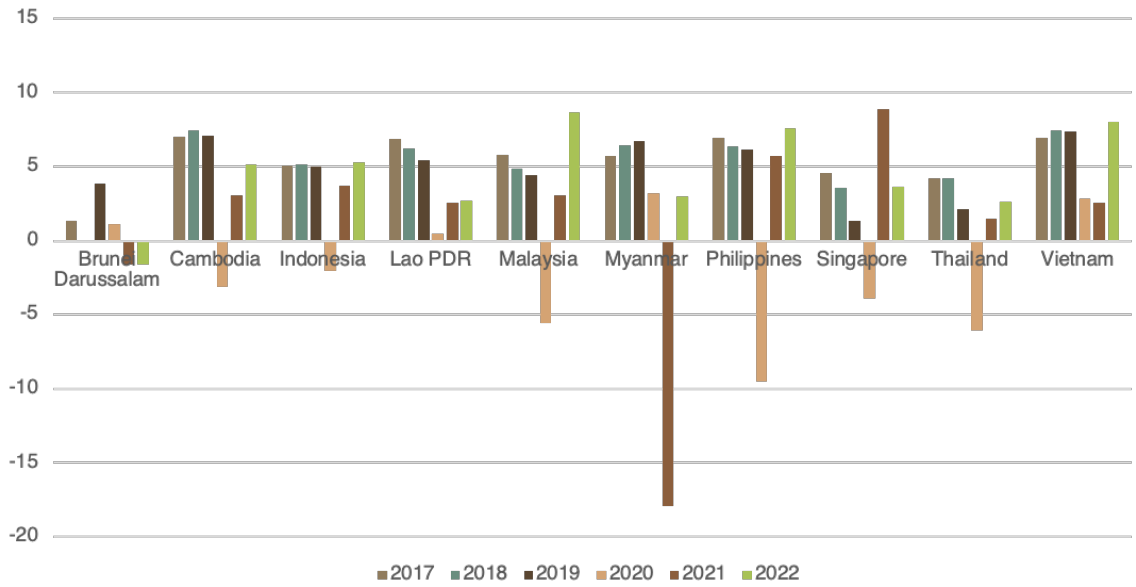
1. Introduction

The ASEAN Socio-Cultural Community (ASCC) Research and Development (R&D) Platform on the Future of Work is a project aimed at developing and implementing holistic solutions to address the fast-changing and emerging challenges confronting the region. The R&D Platform came out of the ASEAN Leaders' Vision on a Cohesive and Responsive ASEAN, which was signed on 26 June 2020. The Vision calls for concerted effort to identify emerging challenges and opportunities and to formulate initiatives to better position ASEAN in the new normal, considering ASEAN's pandemic exit strategy, while also working to developing the ASEAN Community Vision Post-2025.

To prepare workforces for the future, this R&D platform was designed to look at three long-term megatrends: digitalisation, the reconfiguration of GVCs, and the greening of the economy. All existed long before the pandemic struck and disrupted their trajectories.

The ASEAN region currently faces challenges in its post-pandemic economic recovery. Lacklustre post-pandemic GDP growth has prevented ASEAN from achieving its pre-pandemic growth goals. Figure 1 shows the GDP growth rates of AMS from 2017 to 2022. The pandemic has led to significant contractions or very limited increases. While there has been substantial growth in Malaysia, the Philippines, Singapore, and Viet Nam, much of this growth can be attributed to 'base' effects, as those countries started from a lower GDP level. Singapore, for instance, after experiencing 99% growth in 2021, recorded only a 44% growth in 2022 when its GDP base had already increased.

Figure 1. GDP growth rates in ASEAN, 2015-2022



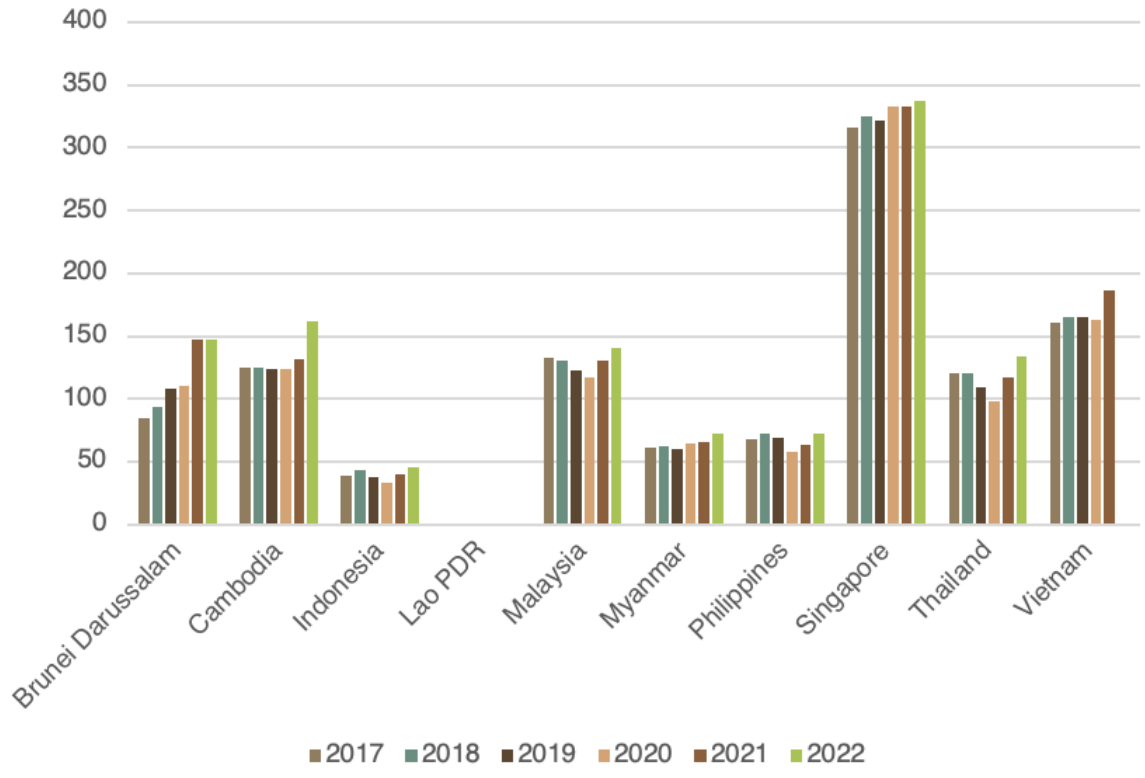
Source: World Bank (2023)

At the centre of the post-pandemic recovery is the prevalence of digital technologies that affect a broad range of economic activities using digitised information and knowledge as factors of production. The internet, cloud computing, big data, fintech, and other new digital technologies are being used to collect, store, analyse, and share information digitally and transform social interactions. Such technologies have eased transactions between suppliers and customers, as logistics (e.g., the delivery and payment of products and services) have become more efficient at lower prices. Technology can improve the abilities of a firm, regardless of size or origin, to find a niche in GVCs and gain access to new markets. Moreover, digital technologies can build better ecosystems or remedy environmental damage by using both organic and inorganic techniques for a cleaner planet.

Despite various windows of opportunities, four main indicators offer challenges.

First, there has been a decline in goods and services trade during and after the pandemic. Figure 2 shows the percentage of total trade (i.e., the sum of exports and imports) to GDP. In Indonesia, Malaysia, the Philippines, and Thailand, the share of trade to national output declined, indicating the loss of several export industries following lockdowns and other virus-related disruptions. Singapore, however, continued to have a high contribution of trade to its output. Part of the reason is Singapore's diversified exposure to GVCs in consulting, finance, and legal services–sectors that play a crucial role in facilitating GVC activities and supporting businesses in areas such as legal compliance, logistics, and supply-chain management. This suggests that its GVCs, especially in the service sector, have remained resilient and of value to the country's economy. Other AMS were involved in GVCs mostly in manufacturing. However, since Singapore also experienced income reductions during the pandemic, the value of trade and GVCs to its economy have also decreased. Trade disruptions and limited GVC operations, especially in poorer countries, have continued after the pandemic (Brenton, et al., 2022).

Figure 2. Percentage of trade to GDP in ASEAN, 2017-2022

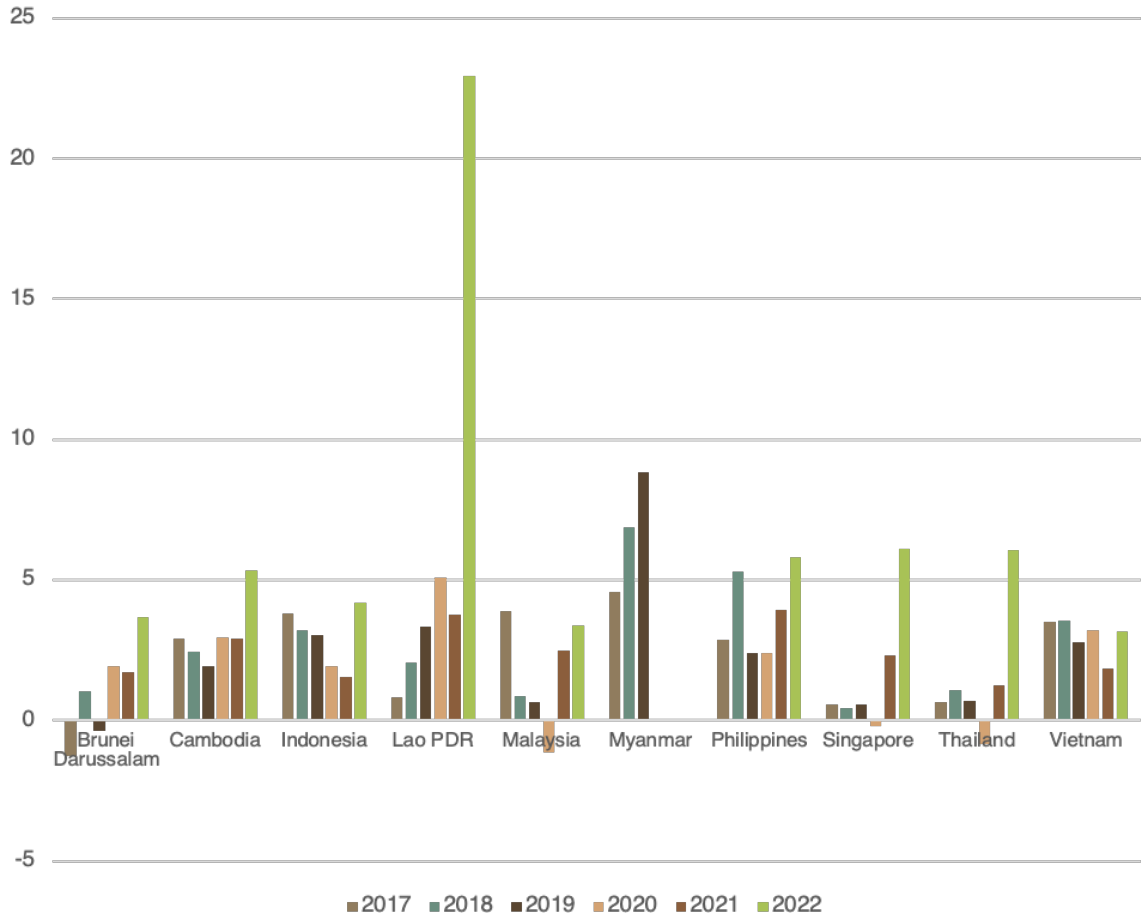


Note: Data for Laos PDR were unavailable.

Source: World Bank (2023)

Second, all AMS have experienced high inflation, which can be attributed to pandemic-related GVC disruptions. Figure 3 shows increased inflation rates in the pre-pandemic phase, as well as in 2022, resulting in a fall in real incomes. While inflation in part is attributable to geopolitical tensions, the post-pandemic environment is also a factor. As countries reopened and increased demand for goods began to outstrip supply, port congestion raised shipping costs and placed additional pressure on surviving GVCs. Reconfiguring GVCs disrupted by the pandemic may help reduce delays and shortages of certain goods, and thus reduce inflationary pressures (Dadush, 2023).

Figure 3. Inflation rates in ASEAN, 2017-2022

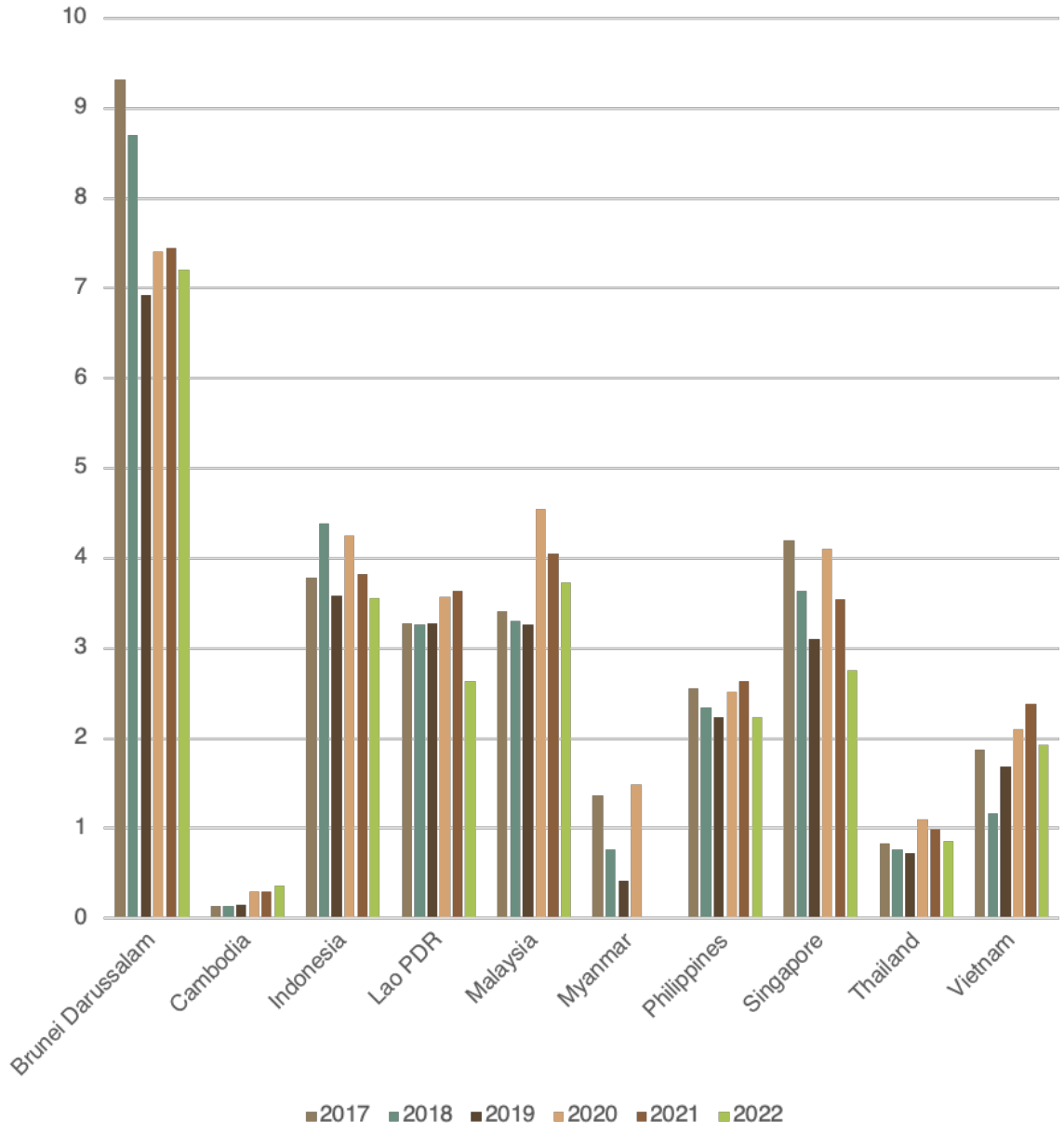


Note: Data for Myanmar are unavailable for 2020 to 2022

Source: World Bank (2023)

Third, while unemployment did not increase during the pandemic, the quality of jobs may have been compromised. An apparent decline in job quality can be noted in Figure 4. Despite fragile growth, unemployment has been declining after the height of the pandemic in 2020. This may be partially due to increased participation in online labour platforms resulting from digital transformation in most AMS. A significant portion of online labour platform workers, however, are employed in the informal sector (ASEAN Secretariat, 2023), meaning that the quality of work may be decreasing. Moreover, the lingering problem of youth unemployment has not been addressed adequately. In 2022, the average youth unemployment rate (ages 15 to 24) in ASEAN was 10%, 1% higher than the overall average rate for the region (World Bank, 2023). Any worthwhile unemployment reduction programme must pay significant attention to youth unemployment.

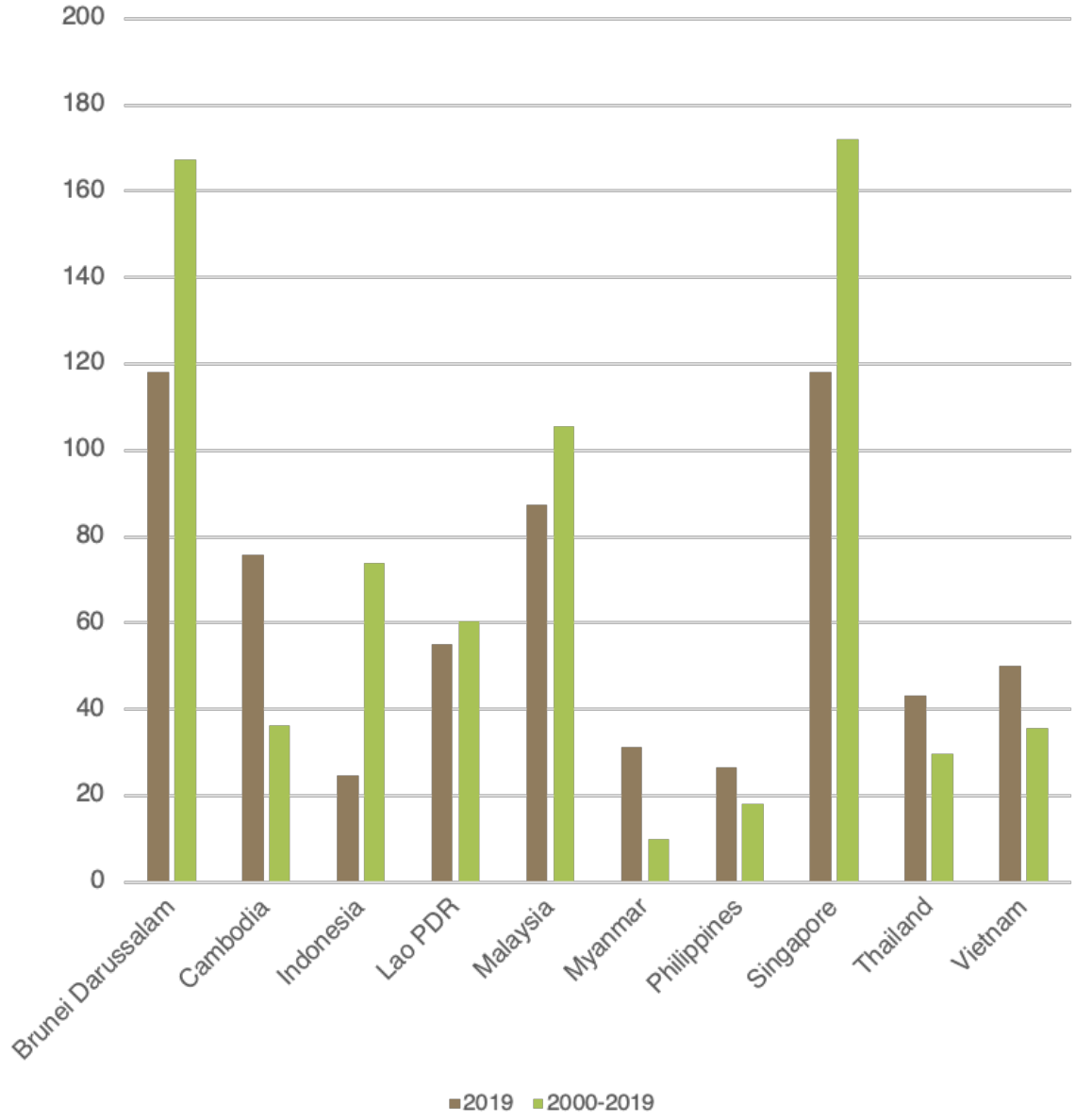
Figure 4. Unemployment rates in ASEAN, 2017-2022



Source: World Bank (2023)

Finally, every AMS continues to be affected by climate change. Extreme weather conditions, such as droughts, floods, and typhoons, have been causing significant damage to agriculture, infrastructure, and ports, and leading to direct losses and GDP reductions. In ASEAN, climate change can exacerbate health problems and harm the tourism sector, which is a main source of income for AMS. Figure 5 shows the Global Climate Change Risk Index (CRI) for AMS from 2000 to 2019 (the most recent year covered). The CRI quantifies annually a country's degree of vulnerability to extreme weather changes, and ranks countries according to their ability to withstand the impacts of climate change. Countries scoring high on the index (e.g., ranked first) are considered the most vulnerable or most at risk. AMS that scored high on the CRI were Myanmar and the Philippines, with Thailand and Viet Nam coming within range. However, other countries that were ranked higher in the same period became less vulnerable in 2019. While the indices presented below are based on data from before the pandemic, they represent a level of exposure and risk that can be interpreted as warnings for possible weaknesses in years to come.

Figure 5. Average Global Climate Risk Index Rangkings for ASEAN, Select Years



Source: Global Climate Risk Index, 2021

This report argues that governments must respond to the megatrends previously mentioned so as to improve labour market conditions and strengthen post-pandemic economic recoveries. As the three megatrends affect each other, so should responses to the trends interact. For example, after the pandemic, governments opted for more sustainable recovery strategies to respond to climate change. Subsequently, green industries have in turn influenced GVCs and digitalisation strategies.

However, the success of such strategies, individually and collectively, will require new skills and knowledge. Thus, the private sector will need to develop human resources alongside digital transformations. While some responses to digital transformation have positive, such as the creation of better jobs and the spread of skills training, there is also the threat of negative effects, such as massive job losses in certain sectors where certain worker segments are more vulnerable than others. Governments must act to create more effective programmes for labour employment and skills development so that the private sector can withstand negative effects of the megatrends.

1.1 Objectives

This trend report and two policy briefs are the first outputs of the Research and Development Platform on the Future of Work. The general objectives of this first output are to:

1. Explore the role of PPPs in preparing human resources for the future.
2. Showcase best practice programmes or mechanisms that demonstrate effective ways to prepare human resources for the FoW through the megatrends.
3. Provide context for policy recommendations to be detailed in related policy briefs.

The specific objectives of this trend report are to:

1. Discuss key issues pertaining to the interconnectedness of the megatrends and identify opportunities and challenges for responding holistically to the megatrends.
2. Highlight the importance of job training and skills development to maximise the benefits of an interconnected response to the megatrends.
3. Emphasise the importance of catching up, as the megatrends are accelerating faster than governments have been responding, creating a risk that latecomers will be trapped in lower income status.
4. Clarify the critical importance of building PPPs in support of skill development.
5. Elaborate the role of governments and communities in skills development.
6. Define different categories of skills needed by countries at different stages of development.

This report will not identify specific skills for individual countries to develop. Instead, the report states that firms in the private sector must decide on the skills that are appropriate for their specific goals. The private sector is the part of the economy that is owned, operated, and controlled by private individuals or entities, rather than governments. It encompasses a wide range of businesses and organisations, including for-profit enterprises and non-profit organisations that operate independently of government ownership or control. Any country seeking to recover from the pandemic must have a private sector that plays a dynamic and diverse role in the economy, job creation, innovation, economic growth, and the provision of goods and services.

However, the challenges faced by the private sector amid the accelerating pace of the megatrends are considerable. Countries must develop strategies so as to not be left behind as the megatrends change economies and societies. Failing to adapt to accelerating digital transformation will lead to severe consequences for countries, especially low-income countries. The impacts will affect corporate competitiveness, growth prospects, financial stability, and reputations. To mitigate these risks, private sector organisations are encouraged to embrace digitalisation, invest in technology, and develop digital strategies to remain agile and relevant.

The report argues that PPPs, with support from community groups, will be crucial in addressing these challenges. Governments can help create an enabling environment for businesses and individuals to navigate the challenges of accelerating digital transformation while promoting economic growth and digital inclusion. Similarly, communities, through civil society organisations, can bridge the gaps between the private sector, governments, and the public, working to ensure that digital transformation benefits society, is inclusive, and respects individual and collective rights. Their involvement can help create a balanced and responsible approach to the process.

1.2 Methodology

This report relied heavily on the qualitative case study method. Case subjects were identified through preliminary secondary research. Secondary research also contributed to the research team's understanding through examination of analyses of the megatrends and their specific impact on AMS. Two round table discussions (RTDs) were conducted to explore the perspectives of different ASEAN bodies, the private sector (as represented by employers and trade unions), and civil society groups.

In the RTDs, experts from the Asian Development Bank (ADB), the Economic Research Institute for ASEAN and East Asia (ERIA), and the International Labour Organization (ILO) were invited to share their knowledge on how the megatrends have affected ASEAN's workforce. Mr. James Villafuerte of the ADB considered the combined impact of digitalisation in ASEAN, Dr. Rashesh Shrestha of ERIA discussed GVC strategies, while Dr. Christian Viegelahn of the ILO elaborated on how digitalisation and the greening of the economy affected different worker segments.

The research also relied on key informant interviews to further expound on the ideas of participants. The case studies, particularly Go Digital ASEAN and the Thailand Automotive Industry case, relied on key informants.

1.3 Scope and Limits

The methodology was slightly modified compared to that proposed by the original inception report, which included focus group discussions that were not convened due to conflicting schedules. The purpose of the focus groups was to explore the perspectives of the private sector in different economic sectors, including manufacturing, services, and agriculture. Instead, a case study of the manufacturing sector representing three different stakeholders (the Government of Thailand, automotive assemblers, and auto parts SMEs) was conducted. The assumption was that digital technology would blur the distinction between sectors as greater linkages between sectoral goods and services were enhanced. In most firms, services are often included as part of the outputs provided via the internet and online apps. Agricultural products can be processed as manufactured goods at less cost with greater information. In effect, through digital technology, complementarities and vertical integration will be enhanced.

Some key informants were not interviewed due to schedule constraints. Hence, the scope of this research was adjusted to report on available data or information provided by available informants, complemented by secondary research. The SkillsFuture Singapore case is mainly based on secondary research and information from the SkillsFuture Singapore online portal.

Perfect alignment between what was planned and what was accomplished was not possible. The case studies used in the policy briefs may not have provided an ideal context, but were valuable for the lessons learned. These cases were selected to reflect various best-case scenarios that might apply to a group of countries subject to various constraints at different stages of development. Case in point is the Thailand automotive industry case. EV imports started only in 2022 and, given that the sector is in its infancy, there is no established and relevant PPP yet to draw lessons from. However, the case is informative and useful for identifying potential areas for collaboration at a certain level of development.

While two out of three of the case studies detail specific country experiences, the authors believe that there are aspects of the cases that can applicable throughout the region. Hence, policy recommendations are not targeted at specific countries, but instead at the ASCC.

1.4 Report Structure

This report is organised into three parts. Part One offers brief background for the study,showing the relationship between the megatrends, employment, and GDP. Part One also contains discussion of the study objectives, methodology, scope, and limitations. Part Two discusses the interconnectedness of the megatrends in detail. Part Three provides concluding remarks, setting the context for policy recommendations to be detailed in subsequent policy briefs.

2. Three Megatrends and the Future of Work in ASEAN

2.1 Conceptual Framework: Importance of Private Sector and Skill Development

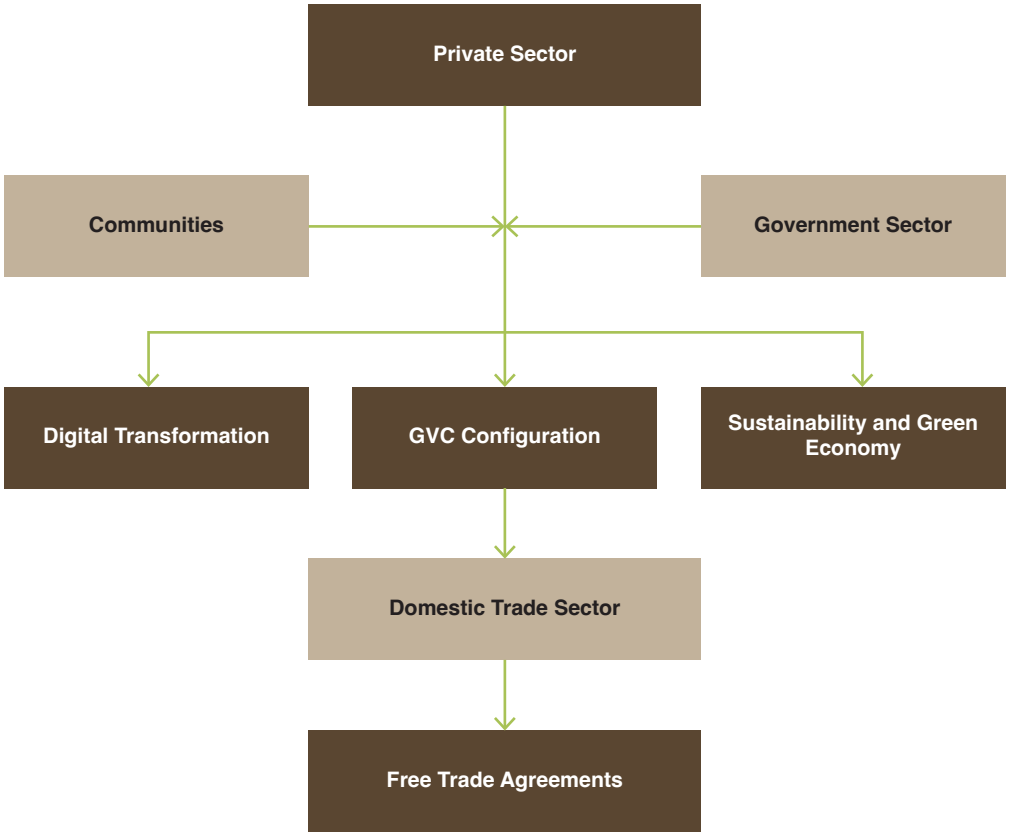
A. Connecting Megatrends and the Private Sector

To understand the value of the private sector and communities to ASEAN human resource development, it must be considered how these social units affect the megatrends considered in this study. Digitalisation can be a means of reconfiguring GVCs by linking countries and firms more efficiently (Ha, 2022) and of developing innovations to spur green economic growth (Hao, et al., 2023). Increasing adoption of digital technologies can transform production and employment. However, the initial impact of these technologies is work disruption, which is expected due to changes in the task profiles of jobs and work organisation–particularly in work time, autonomy, flexibility, and control (Eurofound, 2020). Nevertheless, if more tasks for workers are created around a particular innovation, improvements in labour market conditions can happen. In contrast, issues around data protection and data privacy might disadvantage workers. Substantial change is also expected in health and safety, although available information does not indicate whether this might improve working conditions.

Given that these new technologies were mainly advanced in developed countries, digital transformation may seem exogenous to ASEAN. However, internal economic and social conditions will influence how digital transformation will be adopted and implemented in a country. The main argument is that GVC reconfiguration and greening the economy can be made compatible with the technologies adopted by individual countries after labour demand declines due to digitalisation (Mayer, 2019). Digital transformation is assumed to be affected by market conditions. Additionally, the impact of digitalization on labour and production depends on the reconfiguration of global value chains (GVCs) and the pace of the economy's transition to greener practices.

Figure 6 provides a conceptual framework for this report. The private sector is considered an agent that can determine how the megatrends will proceed. Governments are assumed to be able to influence the private sector by creating incentives and penalties to achieve greater social welfare. In addition, communities, including worker organisations and trade unions, can also affect technology by engaging with technology decision-making processes and advocating for socially and environmentally responsible choices. This involvement would help ensure that technology adoption is not solely driven by commercial interests, but also considers broader social concerns, such as social protections and decent work conditions.

Figure 6. Relationships between private Sector, governments, and the megatrends



Source: The authors

Since GVCs involve different stages of the production process in different countries, globalisation motivates companies to restructure their operations internationally by outsourcing and offshoring. Hence, the domestic trade sector plays a key role in expanding GVCs in a country, making it feasible even for SMEs to engage in greater internalisation (OECD, 2008). Regardless of whether an economy is undergoing technological change, strengthening the domestic trade sector involves resource allocation, and this is where skills are important. Skills must be developed before any significant catch up can be done. Otherwise, a country will be relegated to lower-value exports. Hence, before a country can productively engage in GVCs, it must first develop a stable and productive domestic trade sector, with enough labour capacity and capital to achieve scale economies. Moreover, a country's free trade agreements (FTAs) can create opportunities, as asymmetries across countries (including knowledge and skills) are further decreased by coordination introduced by FTAs (Zhang, et al., 2021).

This study takes a globalisation approach, recognising that production processes are often fragmented and dispersed across different countries, with countries specialising in specific stages of a value chain based on their comparative advantages. This interconnectedness highlights the importance of understanding the global division of labour, trade patterns, and the relationships between different actors in the production and distribution of goods and services.

In this approach, private sector decisions and actions are critical in shaping GVC formation, structure, and dynamics. As major players in international trade and investment, private companies are instrumental in leveraging global opportunities, promoting economic development, and facilitating the integration of economies across borders. Governments and communities should not impede the private sector, but instead act its enablers to achieve greater social welfare.

B. Skill Development as a Catch-Up Strategy for ASEAN

The ASEAN Employment Outlook (ASEAN Secretariat, 2023) discusses the linkages between digitalisation, production, and employment. Digitisation is the key that brings about work changes and is expected to expand as the need for simultaneous consumption and production arises. The Fourth Industrial Revolution (4IR), accelerated by the pandemic and energised by artificial intelligence (AI), underscores the significance of the digital economy as an engine of innovation, competitiveness, and growth. Regional trends show that ASEAN and the rest of Asia and the Pacific are at the forefront of global e-commerce dynamism. Consequently, through digital transformation, the role of labour and its linkages to services and other sectors typically improves an economy's ability for scale, innovation, and spillovers. Digitalisation eliminated the salient characteristics that distinguished services from manufacturing–and which traditionally questioned the service sector's potential to lead productivity growth. Thus, the advent of digital technologies and the increased tradability of services suggest rising productivity in services.

GVC reconfiguration highlights the importance of combining manufacturing and services in an economy's structural transformation. While the immediate impact of digital transformation is concentrated on services, digital transformation can be redirected to develop scale economies in manufacturing that in turn can be realised through linking with GVCs. In this case, the distinction between manufacturing and services should be blurred, as opportunities from manufacturing by small firms and firms from low-technology industries will be linked by digital technologies to GVCs (ADB, 2015; Reddy and Sasidharan, 2023).

Further, inclusion of the green transition in the economy can lead to new products that are more sustainable and resilient. Movement toward the green economy through government regulation has caused GVCs to adhere to sustainable and environmental standards (Hu, et al., 2021).

The rise of online labour platforms (OLPs) can then be viewed as an outcome associated solely with digitalisation (ASEAN Secretariat, 2023). As tasks are gradually altered and economies engage in more digitisation, the demand for OLPs increases and is sustained by further structural changes in the economy. The impact of recent events such as the pandemic and 4IR have accelerated the pace of digital transformation. As a result, there are concerns that technological transitions may displace less-skilled workers and the vulnerably employed.

If appropriate government regulations and community initiatives are developed, the rise of OLPs can create opportunities to form labour arrangements other than the permanent contracts and alternative work arrangements in formal markets. There are three possible future scenarios. In the first scenario, jobs under permanent and alternative work arrangements could be disrupted by OLPs, as these arrangements can substitute for traditional provisions. In this scenario, diminution of traditional arrangements might lead to greater unemployment once digitisation or information and communication technology inputs substitute for labour in the production process. Labour force participation may also decline. This may persist permanently if no other options are available to workers.

In the second scenario for GVC reconfiguration and greening of the economy, additional tasks will be developed and an increased demand for labour and higher wages can be expected. As a result, OLPs could complement existing arrangements and offer workers secondary or complementary forms of work to add to their incomes. Complementary jobs may be suitable for women and youth workers who need greater flexibility to engage in activities such as household work or schooling. In this scenario, unemployment might decrease, labour force participation might increase, and the informal nature of work would remain high.

The pandemic induced ASEAN users to adopt online services and this increased the number of digital consumers: 20 million were added in the first half of 2021, yielding a total of 350 million digital consumers in ASEAN, up from 290 million pre-pandemic (Ing and Markus, 2023).

In the third scenario, GVCs would spark more trade and manufacturing, while added labour market options could help traditional firms employ workers excluded from the formal sector or engaged in informal activities often characterised by poor labour characteristics. In this scenario, unemployment might decrease as the size of the informal sector decreases, since manufacturing firms can hire relatively unskilled labour from the informal sector. Thus, more alternatives would be offered to workers, forcing OLP owners to compete with other employers. While OLPs may offer working conditions similar to the informal sector, they also offer a level of formality that might create better working conditions for workers, such as training and better job quality through improved linkages with formal activities. This can be done only if OLPs face stiff competition.

A practical objective for countries is how to transition large numbers of informal workers to the formal sector. There are two possibilities. First, improving work conditions offered by OLPs can be achieved by offering alternative welfare-enhancing choices to informal workers. Workers can choose to decline work offers from OLPs if there are other work options. In this scenario, the work of communities and governments would be crucial. Second, skills could be improved to increase the scale of manufacturing firms to foster a more competitive labour market, thus raising labour demand and wages. This would be possible if new tasks involving digital technology could be developed around GVC reconfiguration and the expansion of the green economy.

This goal is particularly challenging for AMS, as other countries employing digital and other new technologies have significant market power because of their size, network effects, or technological advantages (scale economies). Large countries, like China and the US, have comparative advantages that could also hinder the development of manufacturing in smaller countries. The first order of business would be to improve the skills of workers so as to complement the use and adoption of digital technologies and AI. Skills that link ASEAN firms to these large economies, or which complement digital technology, would be needed to take advantage of the megatrends. The main goal of skills development would be to provide alternatives to workers, and allow them to adapt, thrive, and contribute to these transformative megatrends.

While advances in AI have the potential to result in job losses and greater inequality, this is a greater concern for developing countries, since their comparative advantage is an abundance of unskilled labour and natural resources (Korinek, et al., 2021). Nonetheless, the greater fear is that AI technologies will be more disruptive than the digital technologies.

In this case, skill development should be seen as a strategy to catch up with more technically advanced countries. Countries that are slow to adapt these technologies will have to transform their routine workers and imitation factories into Schumpeterian entrepreneurs (Yu, 1998). This would require developing new startups to maximise digital technologies while creating new job opportunities. Given accelerating rates of change, startups and technology using entrepreneurs would be more agile than large corporations in adapting to new production processes. A combination of the entrepreneurial activity from startups and the corporate ability of larger firms could be adopted as a management strategy to introduce new innovations (Weiblen, et al., 2015).

Thus, a country's catch-up strategy requires moving away from existing GVCs and developing domestic value chains to create high-end segments for new GVCs (Lee, 2019). For low-income countries, participation in existing GVCs could lead to low value-added production, as final products would be further processed in other countries. Countries should consider 'leapfrogging', e.g., accelerating progress by skipping traditional development paths, and developing their own GVCs. For this reason, countries must strengthen their domestic economies

Based on technical definitions of formality, most online labour platforms, such as Upwork and Freelancer, are informal, as their workers are considered independent contractors and not formal workers. However, these platforms connect formal businesses and individuals with freelance talent for a wide range of tasks. Unlike informal organizations, these platforms have mechanisms that verify the identities of workers and employers and offer features such as escrow payments and dispute resolution to help maintain transparent and secure transactions for all parties.

The ASEAN Employment Outlook (ASEAN Secretariat, 2023) said that fewer persons are engaged in OLPs in countries where the share of services to GDP is higher (e.g., Singapore).

to supply the main inputs for a domestic GVC. Again, this highlights the importance of skilled labour development.

In summary, that reconfiguration of GVCs as resilient and sustainable after the pandemic will provide opportunities that can be used to address new challenges, leverage emerging technologies, and adapt to changing market dynamics. Skilled professionals, with a diverse range of expertise, are essential for navigating these complexities and for ensuring that GVCs remain efficient, resilient, and competitive in the evolving global landscape. The next subsections consider how skills have been affected by the megatrends. By responding to the megatrends, countries will be able to design better skill development programmes.

2.2 Digital Technology and the Digital Divide

The 4IR was just beginning when the pandemic struck. The subsequent imposition of mobility restrictions impeded or shut down many face-to-face businesses, forcing changes to how business processes and transactions were carried out. The adoption of digital tools and platforms was one of the fastest ways to restore connectivity and productivity. Their use helped firms reconnect with customers and helped the public sector deliver public services to constituents.

During pandemic-related lockdowns, societies conducted work and classes remotely, creating a heavy reliance on online platforms. Consumers also adopted e-commerce platforms and adapted to digital forms of payment. This created more online platform jobs, despite their informal, temporary, and unregulated nature (Villafuerte, 2023).

While digitalisation created and saved jobs during the pandemic, it also exposed the grim reality of the digital divide. A 2022 International Telecommunications Union (ITU, 2022) report said that a sizeable proportion of the world's population was not connected to the internet. This is true, despite the universal coverage of mobile networks through at least a 2G network across the globe. By 2022, global 4G network coverage reached 88%, with near universal 4G coverage in Asia-Pacific (96%) . However, near universal coverage did not translate into higher or universal use.

The 2022 ITU report also stated that the digital divide was most evident in the incidence of urban dwellers who use the internet (82%) than rural users (46%). Asia-Pacific reflects these pattern (urban areas, 82%; rural areas, 47%). The gap between gender is smaller (male users, 67%; female users, 61%). The younger youth segment (15-24) has a significantly higher level of individual users, 73%, versus total Asia-Pacific users (63%). This is slightly lower than the global average of 75% and 65%, respectively.

As digital skills increase as requirements for employment, those living in rural areas, older persons, and, to a certain extent, some women, will continue to be isolated by technology unless programmes are developed to eliminate factors preventing them from adapting to or learning digital skills and accessing the internet.

Moreover, widespread use of digital technologies due to the pandemic may also result in the increased use of labour-saving technology as a substitute for labour. As digital transformation accelerates, job polarisation, as evinced by the displacement of middle-skilled workers, can follow. Manual and routine jobs are at higher risk of displacement in advanced economies, while developing countries have lost middle-skilled occupations that are intensive in routine, cognitive, and manual tasks (Autor & Dorn, 2013). Although there is no evidence of job polarisation, experts argue that the effects of digital technologies will be greater in developing countries that have jobs involving a higher routinisation of tasks (Park & Inocencio, 2020). Hence, given the value of digitalisation to ASEAN, the importance of skill development must also be highlighted.

Schumpeter entrepreneurs engage a combination of productive factors in innovative ways, e.g., the introduction of new goods, the introduction of better-quality goods, the introduction of new methods of production, opening new markets, the use of new sources of supply for a raw material or an intermediate good, or establishing a new organisation within an industry.

2.3 GVCs as a Way to Create Alternative Employment Sources

In ASEAN, manufacturing GVCs create more jobs and are slightly more inclusive than non-GVC companies. ADB (2023, pp. 16-17) data show that GVCs generated the highest share of jobs in 2021, and were linked to more than 60% of employment. Intraregional value chains paled in comparison, generating only 13% of the jobs attributed to GVCs in the region in the year 2000.

The same report stated that GVCs influenced labour markets toward inclusivity, noting that a slightly higher proportion of women held GVC-related jobs compared to total employment (45% vs 42%). GVCs also tended to hire young workers compared to total employment figures.

On job quality, GVC jobs offered greater wage stability and better employment conditions than those who were self-employed. In 2021, this was the case in more than half of GVC jobs (54%). However, the downside of GVC employment is that workers are likely to be in low- to medium-skilled occupations. In fact, in 2021, the proportion of high-skill occupations in GVCs was only 11%. In ASEAN, countries that were better integrated with GVCs were able to rapidly reduce working poverty and improve labour productivity (Villafuerte, 2023).

The pandemic triggered a domino effect, as lockdowns disrupted efficient GVC operations, leading multinational corporations (MNCs) to consider reshoring, consolidating, or diversifying their GVCs (Shrestha, 2023). While reshoring is a potential threat resulting from decisions of MNCs or governments to consolidate operations in a home country, the World Economic Forum (WEF) states that MNCs will continue to look for new locations. Logistic metrics, such as ease of market entry and proximity to source materials and market, will be important criteria for choosing a country to invest in. The WEF asserts that low labour costs (or labour cost efficiencies) will be a weaker determinant for location selection by MNCs, while greater importance will be placed on location resiliency (WEF, 2023).

The adoption of digital technologies enhances the resiliency of GVCs. The initial impact of work disruptions is expected to target skill use and development, since changes in the task profiles of jobs and work organisation (particularly working time, autonomy, flexibility, and control) will transform production and employment requirements (Eurofound, 2020).

The megatrends are pushing countries to upgrade their industries and training institutions. Excessive focus on a single megatrend, such as digital transformation, may lead to ineffective responses at the expense of better approaches for managing the other megatrends. At the same time, countries that cannot respond immediately to the megatrends' accelerating pace will face increased difficulty in catching up in the future. Thus, there is a need to establish PPP for skills development to increase the skills that economies, companies, and for workers to adapt to the megatrends.

2.4 Sustainability and the Green Economy

Decarbonisation is something ASEAN must consider as countries to pursue green recovery strategies during the transition to a post-pandemic normal. ASEAN is part of Asia, which has been described as the 'factory of the world' by an ADB study (2023). Asia leads the world in greenhouse gas (GHG) emissions in terms of production (although advanced economies lead GHG emissions for consumption [ADB, 2023]). Thus, responses to digital transformations and globalisation must incorporate sustainability and resiliency. Communities and other social groups are likely to promote these concerns and insist on placing these on the agenda.

On trade, if ASEAN and AMS pursue green recovery options, this will improve competitiveness. ASEAN trading partners with advanced economies, e.g., the European Union (EU), have been growing less tolerant of non-green practices, preventing entry of products from companies that engage in deforestation (ADB, 2022). Aside from the EU, the US is also looking to meet sustainability goals. It can be expected that the US will also enforce new sustainability requirements on companies in their supply chains (Shrestha, 2023).

Over time, as countries transition to green economies, new regulations favouring products that are more environmentally friendly and sustainably produced will be imposed by governments. GVCs will have to abide by these standards if they wish to access these markets (Hu, et al., 2021).

The transport sector, which intersects with the logistics function of GVCs, was identified by McKinsey as another large source of GHGs between 2018 and 2050. Transitioning the entire transport sector might contribute to a 14% abatement of GHGs (Farmer et al., 2022). Globally, regulators have introduced ambitious goals for EVs, with the EU aiming to achieve carbon neutrality by 2050 and the US targeting 50% of new cars sold by 2030 to be EVs.

In ASEAN, eight out of 10 AMS have committed to carbon neutrality by 2050, while Indonesia has committed to carbon neutrality by 2060. The Philippines is the only country without a net-zero carbon emission target (Zheng, 2022) The region is targeting that 20% of new vehicles be EVs by 2025, as reported by the International Renewable Energy Agency (Fallin & Lee, 2022). AMS have drafted their own goals as well, with Indonesia aiming to sell only electric cars and motorcycles by 2050 and Brunei Darussalam targeting 60% of total annual vehicle sales to be EVs by 2035 (BIMP-EAGA, 2022).

3. The Importance of Public-Private Partnerships in Skill Development

The private sector must use digital technologies to enhance supply chain transparency and contribute to sustainable development. In doing so, higher skill levels will be needed to meet the required levels of human capacity necessary to address the challenges introduced by the three megatrends.

There are two basic types of skills training (Becker, 1964):

1. Firm-specific training, that provides workers with firm-specific skills that will increase their productivity only with current employers.

2. General training, that contributes to workers' general human capital and will increase their productivity for any employer.

In this model, workers will only invest in general skills, and firms will only invest in specific skills. While skills training is a combination of firm-specific and general training, productivity can be expected to increase more if firms invest in specific skills. If training costs can be recovered by raising marginal revenues in the presence of market restrictions on worker mobility, private firms are willing to invest in both general and specific skills (Acemoglu and Pischke, 1999). In competitive labour markets, which are characterised by greater job flexibility, workers obtain all the returns from general human capital training, hence creating a disincentive to firms to train.

3.1 Types of Public-Private Partnerships on Skills Development

The limited involvement of industry in training makes public-private partnerships (PPPs) necessary. There are three types of PPPs in skill development (Sakamoto, 2016; Taurelli, 2020).

First are policy or knowledge-oriented PPPs, promoting joint formulation of skills policies and legislation, as well as joint monitoring and evaluation of implementation. Their goal is to generate knowledge of labour market needs and identify demands for competencies, qualifications, and skills.

Second are systems- or resource-oriented PPPs, concerned with raising financing for skills development and focusing on developing the necessary capital, equipment, and schools for effective training. A challenge in setting up these PPPs pertains to the differences in organisational cultures of different partners (Batjargal and Zhang, 2021). Crucial is the refinement of skills or competency-based standards and qualifications, as well as the institutionalisation of a mechanism for assessment and certification, including establishment of workplace learning (e.g., incubators and apprenticeships).

Third are training delivery or provision-oriented PPPs, focusing directly on the learning process. These PPPs are the most diffused with regards workplace training. These partnerships should also establish mechanisms for the joint assessment and certification of skills, as well as for the joint management of former government training institutions. In this type, it is recommended that specific training be conducted in the workplace itself.

Governments must set up all three types of PPPs, even if this must be done via different agreements with different private agencies. The output of the first two types of PPPs create inputs for all three types. The first step must be to create sector skill councils, as well as local/regional skills councils led by private industry skill bodies. Such councils should begin the process of creating PPPs.

Private sector participation is vital, since the goal for countries is to shift their economies to high value-added activities that involve increased GVC participation in transitioning to the green economy as well as leapfrogging to higher segments in value chains. The private sector can provide information on skills in demand, inputs for the development of skills/competency standards, and training curricula. More importantly, private sector participation can help ensure that training graduates are employed and contribute more productively to outputs. The private sector can help develop sector-specific institutional learning facilities and upgrade existing training

3.2 How to Attract Private Sector Participation in Skills Development

The challenge is how to collaborate with the private sector on skills development. Governments can ensure private sector participation via several modalities (Sakamoto, 2016; Taurelli, 2020). First, as skills are not a top private sector priority (especially for firms competing in low-cost production), investing in skills will only be rational if skills are part of an upgrading strategy for a business or sector. Thus, skills councils based on the needs of specific sectors or regions should focus on developing specific training aimed at upgrading production. The creation of entities to make PPPs more effective is an important element of innovation. Membership in these entities would be a mechanism for facilitating collaboration.

Second, as general skills are required for specific skills training, governments must incentivise investment in general skills through fiscal incentives and cost-sharing mechanisms, such as tax incentives, payback clauses, or loans. As with training funds, these mechanisms can significantly ease private investment in foundational education. Private sector participation would depend on government incentives and subsidies.

Third, the role of social partners highlights the importance of civil society actors, such as trade unions and NGOs, that can bring innovation into their pronouncements. Community organisations should be an essential part of PPPs, as they can promote equal access to training and skill recognition. By bringing community movements into partnerships, more cordial relationships may be created between workers and employers when pursuing innovation. Reducing transaction costs between workers and employers could be one incentive for private sector participation. Involving individual businesses, their associations, individual training providers, and relevant public authorities will afford a variety of perspectives to the PPP, and solidify multilevel governance.

Similar to the case on infrastructure-focused PPPs, various legal and financial arrangements will be needed to convince participants that there are benefits from the partnerships. However, unlike infrastructure PPPs, skill-development partnerships are outcome oriented, not output oriented. The benefits of these partnerships are less quantifiable and more long term. Hence, the private sector would have to be involved in monitoring and assessing the training PPPs.

Since society will benefit ultimately from skill development, the public sector, to an extent, should be expected to fund these activities. However, financial costs might burden governments or prove politically impossible, particularly since skill development would require significant tax revenues. This would be difficult to justify in countries with large budget deficits. Accordingly, as the training becomes more specific, mechanisms would have to be put in place to organise collective sectoral and regional arrangements based on taxes collected from key stakeholders (Eurofund, 2018).

Due to limited public resources, investment from private firms would be necessary, although these investments could only be provided with expectation of returns. There are several ways to reduce the burden of financial contributions from private partners (Taurelli, 2020):

1. Planned financial gain for the private sector must be ensured (the classic PPP model). Given that this is a clear business case, potential partners can be forthcoming and partners selected competitively, something that has significant advantages. However, since the expected returns from skills development are difficult to monetise and identify, there will be difficulties in calculating financial returns.

2. Expected contributions must be quantified in advance, i.e., the amount of resources to be given by private partners must be fixed before start of a project. This has advantages and disadvantages. On one hand, there will be an increased sense of ownership of the collaboration by the private partner, who is likely to take more responsibility for the results. On the other hand, ambitious entry requirements may complicate the search for partners, as businesses may not be convinced of the benefits of collaboration.

3. Funds can be taken from a legislated tax-based training fund at the national, sub-national, or sectoral level, or through another mechanism in the general budget process of a country. The advantage would be automatic funds collection, whereas the difficulty would be targeting the tax at those who would later benefit from the redistributed funds. Otherwise, the tax must be applied universally and justification made for why the funds have been disbursed on a selective basis.

The financial modality of these PPPs depends on the work of the councils that will determine the programme content and resources available for these activities. Effective PPP arrangements should include financial arrangements that clearly define how the initiative will be financed and whether financing will be shared. This will require strong management information and monitoring systems to support defining targets and evaluating performance (Batjargal and Zhang, 2021).

4. Summary and Conclusion

The private sector, possessing the best understanding of what is needed to adapt to technological innovation and skills development, can help governments identify the most relevant and in-demand skills to support growing industries, while also participating in training workers in those skills. Governments, on the other hand, control policy tools that can create enabling environments, adapt regulations to support the growth of future industries, and provide training in skills identified by the private sector. Community organisations can also collaborate to ensure welfare protection for workers. This would support that the supply of skills required by the private sector matches the needs of GVCs. The following recommendations are highlighted.

First, AMS should consider how to adapt all three of the megatrends identified in this report: digitalisation, GVC reconfiguration and the transition to a green economy. This simultaneous focus is essential, and will allow countries to develop their individual strategies consistent with domestic conditions and global trends. Focusing only on technological reforms will limit a country's options and may result in inefficient policies. A broad, multifaceted approach is needed to meet the challenges posed by the megatrends.

Second, the private sector should be at the forefront of national responses in AMS. Governments must act as enablers, while community organisers must monitor and enforce social standards. A key issue facing skills development programmes is the alignment of skills demand and supply. This problem can be substantially solved if the private sector is continuously to define their skill needs and requirements. Ultimately, the production plans of the private sector should determine which training programmes are to be implemented.

Third, the goal of ASEAN should be to achieve technological breakthroughs to catch up with more developed regions, avoid barriers imposed by limited national capacities, and take advantage of the knowledge found in other countries. Skills development programmes that support this goal would best be based on the GVC-technology diffusion training model. However, it is also necessary to institutionalise other models to achieve social ends and provide formal training. Training programmes should target individuals and regions that have not fully maximised their technological abilities and resources. Social programmes to enhance green sectors of the economy must be developed. CSOs that work in remote and marginalised regions affected by climate change should be encouraged to perform these trainings. Further, governments must continually invest in general skills, since the private sector may not be willing to, since the returns would be social rather than private. Finally, the megatrends necessitate a shift from specialised learning to lifelong learning, with a focus on critical thinking.

Fourth, catch-up requires leapfrogging through existing GVCs. Participation only in existing GVCs can place a relatively progressive country in a 'middle-income country trap', as low-value added production, which leads to lower wages and poor working conditions, exists within these value chains. Leapfrogging may involve large corporations partnering with technological startups to create incubation facilities and programmes to train and mentor younger and more technically savvy individuals to form entrepreneurships. Incubation programmes provide the necessary support, resources, and ecosystem for startups and entrepreneurs to thrive, leading to job creation, innovation, and economic advancement. With strong mentorship, young entrepreneurs with fresh perspectives, energy, and willingness to take risks can benefit greatly.

Finally, PPP arrangements are needed to formalise the collaboration of governments, the private sector, and communities in the process of creating and ensuring productive employment. Training should emanate from demand. As the private sector is reluctant to invest in training, as cost efficiency is a priority, PPPs should create the necessary financial and growth incentives to sustain skill development. PPP arrangements are the first step in this journey toward sustainable growth.

Appendix A. Key Informant Interviews

Date	Key Informant	Designation	Topic
4/24/23	Dr. Nuwong Chollacoop	Low Carbon Research Group Director & Renewable Energy and Energy Efficiency Research Team Leader	Thailand Automotive Industry EV ecosystem
25/4/23	Ms. Sofia Shakil	Independent Expert	Megatrends, skills training and economic planning, social protection
5/9/23	Mr. Francis Macatulad	Executive Director, Asia Society for Social Improvement and Sustainable Transformation	TVET and digital skills training
5/18/23	Ms. Hannah Najar	Regional Program Manager, Go Digital ASEAN, The Asia Foundation	Go Digital ASEAN case
22/5/23	Ms. Yen Hoang	Senior Officer, External Economics Relations Division, ASEAN Secretariat	Multilateral trade agreements: realities, challenges, and opportunities
24/5/23	Dr. Rashesh Shrestha	Economist, Economic Research Institute for ASEAN and East Asia	Megatrends, GVC integration with MSMEs, skills training
24/5/23	Ms. Jamie Ko	Director, Regional Public Affairs, Grab Southeast Asia	Grab skills training, PPPs
25/5/23	Mr. Pyo Daebum	Labour Attache of the Republic of Korea to ASEAN	Korean skills training ecosystem, PWD employment
26/5/23	Mr. Suphot Sukphisarn	Chairman, Auto-Parts Industrial Club, Federation of Thai Industry	Industry perspective on transition to EV production
8/6/23	Mr. Suroj Sangsnit	Vice President, SAIC Motor	Diffusion of skills training via GVCs
13/6/23	Mr. James Villafuerte	Principal Economist, Asian Development Bank	Megatrends, GVC integration, skills training, social protection
20/6/23	Ms. Marija Ralic and colleagues (written interview)	Lead, Google APAC	Google.org's and Go Digital ASEAN
12/7/23	Dr. Paryono Paryono	Deputy Director for Professional Affairs and Research Manager, SEAMEO VOCTECH	TVET ecosystems and challenges

References

Acemoglu, D., & Pischke, J. S. (1999). ***The Structure of Wages and Investment in General Training.*** Journal of Political Economy, 107(3), 539-572.

An Act to establish the Skills Future Singapore Agency (No. 24 of 2016). https://sso.agc.gov.sg/Act/SSAA2016?ProvIds=P11-#P11-

Asian Development Bank. (2023). ***ADB ASEAN and the Global Value Chains: Locking in Resilience and Sustainability.*** https://www.adb.org/publications/asean-global-value-chains-resilience-sustainability

Asian Development Bank. ***(2022) Implementing a Green Recovery in Southeast Asia.*** https://www.adb.org/sites/default/files/publication/793536/implementing-green-recovery-southeast-asia.pdf.

Asian Development Bank. ***Integrating SMEs into global value chains: Challenges and policy actions in Asia.*** Asian Development Bank, Manila.

ASEAN Secretariat. (2023). ***ASEAN Employment Outlook: The Quest for Decent Work in Platform Economy: Issues, Opportunities and Ways Forward.*** ASEAN Secretariat, Jakarta.

Becker, G. S. (1964). ***Human Capital: A Theoretical and Empirical Analyses, With Special Reference to Education.*** Chicago, IL, University of Chicago Press.

Brunei Darussalam–Indonesia–Malaysia–Philippines East ASEAN Growth Area. ***(2022, August 10). ASEAN gears up for a shift to electric vehicles.***https://bimp-eaga.asia/article/asean-gears-shift-electric-vehicles#:~:text=Southeast%20Asia%20is%20emerging%20as,to%20%242.7%20billion%20by%202027.

Brenton, P., Ferrantino, M. J., & Maliszewska, M. (2022). ***The Key to COVID-19 Recovery and Poverty Alleviation: Globalization, Not Localization.*** Washington, DC: World Bank. https://doi.org/10.1596/978-1-4648-1821-9 https://doi.org/10.1596/978-1-4648-1821-9

Calabrò, A., Chrisman, J.J. & Kano, L. (2022). ***Family-owned multinational enterprises in the post-pandemic global economy.*** Journal of International Business Studies, 53, 920–935. https://doi.org/10.1057/s41267-022-00508-8

Dadush, U. (2023). ***The policy response to global value chain disruption.*** Global Policy, 14(3), 548—557

Eurofound. (2020). ***Game-changing technologies: Transforming production and employment in Europe.*** Publications Office of the European Union, Luxembourg.

Fallin, D., & Lee, K. (2022, August 31). ***Southeast Asia hopes to become the next EV Hub: New Perspectives on Asia.*** CSIS: Center for Strategic and International Studies. https://www.csis.org/blogs/new-perspectives-asia/southeast-asia-hopes-become-next-ev-hub

Farmer, R., Gupta, R., Lath, V., & Manuel, N. (2022, June 30). ***Capturing growth in Asia's emerging EV ecosystem.*** McKinsey & Company. https://www.mckinsey.com/featured-insights/future-of-asia/capturing-growth-in-asias-emerging-ev-ecosystem

Fung, M. (2020). ***Developing a robust system for upskilling and reskilling the workforce: Lessons from the Skillsfuture Movement in Singapore.*** Education in the Asia-Pacific Region: Issues, Concerns and Prospects, 321–327. https://doi.org/10.1007/978-981-15-7018-6_39

Ing, L. Y., & Markus, I. (2023). ***ASEAN Digital Community 2040. ERIA Policy Brief No. 22-11.*** Jakarta: ERIA.

International Telecommunication Union. (2022). (rep.). ***Measuring digital development: Facts and figures 2022.*** https://www.itu.int/hub/publication/d-ind-ict_mdd-2022/.

Ha, L. T. (2022). ***Impacts of digital business on global value chain participation in European countries.*** AI & Society, 1—26.

Hao, X., Li, Y., Ren, S., Wu, H., & Hao, Y. (2023). ***The role of digitalization on green economic growth: Does industrial structure optimization and green innovation matter?*** Journal ofEnvironmental Management Management, 325, 116504.

Hu, D., Jiao, J., Tang, Y., Han, X., & Sun, H. (2021). ***The effect of global value chain position on green technology innovation efficiency: From the perspective of environmental regulatio.*** Ecological IndicatorsIndicators, 121, 107195.

Kantar. (2022). ***Go Digital ASEAN: Regional Impact Summary. The Asia Foundation.*** https://asiafoundation.org/wp-content/uploads/2022/06/Go-Digital-ASEAN-Regional-Impact-Summary-2021.pdf.

Kaymaz, N., & Goksu, A. (2023, June 2). ***Foreign direct investment in the Industry 4.0 Era.*** World Economic Forum. https://www.weforum.org/agenda/2023/06/foreign-direct-investment-new-industrial-revolution/

Korinek, M. A., Schindler, M. M., & Stiglitz, J. (2021). ***Technological progress, artificial intelligence, and inclusive growth.*** IMF Working Paper no. 21-166. Washington, DC: International Monetary Fund.

Mayer, J. (2018). ***Digitalization and industrialization: Friends or foes.*** Geneva: UNCTAD Research Paper No. 25.

Mikic, M. (2023). ***Toward Future-Proofing Global Value Chains.*** In ASEAN and Global Value Chains: Locking in Resilience and Sustainability (pp. 16–17). Asian Development Bank.

OECD. (2022). ***Labour-saving Technologies and Employment Levels: Are Robots Really Making Workers Redundant?*** https://www.oecd-ilibrary.org/docserver/9ce86ca5-en.f?expires=1692153792&id=id&accname=guest&checksum=91BF97449A2793AACB2D830B18F6537A.

OECD. (2008). ***Enhancing the Role of SMEs in Global Value Chains.*** Paris: Organization for Economic Cooperation and Development.

Park, C. Y., & Inocencio, A. M. (2020). ***COVID-19, technology, and polarizing jobs.*** ADB Briefs No. 147. Manila: Asian Development Bank.

Sakamoto, Akiko. (2016) ***Towards demand-based skills development through public-private partnership.*** Paper presented at the National Tripartite High Level Dialogue on Employment, Industrial Relations, and Social Security. Bangkok, International Labour Organization. https://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/---ilo-jakarta/documents/presentation/wcms_518962.pdf

Schwartz, J., Monahan, K., & Stockton, H. (2017, November 9). ***Forces of Change: The Future of Work. Deloitte Insights.*** https://www2.deloitte.com/us/en/insights/focus/technology-and-the-future-of-work/overview.html/#endnote-sup-15

SkillsFuture SG. (2023, April 3). ***Skills Frameworks.*** https://www.skillsfuture.gov.sg/skills-framework

SkillsFuture SG. (2023b, April 3). ***Skillsfuture Credit.*** https://www.skillsfuture.gov.sg/initiatives/mid-career/credit

SkillsFuture SG. (2023, April 3). ***SkillsFuture Movement.*** https://www.skillsfuture.gov.sg/aboutskillsfuture#:~:text=Skillsfuture%20is%20a%20National%20movement,regardless%20of%20their%20starting%20points.

Ministry of Manpower Singapore. (n.d.). ***SkillsFuture.*** https://www.mom.gov.sg/employment-practices/skills-training-and-development/skillsfuture

Shrestha, r. (2023, Apr. 17). ***Technology and ASEAN Competitiveness [round table discussion]***. Round Table Discussion on the Future of Work in ASEAN, online video conference.

Taurelli, Seria. 2020. ***Methodology and Types of Public-Private Partnerships.*** In Vecchi, Veronica, Taurelli, Siria, & van der Meer, Marc (editors), Public-Private Partnerships for Skills Development: A Governance Perspective. Volume I. Thematic Overview. Turin, Italy: European Training Foundation.

TheGlobalEconomy.com (2022). ***Mobile Network Coverage - Country rankings,*** available at: https://www.theglobaleconomy.com/rankings/Mobile_network_coverage/South-East-Asia/ (accessed 5 November 2023).

Tinh Thuong Microfinance Institution. (n.d.). (rep.). ***Go Digital ASEAN: Digital skills to unlock new economic opportunities.*** Tinh Thuong Microfinance Institution. Retrieved from https://tymfund.org.vn/wp-content/uploads/2022/04/Go-digital-Asean.pdf.

Villafuerte, j. (2023, Apr. 17). ***Future of Work in ASEAN.*** [round table discussion]. Round Table Discussion on the Future of Work in ASEAN, online video conference.

Weiblen, T., & Chesbrough, H. W. (2015). ***Engaging with startups to enhance corporate innovation.*** California management review, 57(2), 66—90.

World Bank. (2023) ***Open Data.*** World Bank, Washington, DC.

World Economic Forum. (2023). ***Foreign direct investment in the era of new industrial revolution.*** https://www.weforum.org/agenda/2023/06/foreign-direct-investment-new-industrial-revolution/

Yorozu, R. (2017). ***The Singapore SkillsFuture Movement. In Lifelong learning in transformation: Promising practices in Southeast Asia Brunei Darussalam, Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, Philippines, Singapore, Thailand, Timor-Leste and Viet Nam.*** essay, UNESCO Institute for Lifelong Learning.

Yu, T. F. L. (1998). ***Economic development in latecomer economies: An entrepreneurial perspective***. Development Policy Review, 16, 353–372.

Zhang, R., Zhao, J., & Zhao, J. (2021). ***Effects of free trade agreements on global value chain trade-a research perspective of GVC backward linkage.*** Applied Economics, 53(44), 5122—5134.

Zheng, C. (2022, November 11). ***Which ASEAN countries will be the front-runners to decarbonize their power sectors?*** S&P Global Commodity Insights. https://www.spglobal.com/commodityinsights/en/ci/research-analysis/which-asean-countries-will-be-the-frontrunners-to-decarbonize.html

The ASEAN Secretariat
ASEAN Socio-Cultural Community (ASCC) Department
Jalan Sisingamangaraja 70A
Jakarta 12110, Indonesia

www.asean.org **asean** **the-asean-secretariat**