

SKILLS AND HUMAN CAPITAL DEVELOPMENT POLICIES OF ASEAN

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ABSTRACT

This chapter paper provides an overview of the human capital development policies of ASEAN in terms of education and training. The chapter highlights the importance of aligning educational policies with industrial policies to create sustainable and inclusive growth in the domestic economy and region. There is also an urgent need among the ASEAN countries to achieve rapid catching-up through structural transformation that results in fast and sustained technological change and productivity growth, and more and better job generation leading to rising income and poverty reduction. To achieve this, the country needs to enhance both the social capabilities and human capital required to adopt advanced technologies and shift into new industries, in which education and training has a vital role to play. ■

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SKILLS AND HUMAN CAPITAL DEVELOPMENT POLICIES OF ASEAN

1. Introduction

Investing in people and the accumulation of human capital is critical for economic development and the sustainable growth of the economy (Becker, 1965; Mincer, 1974). Investment in people in terms of education, training, medical care and health of workers, accumulation of on-the-job skills and work experience, and in creating good social values are key components of human capital that will represent wealth to the nation and organisations that could be used to increase the private and social wellbeing of society. These are economic and social values inherent in people and it represents capital that is not separable from their economic and social activities in the economy (Schultz, 1967). This accumulation of human capital generates private and social returns to both individuals and current society, but it also affects the overall wellbeing of future societies and generations. The investment and management of this crucial resource will determine how the society and economy will grow in a sustainable and inclusive manner.

One of the key driving forces in East Asia and ASEAN for the past 40 years of growth is the accumulation of human capital through education and skills (Lee and Francisco, 2010). A study by Lee and Francisco (2010) highlights that strong improvements in educational capital, particularly in primary and secondary school education has significantly improved the competitiveness and growth of Asian countries. However, the study also reveals that the average years of schooling is increasing at a slower rate from 2010 to 2030 compared to 1970 to 2010. They suggest the importance of investing and improving the quality of secondary and tertiary education levels; particularly, there is a need for greater investment in ASEAN countries.

Recent evidence indicates ASEAN is in a structural transformation stage in terms of servicification of the manufacturing sector (Thangavelu et. al, 2018). To achieve rapid catching-up and sustainable growth and social inclusiveness, ASEAN Member States (AMS), particularly ASEAN LDCs (Less Developed Countries) such as Cambodia, Lao PDR and Myanmar, are in urgent need to diversify its economy from a narrow base and dependence on external forces. It is crucial to equip the young workforce with relevant skills to undertake value-added activities in the economy and region for the AMS. Given a narrow industrial base and the weak educational attainment of the current workforce at primary and below education levels for ASEAN LDCs, there is an urgent need to diversify its industrial base and also develop secondary and vocational education.

The investment and accumulation of human capital and the returns it generates on the wellbeing of the people is of central importance to policymakers as it has direct impacts in lifting the wellbeing of not only the current but also future generations, in addition to its effect on the aggregate output

growth of the economy (see 'Race between Education and Technology' by Goldin and Katz, 2010). Investments in human capital can also play a major equalising role in the economy in terms of providing opportunities for the vulnerable parts of the populations to participate in the economic development of the country. Thus, human capital has the strong effect of wealth distribution as economic growth and the pace of technological innovation increases. Further, the 2012 study by Acemoglu and Autor, extending the research of Goldin and Katz (2010), suggests that investments in education and skills that increases technology interactions and accomplishing value-added tasks will lead to greater economic growth and better wellbeing of workers in terms of higher economic returns for their activities. The idea of improving the value of workers and their economic and social value-added activities in the domestic economy reflects the centrality of human capital and the empowerment of workers in driving economic growth. In addition, Acemoglu and Dell (2009) also highlight the important role of institutions in creating well-defined educational and industrial policies as the differential factor for growth and development across countries.

The debate on the importance of human capital as a crucial factor for growth and technology adoption goes back to Schultz (1967) and Nelson and Phelps (1966). Recent studies highlight the importance of human capital for creating private and social externalities in the economy (Acemoglu and Angrist, 2000). These private externalities relate to spillovers in knowledge and diffusion of new technologies in the economy due to highly educated and skilled workers, which increases the returns to technology adoption, the returns of entrepreneurs and managers, and also increases the demand for skilled labour. The social returns to education reflect greater social consciousness and responsibilities such as lower crime, higher recycling rates, and greater inter-generational transfer of knowledge. Several researchers have shown that highly educated workers tend to increase their value-added activities in the economy by adopting new technologies faster than those with less education (Welch, 1973; Wozniak, 1984, 1987; Krueger, 1993, 2001). Although the impact of education on value-added activities of the private sector is widely identified, the impact of value-added social activities is quite new as indicated by recent developments in corporate social responsibility and social enterprises.

The benefits of human capital development in equalising economic development is reflected by the inclusiveness and sustainability of economic growth. Human capital is the 'glue' that binds sustainable development with inclusive growth in the domestic economy. The inclusiveness of economic growth is clearly defined by strong educational institutions and well-regulated labour markets that create equal opportunities to acquire education and also to empower all individuals, including women, to fully participate in the labour market. Strong education policies and a well-regulated labour market that are aligned to industrial policies (demand-side policies of the labour market) are key components to the sustainable development of the economy. This is identified as one of the key differentiating institutional factors for greater impact of human capital development on economic growth (Acemoglu and Dell, 2009). The Commission on Growth and Development (2008) highlights that inclusive growth embraces equity, equality of opportunity, and protection of the poor during market and employment transitions as critical elements of successful growth strategies.

Human capital development in inclusive and sustainable growth is not only reflected by economic wellbeing but also in the social wellbeing of individuals. Although economic wellbeing is generally reflected by income and wage of workers, social wellbeing is reflected by family and household activities such as access to good health in terms of access to hospitals and doctors, mental soundness, access to clean water, access to basic living conditions, and poverty reduction. The idea of economic wellbeing being driven by the market is not mutually exclusive to social wellbeing as they are mutually reinforcing themselves.

The dynamic effects of human capital development are also important to improve the living standards of both current and future generations. A UK study identified that improvements in average education attainment increased intergenerational income mobility and enhanced the social mobility of households (Blanden and Macmillan, 2014). In fact, household dynamics indicate that parental income and education have a great influence on the income and social mobility of the next generation (Blanden and Macmillan, 2014). The average educational attainment of the population is also identified as an important component in the demographic change and economic growth relationship. The ability of the economy to reap high demographic dividends from the demographic shift of the population is also reflected by a highly educated young population. Recent evidence indicates that improvements in educational attainment is the key factor explaining productivity and individual income growth and that a substantial portion of the demographic dividend comes from educational dividends (Cuaresma, Lutz and Sanderson, 2013).

2. Need to Balance Sustainable and Inclusive Growth in an Open Economy

Human capital and institutions are the key to create sustainable and inclusive growth in ASEAN Member States (ADB and ILO, 2014). Human capital development in terms of educational attainment and the tooling and re-tooling of workers with relevant skills and training are important to retain a productive workforce in the economy. The importance of institutions in creating the links between social and economic wellbeing during the growth process is fundamentally essential. It is important that the institutions should empower workers to participate in the labour market. It should be forward-looking in its policies and also sustainable. The sustainability of institutions is critically dependent on the fiscal state of the government, which directly affect policies that create the links between social and economic wellbeing.

Figure 1 illustrates the centrality of human capital development in balancing economic growth in a sustainable and inclusive path. In fact, we can observe the cumulative causation of economic wellbeing and social wellbeing driven by the investment and development of human capital. The complementary effects of economic wellbeing and social wellbeing reinforces each other and create the cumulative causation effects that drive inclusive and sustainable growth in the domestic economy. It is possible to achieve high growth in the domestic economy with little development and investment in social wellbeing. For example, the initial stages of economic liberalisation normally give the base-effects of using the economic resources that creates growth, however this initial growth is not sustainable as the economic resources are rapidly being used and exhausted. In this case, economic liberalisation without human capital development is not sustainable in the long-run as industries lose their innovation and competitiveness; economic resources such as labour have little value-added activities and do not have the capacity to support the emergence of new technologies and industries. In this case, we will transit towards the low-skilled growth path.

We can also envisage another growth path that could produce the initial stages of high growth – but this is not sustainable if institutions are weak and not forward-looking enough to support the sustainable development of human capital to create value-added activities in new technologies and innovation. In this case, market-based activities from economic liberalisation will generate output and growth that will only benefit a few and widen the income and wage gap in the economy. The resultant impact of a widening wage and skills gap within the domestic economy and across countries is clearly evident from recent literature (Goldin and Katz, 2010; Acemoglu and Dell, 2009). The weakness of institutions directly affects the social wellbeing of individuals. The weakness of

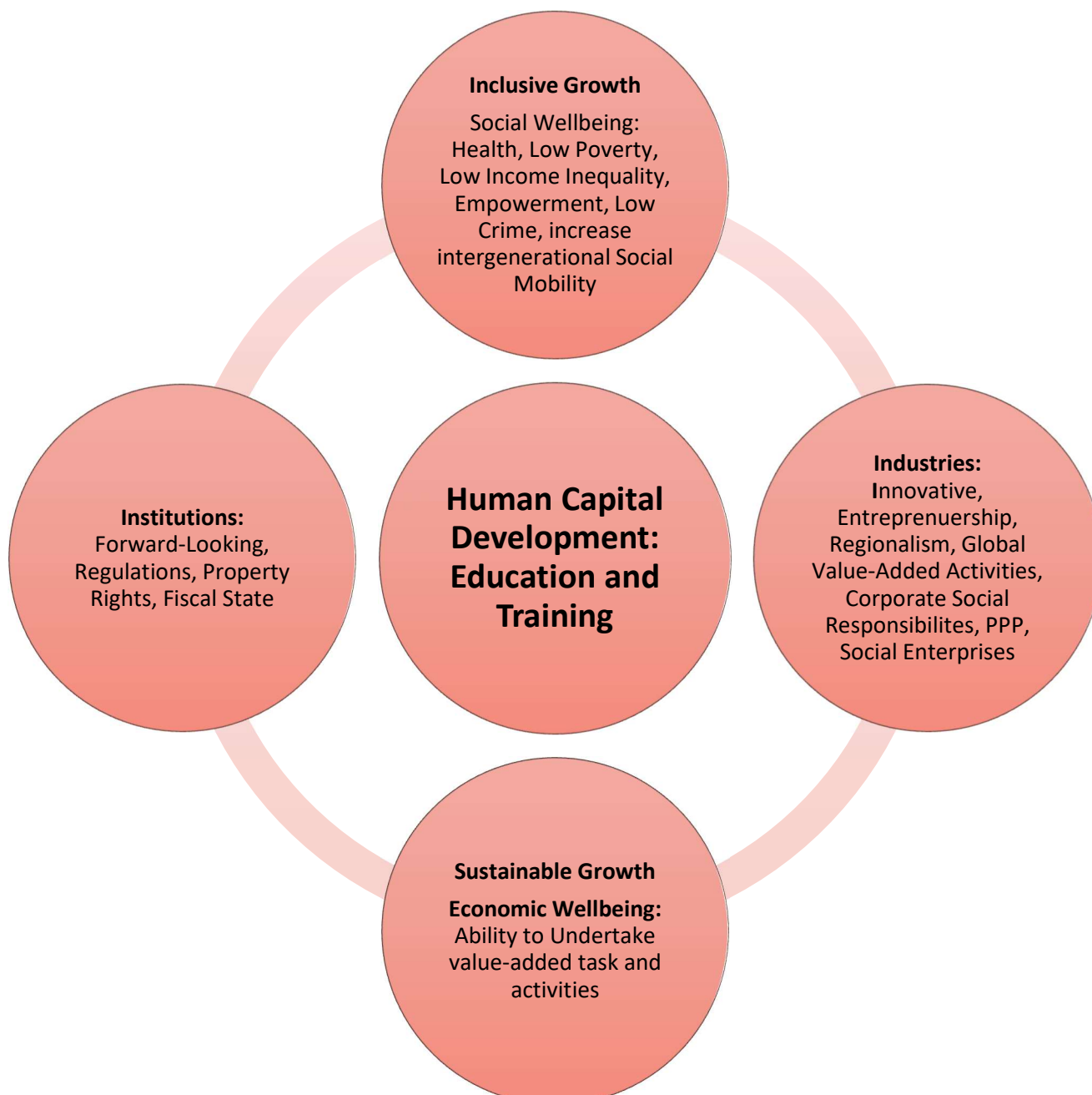


Figure 1: Balancing Growth through Human Capital Development

institutions creates weak links between social and economic wellbeing and thus reduces the cumulative causation effects and growth of the economy. In this case, we will be transiting towards the 'middle-income' trap, although we have the industrial and social base to sustain economic growth but not inclusive growth.

3. Global Production Value Chain and Human Capital Development in Asia

Human capital is the key factor linking production, competitiveness, innovation and economic growth in the development of global value chains (Thangavelu and Najoko, 2015). Numerous studies have explored the role of human capital in economic growth, trade, investment, and labour market in OECD countries and specific developing countries. But studies on Asian countries are relatively scant, due to the limitation of labour data by occupations and educations. In fact, ASEAN and other Asian countries play an increasingly indispensable role in the global economy and the vertical specialisation of GVCs with its comparative advantage in unskilled labour. The development of GVCs also imposes new challenges to the high-skilled human capital in these countries, which are tailored to compete with skills from developed countries and to meet the international standards of GVCs. The human capital development and global production value chain is given at Figure 2. It is very clear that human capital is one of the key fundamentals to participate (joining the GVC) as well as to move to higher tiers of the GVC.

The GVC tier classifications indicate the different stages of GVC activities in Asia. At tier 2, the lowest level of GVC activities are expected in terms of labour-intensive activities – the skillsets required of workers are just primary and upper-primary education. The lowest level of skills is expected to adequately meet industry demand. At this stage (tier 2a), industry strategies are just opening up the domestic market for trade and investments and the economy's participation in the GVC activities. At this stage of development are the ASEAN LDCs of Cambodia, Lao PDR and Myanmar. At the higher end of tier 2b, the industrial structure shifts to higher value-added activities and there is a need for more skilled workers in secondary and upper-secondary level of education. The development of education in technical and vocational education will become very crucial for this stage of the GVC. The position of the domestic economy at this stage requires strong fundamental investment in human capital, infrastructure and more institutional reforms. At this stage, we observe that Indonesia, Philippines, and Thailand tend to position at this stage. At tiers 2a and 2b, we expect the services sector to develop. At the higher tiers of 1a and 1b, we observe stronger growth of services and that greater flexible human capital is required in terms of unbundling skills to task. At this stage, there is a stronger need to emphasise tertiary education attainment as the average level of human capital for the labour market – the training of workers becomes critical as disruptive technologies tend to have greater impact on human capital development. We expect the depreciation of human capital to increase and the relevance of workers in the labour market to decline unless workers are trained with new emerging skills to retain them in the labour market. At this stage, we expect the development of innovative and highly skilled services activities. We also expect the wage gap between the skilled and unskilled to widen as the economy transits to more specialised and higher value-added activities.



Figure 2: Global Production Value-Chain and Human Capital Development

*Source: GVC tier classifications were obtained from ERIA (2015).
The human capital mapping is undertaken by the authors (given in red).*

3.1 Human Capital Development in Selected Countries in Asia

In this section, we focus on the human capital development of east Asian countries. We track how ASEAN and other Asian countries develop and deploy their human capital to integrate into the global economy. We provide comprehensive information on the human capital developments in East Asia, including information on human capital training, employments by education and occupations, human capital inequality (income inequality, gender inequality, etc.), and other labour market outcomes. This chapter also explores the determinants of human capital development of Asian countries with its linkages to international trade, economic integration, technology improvement and servicification.

The development of human capital in ASEAN countries and other six Asian-Pacific countries (Australia, New Zealand, China, Korea, Japan, India), which are referred as the RCEP countries are given at Figure 3. We observe significant heterogeneity in the human capital development of RCEP countries from Figure 3. ASEAN and most Asian countries still have a low-level of human capital development compared to OECD countries such as Austria and New Zealand. Table 1 indicates the human capital development of Asian countries from 1990 to 2015. We observe strong development in the ASEAN countries in human capital development, however the human development index indicates that the human capital development is still much lower compared to more developed European countries.

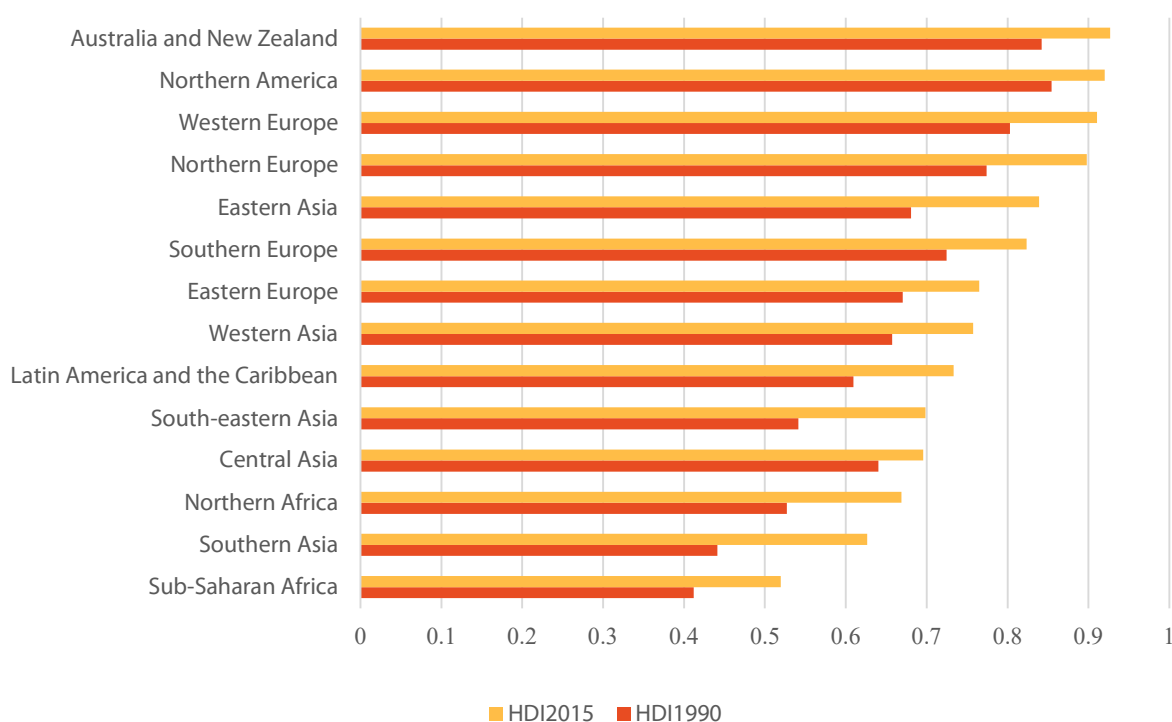


Figure 3: Human development index (HDI) by region, 1990-2015

Source: Human development index comes from the Human Development Reports (1990-2016).

Country	Human Development Index (HDI) Value				Average annual HDI growth (%)			HDI rank	Change in HDI rank
	1990	2000	2010	2015	1990-2000	2000-2010	2010-2015	2015	2010-2015
AUS	0.87	0.90	0.93	0.94	0.38	0.31	0.24	2	1
SGP	0.72	0.82	0.91	0.92	1.34	1.05	0.30	5	0
NZL	0.82	0.87	0.90	0.91	0.61	0.36	0.32	13	0
JPN	0.81	0.86	0.88	0.90	0.51	0.32	0.44	17	1
KOR	0.73	0.82	0.88	0.90	1.15	0.76	0.37	18	0
BRN	0.78	0.82	0.85	0.86	0.46	0.33	0.43	30	1
MYS	0.64	0.72	0.77	0.79	1.20	0.67	0.39	59	1
THL	0.57	0.65	0.72	0.74	1.25	1.03	0.56	87	4
CHN	0.50	0.59	0.70	0.74	1.72	1.70	1.05	90	11
IND	0.53	0.60	0.66	0.69	1.36	0.92	0.78	113	3
VNM	0.48	0.58	0.66	0.68	1.92	1.29	0.85	115	2
PHL	0.59	0.62	0.67	0.68	0.60	0.72	0.39	116	-7
IND	0.43	0.49	0.58	0.62	1.45	1.62	1.46	131	4
LAO	0.40	0.46	0.54	0.59	1.54	1.59	1.59	138	5
KHM	0.36	0.41	0.53	0.56	1.46	2.61	1.09	143	1
MMR	0.35	0.43	0.53	0.56	1.90	2.12	1.10	145	2

Table 1: Human development index (HDI) of RCEP countries, 1990-2015

Source: Human development index comes from the Human Development Reports (1990-2016). The countries in the upper part of Table 1 are categorized as countries with 'very high human development'. The countries in the middle part of Table 1 have 'high human development'. The countries at the bottom part of Table 1 have 'medium human development'.

3.2 Skills Training and Education

The skills level of the labour force in the selected Asian countries indicate clearly the lack of critical skills in the region. There is a greater variation in the skill levels of workers as with the educational attainment of workers. We observe greater convergence in the primary school level of education with ASEAN member countries. The average educational attainment in ASEAN is secondary and lower education. However, there is a large disparity at the secondary school level in ASEAN. We observe from Table 2 that Cambodia, Lao PDR and Myanmar have very low level of secondary school attainment of only 20%, 36% and 24% of total population respectively. Across the developing ASEAN countries, we observe that less than 50% of Indonesia and Thailand's population aged 25 and over possess secondary school education. This is also reflected in the tertiary level educational attainment for Cambodia, Lao PDR and Myanmar. In fact, the level of tertiary educational attainment is also low for Indonesia, Malaysia, Philippines, Thailand, and Vietnam. This clearly reflects the weak potential of ASEAN countries to participate and position in the regional and global GVC.

ISO	Adult Literacy rate	Population with secondary education or over	Enrolment (%)			Education quality, primary school (%)	
	(% ages 15 and older) 2005-2015	(% ages 25 and older) 2005-2015	Primary 2010-2015	Secondary 2010-2015	Tertiary 2010-2015	Trained teacher ratio, 2005-2015	Pupil-teacher ratio 2010-2015
AUS	-	91.5	106.6	137.6	86.6	-	-
BRN	96.4	68.6	107.4	99.1	31.7	87.4	10.3
KHM	77.2	19.6	116.4	-	15.9	100.0	44.6
CHN	96.4	75.0	103.9	94.3	39.4	-	16.2
IND	72.1	48.7	110.6	68.9	23.9	-	32.3
IDN	93.9	47.3	105.7	82.5	31.1	-	16.6
JPN	-	91.8	101.6	101.9	62.4	-	16.7
KOR	-	91.4	99.0	97.7	95.3	-	16.9
LAO	79.9	36.4	116.3	57.2	17.3	98.3	25.2
MYS	94.6	77.1	106.9	79.0	29.7	98.6	11.4
MMR	93.1	23.8	99.7	51.3	13.5	99.5	27.6
PHL	96.3	71.6	116.8	88.4	35.8	100.0	31.4
SGP	96.8	78.6	-	-	-	94.3	-
THL	96.7	43.3	103.7	86.2	52.5	100.0	15.4
VEM	94.5	71.7	109.4	-	30.5	100.0	19.2
OECD	-	85.5	102.5	103.9	70.2	-	15.9

Table 2: Summary of Key Education Indicators in RCEP countries

Source: World Bank Education Statistics

Figure 4 shows the changes in employment by educational level. We observe significant decline in the employment of primary education for India, Indonesia, Malaysia, Philippines, Singapore and Thailand. In contrast, we observe increase in the employment of secondary school education across the countries except for Philippines. We also observe large increase in employment of tertiary education across the ASEAN countries. It is important to take note that the changes in employment only reflects the demand for higher education across the ASEAN countries reflecting the industrial development across ASEAN.

We also provide employment changes by different level of skills based on the occupational classifications. Figure 5 clearly reflects the polarisation effect (decline in semi-skilled occupations) exists in the employment of skills by occupation. Semi-skilled jobs are disappearing in most RCEP countries including both developed and developing ASEAN countries with the exception of China and Vietnam. In both countries, we observe greater decline in unskilled labour and increase in secondary or higher education. At Vietnam, we observe large increase in the employment share for skilled workers.

Table 3 provide the mean nominal month earnings of workers in RCEP countries. There is a large disparity in the mean monthly earnings across ASEAN with Singapore recording the highest nominal monthly wages. In contrast, we have the ASEAN LDCs of Cambodia, Lao PDR and Myanmar with the lowest monthly earnings. Across the more developed ASEAN countries, there are increases in average nominal wages. However, we do not observe significant increase in wages across the ASEAN countries from 2013 to 2016.

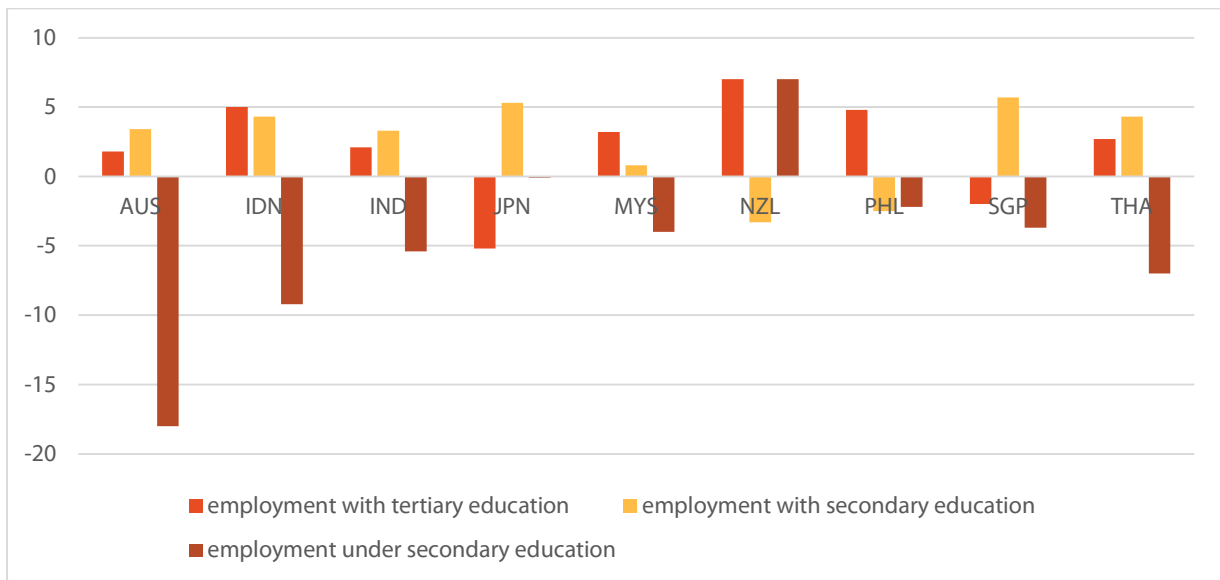


Figure 4: Changes in the Employment Share by Education in RCEP Countries from 2000 to 2012

Data source: ILO statistic database. The figure displays changes in employment shares between circa 2000 and circa 2012 with at least a five-year interval. The figure only shows countries with data available.

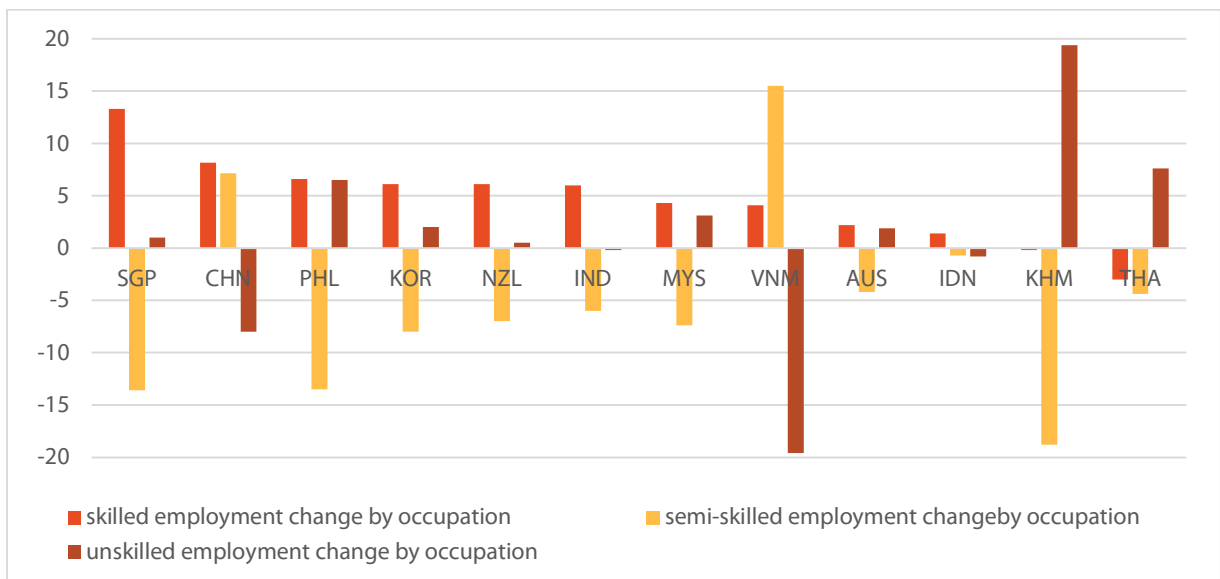


Figure 5: Changes in the Employment Share by Occupation in RCEP Countries from 1995-2013

Source: ILO statistic database. The figure displays changes in employment shares by occupation between circa 2000 and circa 2013 with at least five years' interval. The skill categorisation of occupation follows Autor (2014). The skilled occupations contain legislators, senior officials and managers, professionals, and technicians and associate professionals. Semi-skilled occupations include clerks, craft and related trades workers, plant and machine operators and assemblers. Unskilled occupations include service and sales workers and elementary occupations.

	1986	1995	2001	2006	2010	2011	2012	2013	2014	2015	2016
BRN	-	-	-	-	-	-	-		1651	-	
CHN	32	55	109	219	450	539	617	692	765	830	847
IDN	-	-	58	109	151	152	151	151	144	136	160
JPN	-	-	-	-	3374	3719	3731	3030	2828	2511	2794
KHM	-	-	-	-	-	-	121	-		-	
KOR	-	-	-	-	2409	2631	2661	2846	3072	2890	2888
LAO	-	-	-	-	109	-	-		-		-
MYS	-	-	-	-	-	580	609	-	670	592	594
NZL	-	-	-	-	2839	-	-		3667	3153	3148
PHL	117	271	210	300	-	-	-	-	-	-	189
SGP	-	-	1749	2237	2999	3446	2785	2961	2975	3558	-
THA	-	-	-	-	112	339	360	438	442	324	420
VNM	-	-	-	-	135	152	180	196	211	236	250

Table 3: Mean nominal monthly earnings of employees in RCEP countries (US dollars)

Source: ILO database. The concept of earnings, as applied in wages statistics, relates to gross remuneration in cash and in kind paid to employees, as a rule at regular intervals, for time worked or work done together with remuneration for time not worked, such as annual vacation, other type of paid leave or holidays.

We also observe greater gender inequality in the selected Asian countries (see Figure 6). It is clear from Figure 6 that men tend to experience higher levels of education compared to women. This is clearly identified in Cambodia, Indonesia, Lao PDR, Thailand and Vietnam. The gender gap in education reflects the biasness in providing women with equal opportunities to acquire education and skills in the labour market. We also observe similar discrimination in employment by gender where there is more employment of males as compared to females across selected Asian countries.

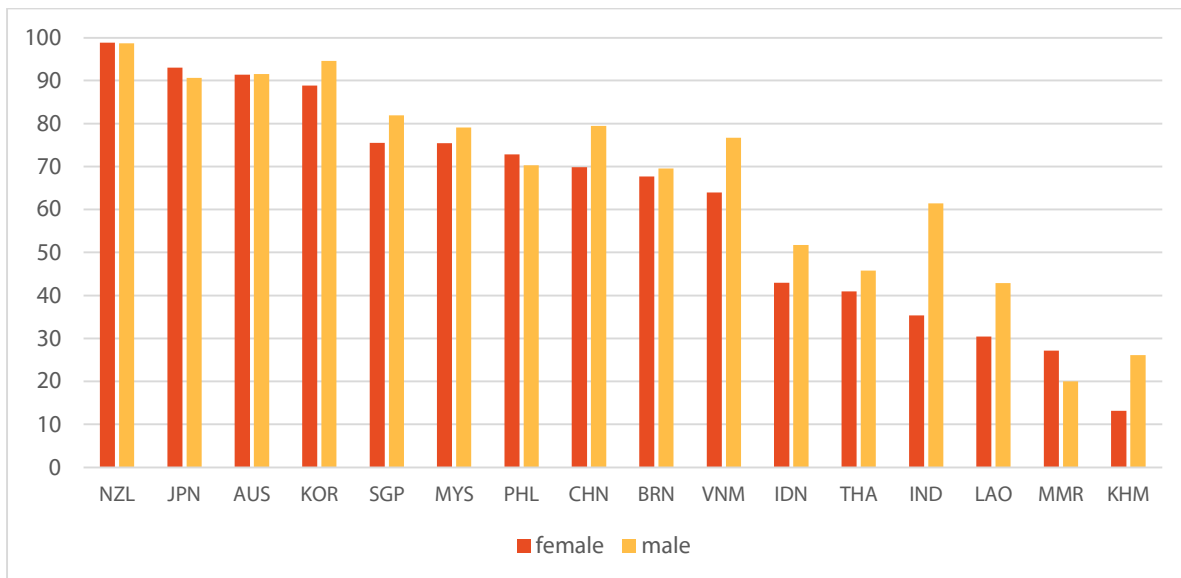


Figure 6: Gender Gap in Education: Average Share of Adults with at least secondary education by Gender, 2000-2015 (%)

Data: The education attainment data of population by gender comes from World Bank Database.

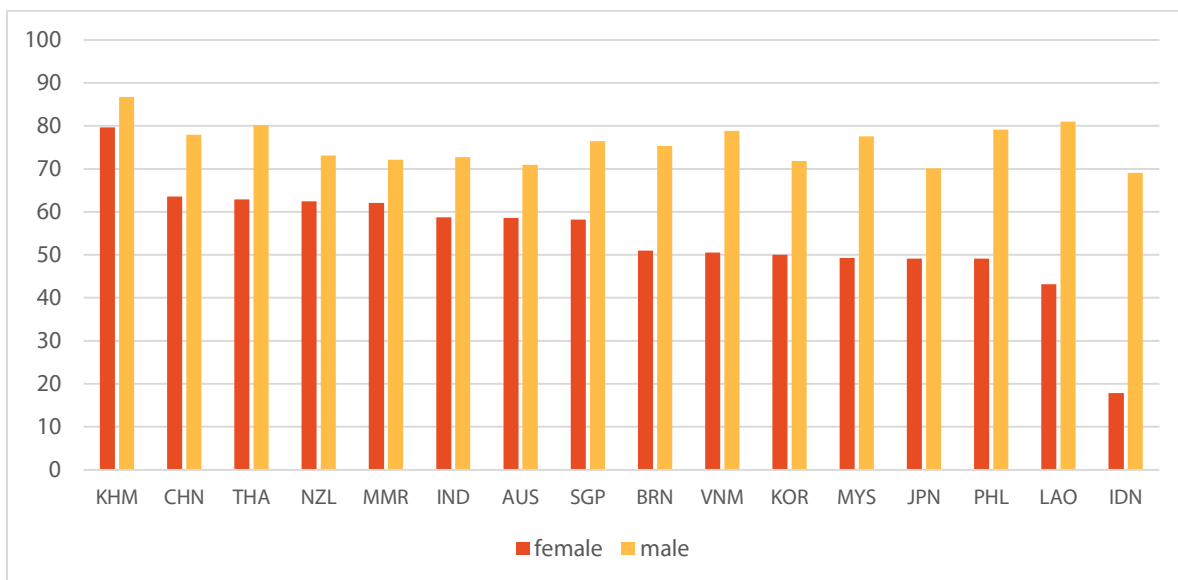


Figure 7: Gender Gap in employment: Labour force participation rate by gender, 2015 (%)

4. Industrial and Educational Policy in ASEAN

One of the critical success factors of some of the selected ASEAN countries' industrial policy was the introduction of forward-looking industrial strategies that allowed for sufficient lag periods for the development of human capital and education as these lagging variables are derived from the output growth. A recent study by Felipe (2018) highlights the importance of industrial policy in the rapid rate of industrial transformation from factor mobility to key manufacturing sectors and also to increase the productivity of key sectors. The crucial factor for successful rapid industrial transformation is the human capital policies of ASEAN countries that are aligned to support the key growing industries. The key features are summarised as follows:

- *Forward-looking industries strategies* and economic blueprints were endorsed by the government, workers and employers. The forward-looking strategies accounted for industrial strength and the development of key fundamentals in the economy. The strategies helped to identify the skills gaps in the industries and educational strategies were adopted to meet these gaps.
- *Educational reforms at secondary and post-secondary level.* Curriculum reforms were undertaken to strengthen the relevance of science and technology to contemporary life and society at secondary and post-secondary schools. For example, the establishment of specialised vocational/technical high schools in Korea in the 1960s to create technical skills at the early stages of education allowed Korea to move its human capital to a skilled-based workforce in order to meet its industrial manpower needs at the early stages of growth.
- *Government investment at primary and secondary levels* to provide laboratory infrastructure and hands-on experiments at the primary and secondary levels.
- *Improved quality of education* by provision of in-service teacher training and new physical sciences grants to enhance science education in all primary schools.
- *Reformed and reinforced Employment Act* that clearly protects the workers' rights, as well as *reforms of labour market institutions* to strengthen the bargaining strength of workers. Employment intermediaries also play an important role to reduce mismatches, and to create one-stop centres for workers to facilitate their job search.
- *Public and Private Partnership* to reduce the coordination cost and increase positive externalities for the domestic economy. Development of forward-looking policies and economic blueprints that were endorsed by the public and private sector reduces the coordination issues in the economy hence increase the mobilisation of private and public resources to key industries. For example, investments in infrastructure such as roads, ports, airports, warehousing and storage facilities, telecommunication technologies and key logistics infrastructure to support and facilitate business activities in the domestic economy and region.

5. Experiences from other ASEAN countries: Alignment of Industrial and Educational Policies

We also mapped the industrial policies and educational reforms for selected ASEAN countries such as Cambodia, Malaysia, Thailand and Vietnam. The key lessons and features from their alignments of educational reforms with industrial policies can be summarised as follows:

- a. Educational reforms in line with expected industrial strategies and policies. It is important to align educational policies and labour market reforms such as skills and training to the emerging key industrial developments in the economy. The coordination of education policies in line with industrial transformation is key to reduce the skills gap and mismatches, and also to increase the response of the supply side of the labour market to the increasing industrial demand for skills.
- b. The development of early and broad-based science and mathematical education at the primary and secondary schools. The East Asian countries of China, Korea, Japan, Hong Kong, Malaysia, and Singapore heavily invest in this.
- c. The importance of 'education for all' by standardising primary school education is critical for accumulation and learning. Most of the East Asian countries of China, Korea, Japan, Malaysia, Philippines, Singapore, Thailand and Vietnam expanded and standardised the curriculum for primary and secondary school.
- d. Most of the ASEAN countries undertook curriculum reform to emphasise basic reading, writing and arithmetic skills. The importance of commercial languages such as the English language in both spoken and written forms are emphasised in schools such as in Singapore and Malaysia.
- e. Technical and Vocational Education and training (TVET) was identified as important for industrial skill-development and initiated at an early stage in the education system to complement formal education, such as skills training as an alternative to formal education. This forms the key framework for tooling and retooling of human capital for workers to remain relevant in the labour market.
- f. The development of PPP (Private-Public Partnership) in training and skills development is critical for several ASEAN Member States such as Malaysia, Singapore, Thailand and Vietnam. The involvement of the private sector is key to develop and support key technical training institutes to developing industry-relevant skills in the economy. Further, the accreditation of skills by the private sector is equally important to identify key skills of workers in the labour market.
- g. The development of human capital in agriculture and improvements in diffusion of technology through the establishment of a strong *agriculture university* were crucial for the development of the agricultural sector and productivity improvements. This was very critical for the development of critical skills for agriculture sector for Indonesia, Malaysia and Thailand.
- h. Improvements in the quality of education by investing in teacher training and education degrees. The ASEAN countries of Malaysia, Philippines, Thailand and Vietnam increased funding for teacher training and established higher education institutes for education.

Malaysia: Education and Industrial Policy			
Stage	Economy	Major Industry/ Exports	Education policy mix
1960s – 1970s	Agriculture and Mining	Agriculture, Mining, Construction	Expansion of primary and lower secondary education; Malay as National Language Standardization of education system 3 year vocational and secondary education route
Mid-1970s – late 1980s	Take-off & Export-driven Export-Promotion with Import-Substitution Strategies	Agriculture and Commodities: Rubber, tin, Iron ore, Oil Palm, timber Light Manufacturing (12% share) Tourism and Travel Government Linked Corporations – Sime Darby (Bhd), Petronas, etc	Curriculum to emphasise basic reading, writing and arithmetic skills Tertiary Institutes: National University of Malaysia Malaysian Technological University <u>University of Agriculture</u> Ungku Omar Polytechnic
1990s	Export-Driven FTAs – AFTA, ASEAN +1s	Gradual shift to manufacturing in Electronics and Electrical Science Parks at Penang; Multi-Media Super Corridor (Infrastructure - Putrajaya, jaya)	Expansion of upper secondary education; Diploma in Teaching (PGDT) to meet demands for graduate teachers
2000-Present	Modern Technology	Agriculture development: Synthetic Rubber, Iron Ore, Oil Palm – bio-fuel Electrical and Electronics	Private Institutions and foreign universities (only after 20 years of growth) Free education for 11 years Government responsible for secondary education Expansion of vocational training

Figure 8: Mapping of Education and Industrial Policy in Malaysia

Thailand: Education and Industrial Policy			
Stage	Economy	Major Industry/ Exports	Education policy mix
1960s – 1970s	Import substitution strategies Agriculture and mining	Agriculture, Mining, Construction	Expansion of primary and lower secondary education; Expansion of Chulalongkorn University (1917) Expansion of Thammasat University (1933) Expansion of Kasetsart University (1943) – Agriculture Science Vocational Education: King Mongkut’s Institute of Technology (1940) – Agricultural Technology
Mid-1970s – late 1980s	Take-off & export-driven with import-substitution Investment Protection Act (1960) Tax exemption on capital imports Fourth NESDP (1977-1981) Export promotion policy revised to reduce anti-export bias resulting from earlier ISI Export Processing Zones	Agriculture: rice and commodities Tourism Industries: machinery, basic metals, rubber, processed minerals Automotive Industries (export promotion with import substitution strategy) Japanese –Thai Eastern Seaboard Development: Port, petrochemical, fertilisers, integrated steel complex	Khon Kaen University (1964) <ul style="list-style-type: none"> • Leading educational and learning centre of north eastern Thailand Chiang Mai University (1964) <ul style="list-style-type: none"> • First provincial university • Provide occupational and educational knowledge Prince of Songkhla University (1967) <ul style="list-style-type: none"> • Needs of Southern Thailand • Strong in medicine, management science and service Private Tertiary Education Establishment of Bangkok University (1962) Assumption University (1969) Business administration, architecture, arts, engineering, law, biotechnology.
1990s – 2000s	Export-driven FTAs – AFTA, ASEAN +1s	Construction, Motor Vehicles, Transport Industries Tourism, telecommunications	Private institutions and foreign universities (only after 20 years of growth) Enrolment at higher Secondary and Vocational increased to 72%

Figure 9: Mapping of Education and Industrial Policy in Thailand

Vietnam: Education and Industrial Policy			
Stage	Economy	Major Industry/Exports	Education policy mix
1970s	Vietnam War Export promotion with import substitution strategies Agriculture and mining	Agriculture, mining, Construction	Expansion of primary and lower secondary education; Establishment of Hanoi Polytechnic Institute (1961-5) – Assisted by USSR graduates Reforms: 12 and 9-year general education system combined into 10-year system <ul style="list-style-type: none"> • Primary:4 • Lower secondary: 3 • Upper Secondary: 3 Illiteracy elimination – compulsory education
1980s – 1990s	Take-off & Export-driven Doi Moi Reforms Centrally planned: socialist oriented Expansion of autonomy of state enterprises + removal of state subsidies Development of private sector Opening to foreign direct investment Export processing zones and industrial parks	Second five-year plan Main sectors Agriculture Heavy industries (meant to complement agriculture) secondary sectors Commerce Construction Transport and services Infrastructure: ports, roads, airports, telecom.	Implementation of ‘patriotic’ education system <ul style="list-style-type: none"> • Issued new 12-year curriculum • Printed new textbooks to replace old European/North American oriented ones in the South • Nationalisation of private schools • Removal of schools from religious influence Eliminating illiteracy - seen as a patriotic act.
1990s – 2000s	Export-driven FTAs – AFTA, ASEAN +1s	Construction, motor vehicles, transport industries, electrical and electronics Tourism, telecommunications	Vocational education Education network strengthened and developed. <ul style="list-style-type: none"> • To have vocational training centres in all districts by 2010. • 23 trillion VND allocated to train one million rural workers by 2015 (2009) German Technical Cooperation (2006-10) <ul style="list-style-type: none"> • Hanoi Vocational Training Centre + Korea-Vietnam Industrial Technology Institute. <ul style="list-style-type: none"> ○ Supported by Korean International Cooperation Agency. • Hanoi Industrial College <ul style="list-style-type: none"> ○ Supported by Japan International Cooperation Agency.

Figure 10: Mapping of Education and Industrial Policy in Vietnam

6. Policy Conclusion

Although we observe the average educational attainment in ASEAN to be at lower secondary and below, there is a clear lack of skills and higher educational attainment in Cambodia, Indonesia, Lao PDR, Myanmar, the Philippines, Thailand and Vietnam. The challenges for more developed ASEAN member states are different from ASEAN LDCs. The more developed ASEAN countries of Indonesia, the Philippines, Thailand and Vietnam are at a critical juncture to develop the key skills of its labour force to move up the global value chain. Given a broader industrial base, the critical skills are in upper secondary and technical and vocational education. There is an urgent need to invest and upgrade the skills of workers to support industries to move up the value-chain through innovation. The productivity of workers to harness and support new innovation in manufacturing and services is critical for these ASEAN countries.

The ASEAN LDCs of Cambodia, Lao PDR and Myanmar have only average primary and lower education level, which indicates an urgent need to diversify its economy from a narrow base and reduce dependence on external factors for growth. Given a narrow industrial base and the educational attainment of the current workforce at primary and below education level, there is an urgent need to diversify its industrial base and to develop its next phase of human capital in secondary and vocational education. Further, there is immediate need to train and re-tool the workforce with relevant skills to equip the young workforce to undertake key value-added activities in the economy and the region.

However, there are several opportunities for ASEAN LDCs in terms of the young working population and the possibility of reaping a positive demographic dividend for several decades. However, the dividend cannot be automatically guaranteed if the working age population cannot earn adequate labour income, and the dividends are not invested productively in physical capital and in human capital development. In addition, the deeper integration of Cambodia and Lao PDR into ASEAN Economic Community (AEC) in 2015 presented further opportunities for the countries to accelerate economic diversification to more skill-intensive activities in manufacturing and services through participation in the regional production network and upgrading domestic supply and linkages to the GVC. However, while the forecasted increase in low- and medium-skilled worker mobility will present more employment opportunities for the workforce, more out-migration could also create a mismatch and put more strain on the country's low wage-based competitiveness.

There is also an urgent need among ASEAN countries to achieve rapid catching-up through structural transformation that would result in fast and sustained technological change and productivity growth, and better job generation leading to rising income and poverty reduction. To achieve this, the country needs to enhance both social and human capital required to adopt advanced technologies and shift into new industries, in which education and training have a vital role to play. East Asia's successful catching-up experiences show that an 'economic miracle' was accompanied by an 'education miracle' in the sense that the education and training system has been organised to specifically serve the skills needs of the economy through close linkage with industrial policies and adapted over time to changing conditions.

A large body of empirical evidence shows that TVET appears to generate the same types of benefits and similar rates of return as general education. The skills acquired through general education and TVET are not substitutes but are complementary to general stronger human capital development. TVET brings not only considerable economic market benefits, such as higher wages, increased productivity and economic growth, but also social non-market benefits such as social inclusion, equity, better health, job satisfaction and reduced crime. Moreover, these two types of benefits interact and reinforce one another, for instance, the combination of skills and improved wellbeing

acquired through TVET are more likely to enable an individual to earn higher wages than skills alone. To maximize these TVET benefits, however, a country needs to have organisations that compete based on high quality and high value-added activities, where skills and attitudes are necessary.

In a globalised and dynamic GVC, we will experience a rapid and dynamic labour market where most types of skills in demand now did not exist in the past. The increased inflow of FDI has gradually shifted demand for non-and lower-skilled labour to mid-skilled workers in most ASEAN member states. For example, most ASEAN countries are forecasted to have greater demand for more mid-skilled workers (especially for service workers and craftsman), high-industrial skilled workers (such as technicians), and skilled livestock farmers (De Vries et. al, 2019). In addition, the AEC 2015 will accelerate out-migration demand for low-and-medium skilled workers, especially in manufacturing, construction, and fishing industries and domestic work.

6.1. Key Recommendations

A. Policy Recommendation 1: Filling up the 'Missing Centre' for Education in Secondary and Vocational education in ASEAN LDCs

Given the low production base in Cambodia and Lao PDR, there is an urgent need to address the 'missing centre' in human capital accumulation especially in terms of the educational attainment of the workforce (UNDP, 2014). There is a large segment of primary and lower educated workers with a growing demand for skills at tertiary education. Thus, there is a 'missing centre' in terms of developing secondary and vocational education which hampers the progressive nature of accumulation of human capital through investment in education. Across the more developed ASEAN countries of Indonesia, Malaysia, Thailand and Vietnam, there is an urgent need to increase the returns to education for secondary school learning. In addition, it is critical to introduce vocational education at an early stage of the education system. The government could consider vocational high schools that will impart the relevant technical and vocational skills. There is a need to review the secondary school curriculum to align it with the growing industrial demand for skills.

B. Policy Recommendation 2: Increase the Quality of Education by Improving the Quality of Teaching

The quality of teaching and the career paths for teachers must be developed. Teachers should be equipped with relevant teaching skills in mathematics and technical education to impart knowledge effectively to the students. There is a need to develop strong professionalism in the teaching profession that sets the standards for education and respective career development for young teachers to invest in their careers. The government should consider creating university degrees and postgraduate degrees in education to improve the teaching and professional standards of teachers and educators.

According to UNESCO study reported by Varghese and Micheala (2014), the accrediting body for all levels of education is critical to maintain the quality of education. For example, Malaysia established the 'Standard for Quality Education in Malaysia' (SQEMS) and 'National Accreditation Board' (LAN).

C. Policy Recommendation 3: Need to engage the private sector early in the education system through vocational high schools

The private sector should be engaged early to participate in the education and vocational development of students. The government could consider the PPP framework in terms of engaging the private sector to participate in developing vocational high schools in the terms of (a) curriculum development, (b) supervisors from the private sector engaged as part-time lecturers, (c) employers

as part of the school board to decide on the development of technical schools, and (d) internships with private sector.

Students who have completed the vocational high school could also be given Industrial Training Certificates (ITC) after the completion of their internships to recognise their education and skills.

The government could give tax incentives for private sector participation in terms of internships and scholarships, which will encourage and increase the corporate social responsibilities of the private sector.

D. Recommendation 4: It is important to address household dynamics and low incentives to investment in education

Due to a lack of middle-aged members, there is a high opportunity cost for most poor households in Cambodia, Lao PDR and Myanmar to invest in education as there is a strong need to support and supplement household incomes. The government has to address this important negative effect at the household level. The government could consider 'Education for All' at the primary school level by making primary school education compulsory and subsidising the costs of primary school education.

Targeted policies such as educational (and food) vouchers to poor households should be introduced to increase their incentive to invest in education without affecting their household expenditure. These vouchers would be given progressively in line with the educational progression and results of the children in the households. This progressive voucher system will also retain talented and highly motivated students in the school systems. The voucher system will also be effective for middle-income and poor families in rural areas to increase their investment in the education of the young. The use of such vouchers can be useful to bridge and narrow the educational gap between rural and urban regions.

To increase the incentive for students to complete their education, the school curriculum could have certain elements of internships with the private sector. This will incentivise students to invest in relevant industry skills and also earn some funds to offset household expenses.

The government should also consider scholarships to retain talented individuals in schools and this could be targeted at secondary and higher levels of education. The scholarships could be linked and jointly given with private enterprises – this will increase the recognition and reputation of the scholarships.

E. Policy Recommendation 5: TVET is very important to increase and sustain the relevance of human capital in the economy.

A significant portion of the labour force will be with primary and lower education, which is not sufficient for the next stage of industrial development. Thus, TVET is important to address the skills gap of the labour market and increase the returns to human capital. TVET will have two objectives: reducing poverty (better quality jobs and wages) and increasing the skill set of workers. The relevance of skills to secure quality and good paying jobs is one of the key objectives of TVET.

TVET will also be important for skills training to reap greater returns from the demographic dividends of the young workforce. Firstly, the quality of TVET must be improved as training providers need strong education and training in the relevant industry skills. In this respect, the government could consider engaging private sector supervisors and engineers. Further, there is a need to consider progressive TVET whereby accreditation increases the recognition of training and the mobility of workers. The government should also consider regional TVET centres to bridge and reach out to the rural sector. In this respect, ICT could be effectively used.

F. Policy Recommendation 5: There is a need to align education and TVET in an integrated framework

There is a need to align the education and TVET frameworks to allow seamless transition between skills training and education progression of workers. There should be an alignment to 'tool' workers to remain relevant and progressive in the labour market using both the education system and TVET framework. In fact, the integrated educational curriculum with TVET training will allow for 'Pathways for All' for both young and old. There is a need for early emphasis on developing the mindset of youth and workers to create value-added activities, which could be emphasised at the education system and reinforced with the TVET framework.¹

G. Policy Recommendation 6: Need to emphasise lifelong learning and initiate a 'Lifelong Learning Institute'.

It is important to emphasise lifelong learning as part of the human capital development of workers and the government could initiate a campaign for this. This public campaign could be initiated with the support of the private sector through a 'Lifelong Learning Institute'. This could be financially supported and managed by a partnership between government and business associations. The institute will provide information on lifelong learning, matching of workers' skills, one-stop portal for jobs, developing soft-skills in terms of interviews, writing reports, and good communications skills. The lifelong learning policies of workers is very critical for a dynamic economy like Singapore, where the 'Future Skills' initiatives was introduced in 2015 to create an integrated framework of education, training and lifelong learning in a seamless framework supported by the government and private sector.²

H. Policy Recommendation 7: Create innovative financing schemes for education and TVET

The government could consider innovative financing schemes for funding education and TVET. For example, PPP (Public-Private Partnership) is an important framework to distribute the costs of education with the private sector. The government could initiate a Skills Development Fund supported by the private sector for workers training. As discussed above, the fund can give out educational vouchers to target households to incentivise them to increase investments in education without increasing the constraints on the household budget. The government could also coordinate with NGOs and aid-agencies to identify funding gaps in key areas and direct the funds accordingly.

The government could also consider using 'soft-financing' schemes that incentivise households and firms to invest and mobilise savings into education, for example, the government could start public campaigns which directly invoke national pride to increase the incentive for investments in education for the youth.

I. Policy Recommendation 8: Innovative and Creative Learning through Information Technology

Innovative learning is important as it creates flexibility and different pathways to education. If ICT (Information and Communication Technologies) is appropriately utilised, it could incentivise investment in education and training. Use of ICT is a cost-effective way to increase education access to all as it is able to reach out to wider segments of the population including the rural areas. It also creates flexibility for learning and can be an effective tool to impart skills to workers differentiated

¹ See Future skills initiative of Singapore that integrates formal education system with TVET (<https://www.myskillsfuture.sg/content/portal/en/index.html>)

² See future skills (<https://www.skillsfuture.sg/AboutSkillsFuture>)

by distance. ICT investment will reduce the digital and educational divide between the rural and urban regions. ICT education will also provide flexibility between students and teachers – the working population can get back to education as they can study in the evenings and at weekends. It could also empower women and mothers to advance their education as it gives flexibility in their learning time.

The government could consider Innovative Learning and Training Centres at both rural and urban regions. In fact, ICT could be effectively used for rural regional training with the appropriate interface with key training centres at urban areas. This will reduce the cost of training and centralise the core training at the main centres. ICT education could balance the need for curriculum with theoretical learning and practical training. Workers could effectively undertake theoretical learning through ICT education and practical training could be undertaken through internships with the private sector. However, training through ICT or virtual training centres requires proper coordination and accreditation institutions.

There are several challenges with using ICT technologies in education and training. Firstly, there is a need to invest in ICT infrastructure. Further, there is a need to improve the ICT skills of the youth from an early age so that ICT education is feasible in the future. ICT education also requires proper accreditation with students taking exams at centralised institutions.

J. Policy Recommendation 9: Alignment of Education Policy and Industrial Strategies

It is important to identify the key skills in the economy for developing and managing human capital in terms of education and training of workers. This alignment of education policy and industrial policies is crucial to map the required skills in the industries and also to reduce skills mismatch in the labour market. The alignment will also reduce the redundancies of skills and creates social benefit in the economy. It is important to develop industrial strategies with education policy to develop skills for the future, for example the skills needed for the ASEAN Economic Community.

It is also important for workers to develop a portfolio of skills that consists of education qualifications, skills certifications and intrinsic work experience. This portfolio of skills could be developed as part of an individual's skillset to create the foundation for lifelong learning and also to remain relevant in the economy as it moves to a higher stage of development. This is important for inclusive and sustainable growth. As highlighted above, a portfolio of skills (human capital) requires integrated education and training systems that provide 'different pathways' for human capital development. ■

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