

The Impact of a ‘Digital Divide’ on Larger Socioeconomic Inclusion in Southeast Asia

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Briefing Note

This briefing note will aim to analyse the issue of a digital divide and its impact on socio-economic inclusion by first addressing the wider context contributing to the existence of a digital divide in Southeast Asia (SEA) and hence addressing specific impacts on broader societal inclusion (including but not limited to social inclusion) and impacts on labour market inclusion.

Overview:

- Several socio-demographic differences determine digital accessibility which contributes to the digital divide, making the digital divide both a cause and consequence of inequalities.
- The inaccessibility to digital resources results in literacy, both digital and otherwise, especially due to home learning during the pandemic.
- Participation in the labour market is hampered by inaccessibility to digital tools that result in barriers to entry.

Socio-demographic differences determining digital accessibility

Changing demographics in Southeast Asia make the provision of digital tools a complicated affair.

- There is a mobile internet gender gap in Low- and Middle-income countries like the SEA, with women being 16% less likely than men to use mobile internet.¹
- There is also a rural-urban gap in terms of both human and non-human resources. States are less likely to digitally transform rural areas since there is an added cost of teaching individuals in these areas how to use these resources when compared with urban areas due to differences in income and living standards.²
- The preexisting gender gap alongside the rural-urban gap make digital transformation less inclusive in the SEA region. This is reflected in the low uptake of digital services in various sectors.³
- Apart from skill based disparities affecting government provision, a similar rhetoric is seen in the case of older ages (65+) since digital inclusivity in parts of the society that do not contribute to the GDP and do not have as many positive externalities associated with digital transformations are less likely to be a priority for the government.⁴
- Climate change has caused a wide variance in sub-regions of the SEA, affecting infrastructural investment, and hence provision of digital tools as a public good.⁵

¹ GSMA, 2022, [The Mobile Gender Gap Report 2022](#)

² International Fund for Agricultural Development, 2018, [Asia's rural-urban disparity in the context of growing inequality](#)

³ GSMA, 2022, [Inclusive digital transformation in Southeast Asia: What initiatives should be prioritised?](#)

⁴ Roland Berger, 2021, [Bridging the digital divide. Improving digital inclusion in Southeast Asia](#)

⁵ Asian Development Bank, 2017, [Meeting Asia's Infrastructure Needs](#)

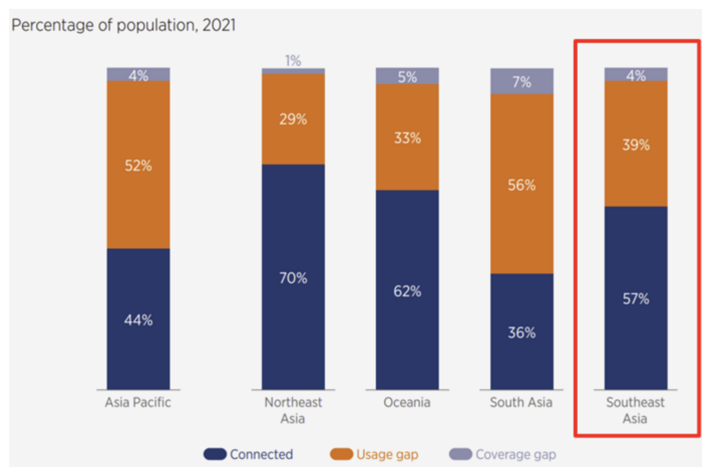
There exist restrictions in the development of telecommunication services on the basis of geographic and hence infrastructural differences in southeast asia.

- On the supply side of digital transformation, the main issue is that of connectivity due to diverse terrains and hence inadequacies in infrastructural and technological abilities; broadband deployment has not been a priority in most SEA nations.⁶
- Regulatory frameworks also do not particularly incentivise innovation in businesses, particularly Small and Medium sized enterprises, like financial automation and e-commerce.⁷
- This is likely due to additional costs associated with digital transformation as opposed to cheaper labour and increasing employment.

High economic development is correlated with higher affordability which makes the accessibility of digital tools difficult for citizens as well as an expensive affair for governments.

- Despite internet providers covering 96% of the SEA region, 39% of the population covered do not use an internet provider contributing to a ‘usage gap’.

Figure 1 - The usage gap in Asia Pacific



- This is likely attributed to a higher cost associated with providing connectivity in ‘resource-poor’ regions, or at least developing them enough to provide the infrastructure for digital tools, such as broadband towers in addition to telephone lines. While the infrastructural improvements have been rapid in the region, they are far from adequate.⁸

⁶ OECD, 2019, [Southeast Asia Going Digital: Connecting SMEs](#)

⁷ OECD, 2017, [Opportunities and Policy Challenges of Digitalisation in Southeast Asia](#)

⁸ Asian Development Bank, 2017, [Meeting Asia’s Infrastructure Needs](#)

- As aforementioned, economic and demographic factors are a determining factor in a region's development, particularly infrastructurally. These demographics include per capita GDP, population density, the share of urban population, etc.⁹
- Accessibility to resources also depends on pre-existing inequalities, leading to a vicious cycle of perpetuity of inequalities and a lack of mobility.

⁹ Asian Development Bank, 2017, [Meeting Asia's Infrastructure Needs](#)

Digital Divide in Education

Despite the high use of the Internet, the digital literacy of society needs to be addressed.

- In Indonesia, many of the young students are ‘digital natives’, however, they are taught by a staff that is not used to digital technologies.
- Even though Indonesian students are provided with the necessary devices (40% of the students use the IT suite in classroom¹⁰), ‘it is estimated that only about 2.5 percent (of teachers) have a good ability to use technology’.¹¹ Before the pandemic, 56.5% of teachers never took professional training in digital learning.¹²
- This problem is related to a much broader issue of the low quality of teaching staff, especially in vocational schools where merely 28.49% of all teachers were certified. Yet, vocational schooling is one of the main places for digital upskilling for students from various backgrounds.
- Albeit, usually better private training institutions are not evenly available in all provinces - almost 50% of these offices are located in Java.¹³
- The curriculum everywhere is highly reliant on conventional methods of teaching and insufficient incorporation of relevant subjects. The current curriculum policy does not consider ICT subjects compulsory, instead, it requires integration of the digital literacy elements into other disciplines. As a result, they are integrated very poorly or sometimes not conducted at all.¹⁴

The global pandemic of COVID-19 proved that the accessibility of remote and digital learning is interlinked with the socioeconomic strata of the students. Oftentimes, it is arduous to collect the necessary data to analyse these cases as different agencies do not work in concert.

- According to the 2021 study conducted by the International Telecommunication Union, merely 23% of the group representing the lowest-income quartile have access to a computer for school work at home in Thailand.¹⁵
- Thai disparities are also highly dependent upon geographical location - the households and educational institutions in more impoverished regions of Northern

¹⁰ Cambridge Assessment International Education, 2018, [Global Education Census Report](#)

¹¹ Unicef, 2021, [Situational Analysis on Digital Learning Landscape in Indonesia](#)

¹² David Sulistiawan Aditya, 2020, [Embarking Digital Learning Due to COVID-19: Are Teachers Ready?](#)

¹³ SMERU Research Institute, 2022, [Diagnostic Report. Digital Skills Landscape in Indonesia](#)

¹⁴ SMERU Research Institute, 2022, [Diagnostic Report. Digital Skills Landscape in Indonesia](#)

¹⁵ ITU, 2021, [E-learning in Thailand: Mapping the digital divide](#)

and Northeastern Thailand are less connected to the Internet (59% have the connection). This reinforces 'traditional economic fault lines'.¹⁶

- The scarce action to ameliorate digital connectivity and digital learning results from, inter alia, poorly gathered information. The organisations such as the previously mentioned ITU emphasise the need for governmental agencies to update their datasets and make them publicly available. 'Out of 12 Internet connectivity and computing device-related indicators examined by the Education Management Information System, data for only four were publicly available for analysis'.¹⁷

Due to the COVID-19 pandemic, to date, many households still struggle economically which also affected online learning.

- In 2020, around 22 million people out of 32 million who felt the negative financial consequences of the pandemic, had their income reduced in Vietnam.¹⁸
- The pandemic exacerbated the preexisting educational disparities - 55% of students reported that the quality of education declined during online learning.¹⁹ Moreover, the lack of access to the internet at home, increased the likelihood of dropping out. 22% of the students without the necessary devices to effectively participate in online classes left education earlier.²⁰
- As stated by the Asia Development Bank Institute, the underperforming coordination between government and central as well as local authorities also contributes to the insufficient equitable access to digital education. The decentralised units struggle, e.g. due to the lack of infrastructure arising from their remote and mountainous geography.²¹

¹⁶ ITU, 2021, [E-learning in Thailand: Mapping the digital divide](#)

¹⁷ ITU, 2021, [E-learning in Thailand: Mapping the digital divide](#)

¹⁸ Young Lives: Oxford Department of International Development, 2022, [The continuing impact of the pandemic on education in Vietnam: how the 'new normal' is affecting children and young people.](#)

¹⁹ Young Lives: Oxford Department of International Development, 2022, [The continuing impact of the pandemic on education in Vietnam: how the 'new normal' is affecting children and young people.](#)

²⁰ Young Lives: Oxford Department of International Development, 2022, [The continuing impact of the pandemic on education in Vietnam: how the 'new normal' is affecting children and young people.](#)

²¹ Asian Development Bank Institute, 2022, [Tackling Unequal Access to Digital Education in Viet Nam during the COVID-19 Pandemic](#)

The impact of digital Inclusion on labour market inclusion

The inaccessibility to digital tools hampers the potential social mobility of low-income groups.

- Predominantly, the impact of the digital divide on the labour market relates to the existing wider structural discrepancies, such as the rural-urban gap. Oftentimes, it is a vicious circle - the people representing the disadvantaged strata do not have access and adequate knowledge to achieve social mobility.
- In Thailand, for instance, only 21% of people working in agriculture have ever used any ICT-based solutions. It is drastically low, concerning that a third of the Thai people are farmers, 40% of whom live below the national poverty threshold. Agritech solutions are nonetheless unaffordable and incomprehensible to many.²²
- Another instrument that could be leveraged to reinforce positive aspects of digital inclusion in Southeast Asia is a more flexible virtual banking ecosystem. This would be especially beneficial for small and medium enterprises (SMEs), which employ roughly 70% of the Thai workforce. Simultaneously, merely 30% of them have access to financing from formal institutions.
- The adoption of new technologies by the banking industry and the support for bridging the digital divide in the nation would be advantageous for both the industry and the customers. Thai banking has experienced stagnation in recent years. Opening to digitalization would have a positive social impact, and is something that the industry would benefit from, e.g. via scale economics.²³

The wider accessibility to participation in the digital economy has the potential to alleviate existing social issues and discrepancies, making the labour market more sustainable

- 10.4% of all employed workers, i.e. 13.2 million out of 127 million engage in e-commerce activities in Indonesia.²⁴ The statistics on women's participation in these activities, overall, demonstrate their higher involvement in comparison to men.
- Simultaneously, to cite World Bank: “The female labour force participation rate in Indonesia has remained persistently low, hovering at around 50 percent for the past three decades”.²⁵ Widening women’s participation in e-commerce might

²² GSMA, 2022, [Inclusive digital transformation in Southeast Asia: What initiatives should be prioritised?](#)

²³ McKinsey & Company, 2022, [Shaping the future of Thai banking: Reinventing purpose to ignite growth](#)

²⁴ The World Bank, 2021, [Beyond Unicorns: Harnessing Digital Technologies for Inclusion in Indonesia](#)

²⁵ The World Bank, 2021, [Beyond Unicorns: Harnessing Digital Technologies for Inclusion in Indonesia](#)

mitigate this issue and help Indonesia move towards becoming a high-income country.

- Another factor that might benefit the Indonesian market is widening participation in the gig economy. The digital gig environment provides many young people with flexible jobs, for many of whom it is a 'first stepping-stone into a labour market'.²⁶
- Internet-using gig workers on average earn salaries that are 15.8% higher than those of other informal workers.²⁷ However, Internet-using gig workers are predominantly young men from urban areas who are better educated than other informal workers. Widening accessibility to technology and knowledge would enable more people to turn to the digital gig economy.

²⁶ The World Bank, 2021, [Beyond Unicorns: Harnessing Digital Technologies for Inclusion in Indonesia](#)

²⁷ The World Bank, 2021, [Beyond Unicorns: Harnessing Digital Technologies for Inclusion in Indonesia](#)

Insight

Overview:

This session will attempt to explain the impact of the aforementioned factors and hence establish why the existence of the digital divide is so problematic. Specifically, this is because the digital divide is not only *caused* by a scarcity of resources, but it also *leads to* a scarcity of resources through means such as a lack of integration in wider society and the labour market. This is particularly evident in the case of Small- and Medium-sized companies that may not survive or flourish in competitive markets due to barriers to entry, especially since the competitiveness and efficiency of markets are characterised by an increase of digital tools and automation, leading to more competitive prices. These factors are particularly important, especially in the case of SEA, because of their developing nature, and the digital divide, which further impedes this process.

Inequalities as both a cause and consequence of inadequacies in digital transformation.

Socio-demographic inequalities, particularly in the case of developing economies, have a close link to institutions and infrastructure. Often, the institutionalisation of these inequalities causes them to perpetuate over time, preventing development. However, it is also the case that a lack of institutional reform over time causes inequalities to be perpetuated. This is particularly evident when considering digital inclusion in developing economies in the Southeast Asian (SEA) region.

Areas that do not have the resources or environment to support the infrastructure for advancements in the telecommunications sector are particularly interesting to look at since they can best explain the two-fold problem we are faced with. There is a supply problem on the end of the state or governing body: there is an added cost of installing infrastructure due to the cost of developing the environment adequately for infrastructural installation. There might also be the added cost of losses borne due to a potential misallocation of these resources in case that the population does not use them, either due to accessibility or skill-based issues. There will then be a cost to promote digital literacy in that population to ensure that resources are used since infrastructural installation cannot be undone.

On the demand side, there is an issue of affordability and accessibility of these resources. Due to the high costs of digital transformation, it might be the case that the costs of these services are so high that individuals in these previously 'resource-scarce' areas, with lower income levels and standards of living are unable to afford them. It might also be the case that individuals in these areas work in specific sectors, such as agriculture, and hence do not necessarily need digital resources on a day-to-day basis. There, therefore, exists a 'usage gap' despite the provision of these digital resources as outlined by GSMA in their 2022 report.

There also exists an additional layer to this problem, which refers to the diverse socio-demographics in SEA. In addition to a rural-urban divide, based on resource allocation in specific regions, there is intersectionality with the gender gap as well as the sectors that individuals generally work in. Individuals in rural areas with an environment suitable for fishing and farming do not generally require a digital transformation in their processes, especially since a lot of these businesses are family-owned and run. However, urban areas with higher rates of development require higher connectivity, to ensure that their businesses continue to generate profits. Similarly, based on the integration of women into

the labour force for each specific sector, levels of digitisation differ and so does the gender-based digital divide. However, even SMEs are unable to take advantage of digitisation due to barriers to entry from formal regulations, especially concerning e-commerce and automation of financial processes. Therefore, there is a need for more widespread digital inclusion, to ensure that specific groups in society have access to resources that could ensure that they develop adequately.

The COVID-19 pandemic has actually been a great catalyst for change in digital transformation in the region. Due to lockdown restrictions, governments were forced to digitise a lot of processes with health and safety considerations. However, whilst the rate of industrial development for digitisation has been rapid in SEA, it is nowhere near adequate. This is largely because there is a variation in these industrial development rates across sub-regions. These differences arise from pre-existing variations in infrastructure stock and economic and demographic growth prospects. According to a report by the Asian Development bank²⁸, economies with low GDP per capita, low infrastructure stocks, and higher growth prospects will have higher investment needs as a percent of future GDP. As the GDP per capita rises, the infrastructure stock will also rise, but annual infrastructure investment needs as a share of GDP will decline.²⁹

As suggested, over time, digitisation benefits consumers by saving costs but also making processes more efficient, hence increasing overall standards of living, and potentially reducing the divide between different groups based on these socio-economic variations. However, not having the means or resources to digitise or utilise these benefits could lead to a widening of these gaps, making inequalities not only a cause for the lack of digitisation but also a consequence of it.

²⁸ Asian Development Bank, 2017, [Meeting Asia's Infrastructure Needs](#)

²⁹ Asian Development Bank, 2017, [Meeting Asia's Infrastructure Needs](#)

Impact of the digital divide on the labour market

The unequal access to digitalization creates an unlevel playing field for a plethora of Southeast Asians who seek jobs or an opportunity to leverage their social status. According to Roland Berger, the issue of digital exclusion covers around 150,000,000 adults, i.e. nearly a third of the entire population of the region.³⁰ Having so many ‘unconnected’ people hampers their economic mobility as well as the economy of the particular nations. If enabled to participate in the digital economy, the potential inclusion of these workers may unlock \$19 million to \$2.9 billion of additional national revenues or \$16 to \$307 per capita in new revenue streams, according to the projections.³¹ This section will mainly focus on the quality, affordability, and accessibility of information and communication technologies as well as their impact on the labour market in Southeast Asia.

The dearth of adequate infrastructure results in poorer performance of workers across all social strata. A good example of this is the agriculture sector in Thailand. Agricultural labour forces are on average older and less educated than people representing other sectors; over 23% of the agricultural force is aged 60 or older, compared to 6.4% in the industrial sector, and almost 70% of farmers have only primary education or less.³² Even though most of them own mobile phones (98.4%!), merely 64.4% have access to the internet, 21% use ICT-based agricultural solutions, and merely 1.5% have basic or above basic digital skills.^{33 34} In the case of countries where agriculture comprises a crucial share of the overall labour force, the implementation of agrotech is necessary. The governments strive to find methods not only to connect difficult-to-access communities but also to provide knowledge in the most attractive and understandable manner. This problem has been addressed, for example, by the Thai Digital Economy Promotion Agency which tries to share ideas concerning smart agriculture and digital technology in food production with the farmers.³⁵ The case study of agricultural labour forces demonstrates the structural side of the issue - the rural-urban divide as well as the gender gap and their effect on economies.

³⁰ Roland Berger, 2021, [Bridging the digital divide. Improving digital inclusion in Southeast Asia](#)

³¹ Roland Berger, 2021, [Bridging the digital divide. Improving digital inclusion in Southeast Asia](#)

³² Food and Fertilizer Technology Center for the Asian and Pacific Region, 2022, [Thai Farmers’ Digital Literacy: Current State and Policy Implications](#)

³³ Food and Fertilizer Technology Center for the Asian and Pacific Region, 2022, [Thai Farmers’ Digital Literacy: Current State and Policy Implications](#)

³⁴ GSMA, 2022, [Inclusive digital transformation in Southeast Asia: What initiatives should be prioritised?](#)

³⁵ OpenGov Asia, 2022, [Thailand to Boost Digital Technology in Agricultural Sector](#)

The inequalities are also visible among the enterprises. On the first level, 'there is an undeniable digital divide between firms within countries, with SMEs lagging in technology adoption at all levels of economic development' says a report by the World Bank Group based on data from OECD.³⁶ However, the digital divide goes deeper. Specifically, SMEs and their new model businesses are highly dependent on factors such as high-speed broadband infrastructure. In Southeast Asia, both the mobile and fixed broadband download speeds in all middle-income economies are behind the OECD average.³⁷ The strategies of these countries do not provide affordability of the broadband networks in tandem with their quality - the fixed broadband is much more expensive; one of the worst cases being Indonesia with a cost of such a type of broadband amounting to 9.51% of GNI per capita.³⁸ The prices are often volatile inside countries and change according to variables such as geography and population distribution. All these factors hinder the development of small and middle-size companies which constitute almost all enterprises and employ most of the workforce (70% in the case of Thailand), yet do not contribute proportionally to their combined scope (35% of Thai GDP).³⁹

Above issues have a common denominator - narrow accessibility to participation in the digital economy, which can be a result of scarce knowledge or inadequate resources. Nonetheless, the subjects that must endure these social consequences of a digital divide are not only enterprises but mainly individuals who have a more difficult opportunity to join the virtual labour market. One of the most vulnerable groups in Southeast Asia are women. Female participation in the digital economy has immense potential to boost countries' economies as a female share of the total labour force remains quite low across the region (Thailand: 45.9%; Indonesia: 39.4%; Philippines: 38.9%).⁴⁰ The World Bank pointed out e-commerce as a means that can alleviate their lack of participation. On average, women are more involved in e-commerce activities than men, therefore necessary instruments that could facilitate their development and widen the scope of their participation should be used. Unfortunately, similarly to the above-mentioned issues, e-commerce activities are mostly concentrated in more populous and affluent regions. Looking at the example of Indonesia - in DKI Jakarta (HDI = 0.817; the highest in the

³⁶ World Bank, 2019, [The Digital Economy in Southeast Asia: Strengthening the Foundations for Future Growth](#)

³⁷ World Bank, 2019, [The Digital Economy in Southeast Asia: Strengthening the Foundations for Future Growth](#)

³⁸ World Bank, 2019, [The Digital Economy in Southeast Asia: Strengthening the Foundations for Future Growth](#)

³⁹ McKinsey & Company, 2022, [Shaping the future of Thai banking: Reinventing purpose to ignite growth](#)

⁴⁰ World Bank, 2021, [Labor force, female \(% of total labor force\) - East Asia & Pacific, Indonesia](#)

country), around 22% of households with access to the Internet engage in e-commerce, in comparison to Papua (HDI = 0.614; the lowest) with roughly 8% of households.⁴¹

⁴¹ Badan Pusat Statistik, 2022, [Indeks Pembangunan Manusia 2021-2022](#)

The impact of the digital divide on perpetuating educational inequalities

Education on the use of new technologies is as central to bridging the digital divide as other solutions to alleviating the socioeconomic status of impoverished individuals. Inclusive growth requires necessary digital skills and basic knowledge of ICT. People who are entering the job market or who are going to in the future will be able to reap the fruits of the digital economy only if they have the intellectual foundation to do so. The issue is multi-dimensional. The curriculum and the quality of teaching are some of the facets, which are the most important when it comes directly to obtaining digital skills. Nonetheless, the pandemic of COVID-19 especially showed the intrinsic links between socioeconomic position, digital inclusion, and overall standards regarding teaching, both in-person and online.

Many students in Southeast Asia are Internet users and are 'digital natives', therefore the locus of the issue does not revolve around just connectedness. After delving into the statistics and modern research on these inequalities, the problem looms to be systemic. Investing in new technology and digital resources is important, however, students' potential will remain untapped without proper training for education providers and the adaptation of the curricula. The inadequate quality of teaching hampers the effective delivery of courses, hence limiting students' understanding of the often difficult-to-grasp material. Oftentimes, it is the case on all levels of education - from elementary schools to vocational schools and universities. It is only exacerbated by the deficient curricula which are not in line with the industry needs and sometimes, the subjects related to computer science are considered compulsory. Yet, it is crucial to note - despite these systemic hurdles, more affluent people and populations of much better-developed regions can either afford private educational institutions or the education provided in the public schools is already good enough.

These discrepancies became even more apparent and stark during the pandemic of COVID-19. Issues concerning e-learning and lack of accessibility to necessary digital devices were common in a plethora of places all around the world; in the case of Southeast Asia, they are reinforced mostly by existing social inequalities and geographical challenges. Again, the lowest quantile of society and the population living in the less-developed areas have the scarcest resources as well as the worst broadband connections. The issue, which must be tackled by government-level policies, is sometimes not addressed comprehensively in the national statistics though. Oftentimes, it is arduous to collect the necessary data to analyse the cases of the structural digital

divide as different agencies do not work in concert. All in all, online learning could have the potential to level up the social status of young people living in remote villages. Unfortunately, the problem of scant uncoordinated information in addition to the obstacles such as Internet affordability for students, the digital devices-to-student ratios in school and poor connectivity impede the progress of benefiting from a broad online learning strategy.

Many households after the COVID-19 pandemic struggle economically more than before it, which in conjunction with the online learning that was enforced, causes massive obstacles for students' futures. The lack of access to the Internet, therefore the impossibility to attend classes, raised the levels of dropping out. It is a vicious circle - with a hindered chance of social mobility, the 'traditional economic fault lines' are reinforced. As noted by the Oxford Department of International Development, despite the present economic recovery, "poorer households and marginalised groups appear [to be] trapped in deep pockets of poverty, unable to bounce back".⁴² Imposing adequate targeted actions will bridge the widening educational inequalities between the students especially affected by the pandemic and their more advantaged peers and also it will be a good step towards building long-term resilience to future similar interruptions. Bearing in mind disasters caused by climate change and their impact on Southeast Asia, these disruptions will certainly occur again.

⁴² Young Lives: Oxford Department of International Development, 2022, [The continuing impact of the pandemic on education in Vietnam: how the 'new normal' is affecting children and young people.](#)

Conclusion:

The issues covered in these sections are interlinked and demonstrate a need for broader systemic reforms. In addition to gender, age, and socioeconomic status, the most palpable traditional discrepancy is the rural-urban divide. Many regions in Southeast Asia are remote and it is difficult to install the necessary infrastructure there quickly. That directly translated to the affordability of the Internet and technology, which forcibly leaves many people out. The issue of affordability and accessibility is being aggravated by the supply problem and also the costs of losses borne due to a potential misallocation of the resources in cases where the population does not use them. This is a vicious circle - in the wake of the digital economy, many SMEs rely on quality broadband speed to thrive. These obstacles hamper the development of the sector and prevent the social mobility of the marginalised groups. Another problem that exacerbates the societal transition to the digital economy is the lack of digital skills. The crux of the matter is that the education providers do not have adequate knowledge themselves to teach the 'digital natives'. Moreover, studying in modern times requires the use of digital devices (in response to online learning), which may not be accessible to the representatives of marginalised communities. All the above-mentioned issues were reinforced by the COVID-19 pandemic.

Policy Recommendations

Overview:

Bridging the digital divide in Southeast Asia requires an approach covering a wide array of policy instruments. Most of the issues revolve around the inclusion of marginalised groups in the digital economy. The responses must be overarching. Digital transformation has great potential to reduce social and economic inequalities as well as accelerate the economic growth of the region and its importance in the world. Therefore, we propose three areas of policy recommendations:

- **Action 1:** Transform rural agricultural processes by increasing investment in digital infrastructure; promoting the adoption of digital technologies (subsidies or tax breaks for specialist digital technologies); establishing digital agribusiness incubators.
- **Action 2:** Reduce barriers to entry for SMEs in digital marketplaces by the promotion of standardisation and interoperability; support for digital literacy and skills; simplification of pre-existing regulatory requirements; introduction of anti-monopoly laws.
- **Action 3:** Bridge the digital divide in education by increasing investment in digital upskilling; providing access to professional training for teachers; adapting the curricula to the needs of the digital economy; creating a dedicated agency that would oversee the implementation of policies and coordinate data related to the digital divide in education; supporting public-private projects and foreign aid.

Digitally transform rural agricultural processes and have specific goals by incentivising transformation

Digitally transforming rural agricultural processes is crucial for reducing the digital divide in Southeast Asia. The region has a large rural population that relies heavily on agriculture for their livelihoods. However, many rural areas lack access to digital infrastructure, limiting their ability to benefit from digital technologies. For this, there must be a specific plan for the rural agricultural sector in SEA.

This can first be done by increasing investment in digital infrastructure in rural areas. Governments should provide incentives for telecom companies to expand their network in rural areas, such as tax breaks or subsidies. This will help ensure that farmers first have access to the technological tools they may need to feel connected to other parts of the country (or even the world) and may help to reduce the rural-urban gap. It is then also crucial to ensure that these tools are being used efficiently, which would mean providing digital literacy training to farmers. This would help them understand how to use digital tools to improve their farming practices, access new markets, and manage their finances. Governments can do so by partnering with NGOs and other organisations to provide this training at no cost to farmers.

The second stage of this transformation process would involve promoting the adoption of digital technologies in rural agriculture. Governments can provide subsidies or tax breaks to farmers who adopt digital technologies such as precision agriculture tools, crop monitoring systems, and automated irrigation systems. By making these technologies more affordable, farmers will be more likely to adopt them, which will help improve their yields and increase their income. The next step would be to develop digital marketplaces for rural agricultural products. These marketplaces can connect farmers with buyers, allowing them to sell their products at fair prices. Governments can work with private sector partners to develop these marketplaces and provide subsidies to farmers who use them.

The final stage would include establishing digital agribusiness incubators in rural areas. These incubators can provide training, mentorship and funding to farmers who want to start or expand their businesses using digital technologies. Governments can provide seed funding to establish these incubators, and partner with private sector organisations to provide ongoing support.

Digitally transforming rural agricultural processes is crucial for reducing the digital divide in SEA. By providing incentives for investment in digital infrastructure, digital literacy

training, promoting the adoption of digital technologies, developing digital marketplaces, and establishing digital agri-business incubators, governments can help farmers in rural areas benefit from the digital revolution. This will help improve their income, increase food security, and promote socio-economic development in the region. The multitude of positive externalities associated with the policy should incentivise the government itself to also implement and fund the policy.

Reduce barriers to entry to digital marketplaces for SMEs

Small and medium enterprises (SMEs) play a crucial role in the economic development of Southeast Asia.⁴³ However, in the digital marketplace, they often face barriers to entry and unfair competition from larger companies. To ensure fairer competition and reduce barriers to entry for SMEs in Southeast Asia's digital marketplaces, there needs to be a systematic way of ensuring integration of the policy into current systems.

First, this involves the promotion of standardisation and interoperability. Digital marketplaces in Southeast Asia should be encouraged to adopt standards that enable interoperability, making it easier for SMEs to participate. This can be achieved through government policies that incentivise companies to adopt open standards and through collaboration between marketplaces and industry associations to develop and promote these standards. As aforementioned, having standardised processes, even in terms of financial processes in the country will allow for efficiency and overall integration into wider labour markets. Furthermore, policy should aim to encourage transparency and data sharing. Digital marketplaces should be required to provide greater transparency and data sharing with SMEs. This can be done by mandating the disclosure of information such as fees, commissions, and terms of service in a clear and understandable manner. This will help SMEs make informed decisions and prevent them from being taken advantage of by larger companies.

Linking to the previous policy recommendation, there should be support provided for digital literacy and skills. To ensure SMEs are equipped to compete in the digital marketplace, there needs to be support for digital literacy and skills development. Governments should provide training programs and resources to help SMEs understand the digital landscape and how to leverage digital tools to grow their businesses. This can be done in ways such as through private sector partnerships or NGO support in particular areas, which also draws on the pre-existing social capital due to their position in particular areas, especially rural, and drawing on those experiences will make for a more efficient provision of support.

Secondly, pre-existing regulatory requirements should be simplified. Regulatory requirements can be a significant barrier to entry for SMEs in Southeast Asia's digital marketplaces.⁴⁴ Governments should simplify these requirements and create a

⁴³ OECD, 2019, [Southeast Asia Going Digital: Connecting SMEs](#)

⁴⁴ OECD, 2019, [Southeast Asia Going Digital: Connecting SMEs](#)

streamlined regulatory environment that reduces the burden on SMEs while still ensuring consumer protection and market stability.

To ensure fair competition and prevent market failure, the government should prevent monopolies, which are currently very common due to the urban-rural digital divide. While the earlier steps would encourage entry, the prevention of monopolies in the digital marketplace would require antitrust laws and the promotion of a diverse ecosystem of marketplaces, payment providers, and logistics providers.

In addition to more investment in digital upskilling and capabilities, there should be provision of more adequate training for staff, and various necessary changes in the curricula

Education is one of the cornerstones of the digital economy, which relies on skills such as coding, data analytics, online research and simple digital literacy. The socioeconomic situation of individuals, however, determines their access to the quality of both digital resources and overall education. Moreover, owing to the pandemic of COVID-19, the downfall of national economies created direly disadvantaged environments for a plethora of students. All these issues must be addressed in conjunction, bearing in mind the principles of digital inclusion. Furthermore, it is essential to point out that any such a recommendation should be first of all directly targeted towards the marginalised peoples, i.e. geographically and economically peripheral groups.

As stated by The SMERU Research Institute, quality and affordability are two factors that play a major role in a more inclusive policy for improving ICT skills among students.⁴⁵ Firstly, the staff of educational institutions must have wider and better access to professional training, which would increase the quality of teaching. The knowledge learnt in class should correspond with the industry market's needs. Therefore building up-to-date proficiency in the digitised world can be achieved only if the introduced curriculum also echoes the latest developments in the technology sector and accentuates relevant skills. This step highly depends on the national education system. Some states merely need to steer their policies towards more innovative solutions such as encouraging the creation of private-public partnerships and some need to make the first major step of establishing IT as an independent compulsory subject.

The most crucial actor in tackling these issues is the government and the corresponding Ministry of Education, to be precise. By creating a dedicated time-restrained framework for implementing these policies, the government might succeed in making progress. In this matter, there is a lot of hope - as noted by the Tony Blair Institute: "All ten ASEAN countries have developed digital-economy masterplans, and most have cited capacity building, skills or education as their priorities".⁴⁶ One of the major hurdles that looms over, however, is the lack of coordination between different state ministries. Creating one concrete dataset or agency that would collect all data regarding the digital divide

⁴⁵ SMERU Research Institute, 2022, [Diagnostic Report. Digital Skills Landscape in Indonesia](#)

⁴⁶ Tony Blair Institute for Global Change, 2022, [Digital Government in South-East Asia: Greater Collaboration Needed to Reach Regional Integration](#)

domestically would be beneficial for both the policy-makers as well as the analysts. Without this, there is a risk the changes might be incorporated even more glacially or inaccurately.

Nonetheless, two more actors could avail the digital inclusion in Southeast Asia - private companies and foreign aid providers. Making policies that would allow and encourage these actors to help in bridging the digital divide and overcoming the consequences of the COVID-19 pandemic will be highly beneficial for the region. Especially since private companies are the leaders of digital transformation; it is also in their interest to instruct the workforce of the future. This *has* already been visible, for example with Microsoft and its programmes in Southeast Asia. The Microsoft Global Skilling Initiative helped to skill 24 million people in Indonesia and 1 million in Malaysia.⁴⁷ As seen, private companies can give governments that have been weakened by economic crises a hand, effectively following the slogan 'build back better'.⁴⁸ More broadly, welcoming foreign aid and various support instruments would contribute to even more accelerated progress. The exemplar of such a party is the USA and their Power Africa which, inter alia, aims to enhance the digital skills of African communities. Over \$500 million has been invested in the programme by USAID.⁴⁹ Bearing in mind the present geopolitical and geoeconomic shifts, the United States presents itself as a good partner.

⁴⁷ Microsoft, 2022, [Bridging the digital divide for an inclusive skills-based economy](#)

⁴⁸ Microsoft, 2022, [Bridging the digital divide for an inclusive skills-based economy](#)

⁴⁹ Brookings, 2021, [Bridging the global digital divide: A platform to advance digital development in low- and middle-income countries](#)

Conclusion:

Digital transformation of the world is *necessary*, and states should take up all necessary measures to adapt their economies and societies to the changing reality. In Southeast Asia, there is an awareness of this process and the issues that emerge in attempting to bridge the digital divide. Therefore, the policies we recommend would not fall into a void of unrealised slogans - the political will gives hope that certain instruments will be used in the foreseeable future. Each state struggles with different economic and social problems, however, the need for digitalisation is common among all of them. Southeast Asia is a vibrant emerging market that consists of over 400 million internet users right now - the potential of the region is seen by a multitude of both domestic and foreign investors who can avail the societal transition and lobby for the policies to be introduced more quickly. Many of the derivative policies have already been introduced at their early stage on the supranational forum in the ASEAN Digital Masterplan 2025. What pushes the narratives and progress of the policy-making further is precisely the existence of the union which comprises highly developed countries such as Singapore and less developed ones, amongst which are, for example, Cambodia and the Philippines. Ambitions and practices in one state are re-used and re-produced in others. Setting proper agenda and goals for the union makes sure the whole region grows in concert.