

**Economic and Social Commission for Asia and the Pacific**Committee on Information and Communications Technology,
Science, Technology and Innovation**Fourth session**

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Item 2 of the provisional agenda**

Asia-Pacific digital transformation landscape**Summary of the Asia-Pacific digital transformation
report 2022****Note by the secretariat***Summary*

The rapid rise of digital technologies poses both opportunities and challenges for implementing the 2030 Agenda for Sustainable Development. As digital options became the default during the coronavirus disease (COVID-19) pandemic, the interrelationships between digitalization and development were exposed through the positive impact of digital transformations on societies and the negative impact of widening digital divides. Consequently, the region faces a compelling need to bring meaningful digital opportunities to all, for a more prosperous present and greater participation in the digital societies of the future.

The present document contains a summary of the key findings of the Asia-Pacific digital transformation report 2022 in support of the implementation of the action plan for implementing the Asia-Pacific Information Superhighway initiative, 2022–2026. The aim is to provide policymakers with information, data and analysis pertaining to the links between the COVID-19 pandemic, the digital divide, the opportunities of digital transformation, and sustainable development. The digital transformation report will be launched during the fourth session of the Committee on Information and Communications Technology, Science, Technology and Innovation.

The Committee is invited to share national policy perspectives pertaining to the analysis and recommendations emerging from the Asia-Pacific digital transformation report 2022. The Committee is further invited to propose ways in which the findings and national experiences can support the implementation of the action plan for implementing the Asia-Pacific Information Superhighway initiative, 2022–2026 (ESCAP/CICTSTI/2022/INF/1).

* Reissued for technical reasons on 27 July 2022.

** ESCAP/CICTSTI/2022/L.1.

I. Introduction

1. Across Asia and the Pacific, digital technology is changing many aspects of daily life. While this transformation was already well underway before the coronavirus disease (COVID-19) pandemic, it received a sudden and largely unforeseen impetus by the pandemic, as governments, businesses and communities sought greater safety in contactless digital communications. In many respects the outcome was beneficial, motivating whole societies to take more rapid advantage of digital technologies. But this big bang¹ also left many people behind – those without the assets or the capacities to adopt new technologies – thus further accentuating the digital divide and its socioeconomic impacts.

2. Digital transformation and disruptive technologies² are a paradigm change, affecting all aspects of a society's value creation, management, use and distribution of resources. Digital transformation is more extensive than digitalization, as societies generally cannot revert to previous digital transformation stages³ even if they wanted to, due to the widespread socioeconomic changes to the structure of the economy.

3. In response to the COVID-19 pandemic, Governments in the region have had to implement strong containment and mitigation measures aiming to minimize direct human interactions – which encouraged greater use of contactless online digital services. For example, some Governments provided online income support and new digital services for households and businesses, and people took greater advantage of online shopping, remote working, video conferencing and distance learning.

II. The big bang widens digital divides and socioeconomic inequalities

4. This big bang has, however, also widened the digital divide. These changes are taking place at a speed that is leaving many people and businesses behind. As more and more devices and systems rely on Internet connectivity, those businesses and people without reliable and affordable connections or the necessary digital skills will be further denied access to the benefits and opportunities of the digital economy.

5. The digital divide is demonstrated by significant differences between countries. For example, in Asia and the Pacific, the gaps are widest for fixed broadband – with the least access in the Pacific developing countries, and the most access in East and North-East Asia. For mobile subscriptions, the divide persists even though overall access is greater, and the gaps are narrower:

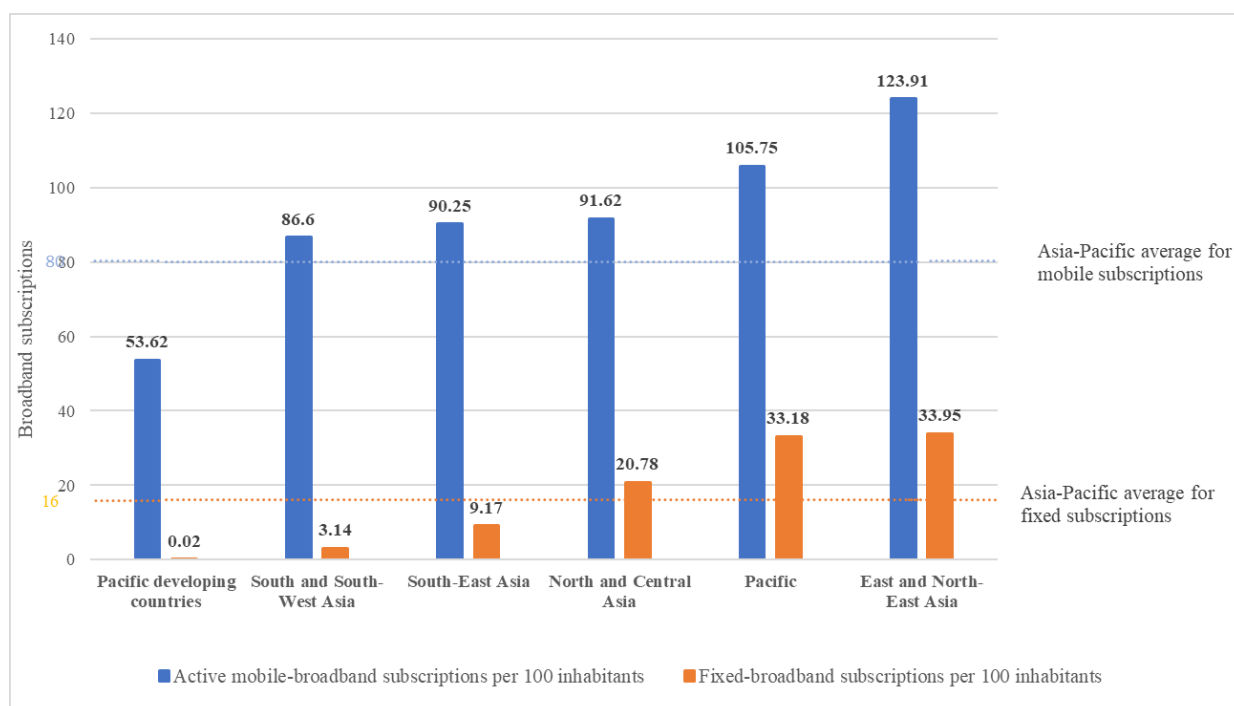
¹ Proliferation or adoption of disruptive digital technologies by Asia-Pacific countries in response to the restrictions of the COVID-19 pandemic in a short period of time.

² Including artificial intelligence, big data, high-capacity electronic networks and mobile connectivity, all of which are disrupting and transforming production, consumption and social interactions.

³ Essential elements to enable digital transformation include digitization and digitalization. Digitization is the process of converting analogue information into a digital format so that it can be electronically stored, processed, managed and transmitted – for example, the conversion of analogue music to MP3 files. Digitalization is the adaptation of a system or process to be operated with the use of computers and the Internet, which may improve business processes, models and productivity.

subscriptions per 100 inhabitants range from 54 per cent in the Pacific developing countries to 124 per cent in East and North-East Asia (figure I).

Figure I
Broadband connections per 100 inhabitants, by subregion, 2020
 (Weighted by population)



Note: The category “Pacific developing countries” excludes Australia and New Zealand.

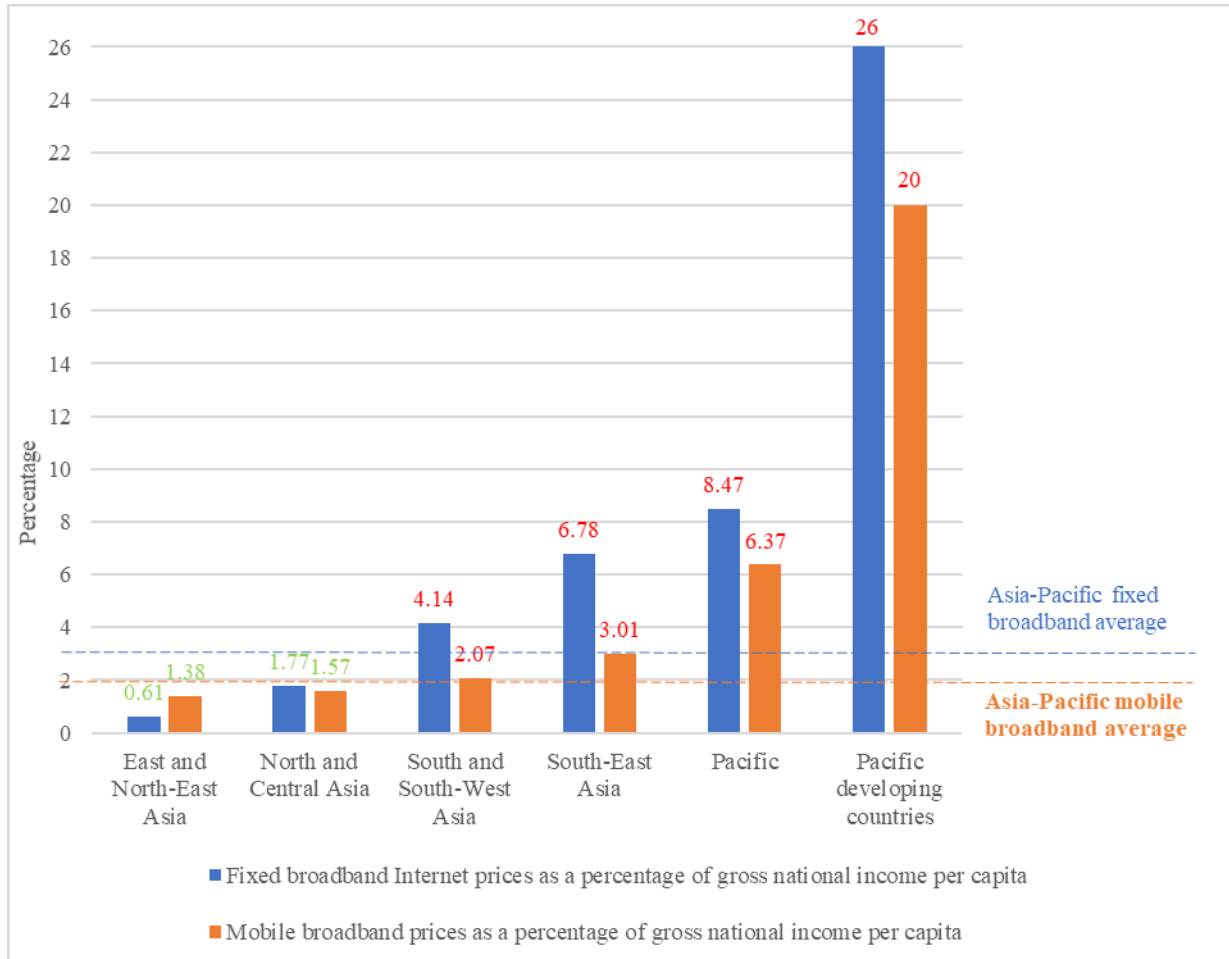
Source: International Telecommunication Union (ITU), *World Telecommunication/ICT Indicators Database*, 25th ed. (2021).

6. Even within individual Asia-Pacific countries, there are notable differences between urban and rural areas. For example, in Bhutan, 71 per cent of the urban population use mobile services compared to 29 per cent in rural areas. There are similar rural-urban gaps in Mongolia (25 and 58 per cent) and in Samoa (2 and 11 per cent).

7. Variations between countries in subscription levels correspond to differences in affordability. These are illustrated in figure II which shows average subscription prices as a proportion of per capita gross national income. Only two Economic and Social Commission for Asia and the Pacific (ESCAP) subregions, East and North-East Asia and North and Central Asia, are considered affordable in terms of access to both fixed and mobile broadband subscriptions.⁴

⁴ According to the Broadband Commission for Sustainable Development target, a value equal to and below 2 per cent is considered affordable and vice versa. See Broadband Commission for Sustainable Development, “Achieving the 2025 advocacy targets: universal connectivity, affordability, skills, access, equality and use”, available at www.broadbandcommission.org/broadband-targets/ (accessed on 10 May 2022).

Figure II
Fixed and mobile prices as a percentage of gross national income per capita (2018–2020)



Note: The category “Pacific developing countries” excludes Australia and New Zealand. Percentages are weighted by population.

Source: ITU, *World Telecommunication/ICT Indicators Database*, 25th ed.

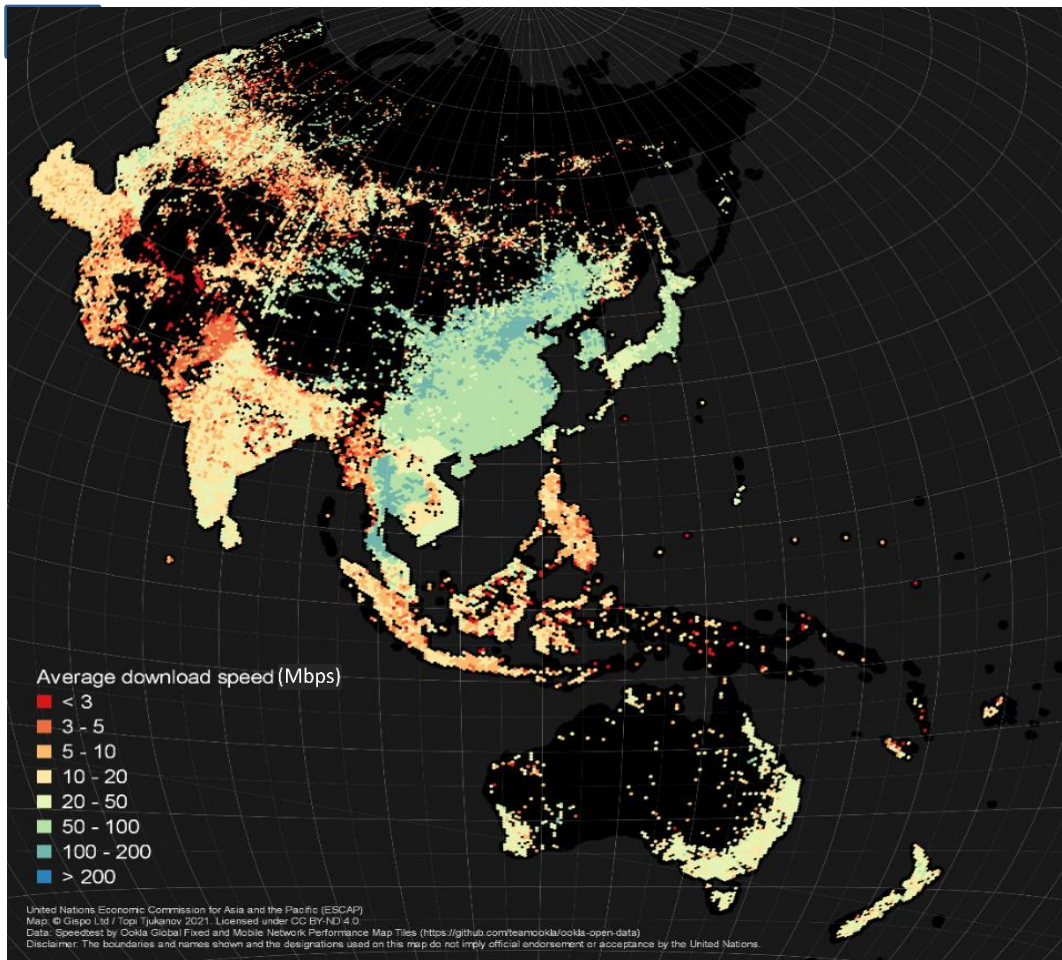
8. Affordability is also a persistent challenge for users when it comes to buying or upgrading mobile phone devices. According to a recent analysis on global mobile device pricing in 2021,⁵ the global average cost of a smartphone was approximately \$104 or 26 per cent of an average monthly income. However, significant price differences between income groups and geographic groups remain. In least developed countries, users were found to spend more than double the global average, at 53 per cent. South Asia, at 40 per cent, had the second most expensive average smartphone price by geographic grouping; sub-Saharan Africa was the most expensive, at 45 per cent.

9. ESCAP recently aggregated real time download speeds and mapped them (map). The study revealed stark gaps. For example, Japan, the Republic of Korea, Thailand and Viet Nam, as well as the eastern part of China, have higher average fixed-broadband download speeds almost country-wide (shown in green). The archipelago countries of Indonesia and the Philippines have lower speeds, as do several countries in South and South-West Asia (shown in orange). Pacific island developing countries and parts of Central

⁵ Alliance for Affordable Internet, “Device pricing 2021”, 7 October 2021.

and West Asia are among the areas that experience the lowest speeds (shown in red).

Fixed broadband download speeds in Asia and the Pacific



Abbreviation: Mbps, megabits per second.

Note: Map prepared by Gispo Limited based on Speedtest by Ookla Global Fixed and Mobile Network Performance Map Tiles for ESCAP.

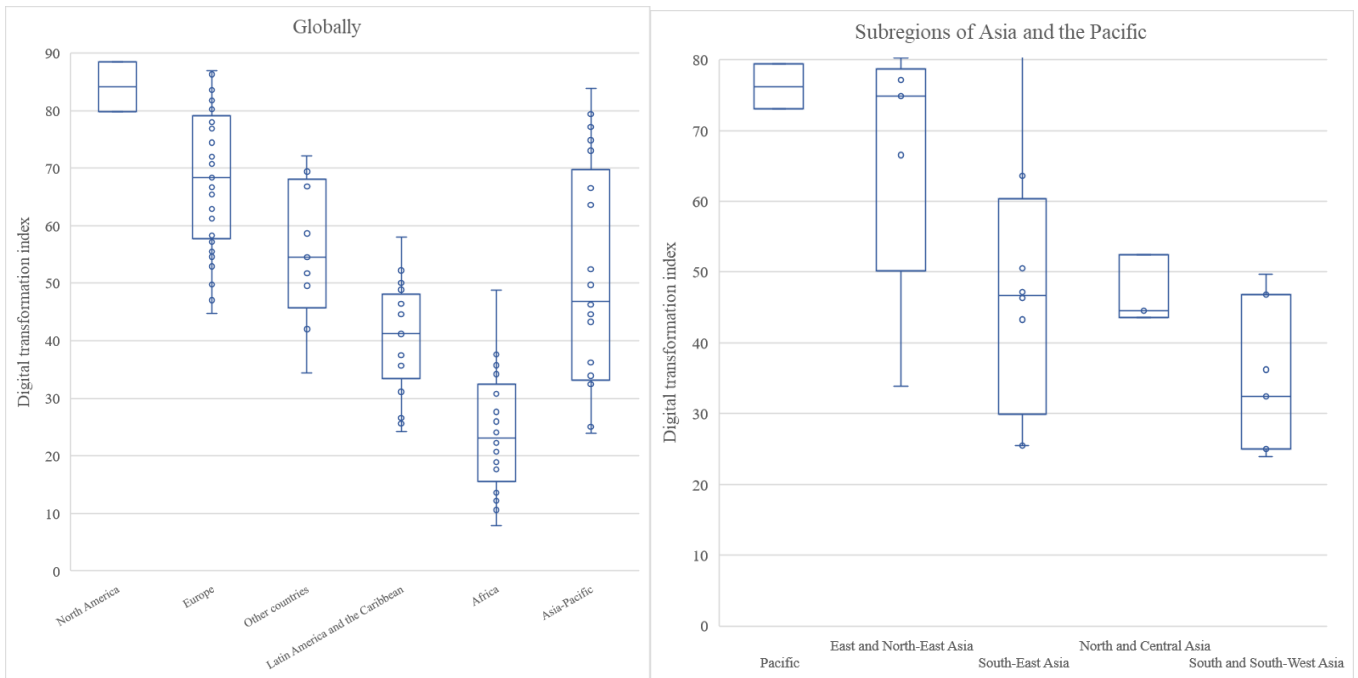
Disclaimer: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

10. Rapid technological change, in addition to the Internet speed gap, can also expose and exacerbate existing social, economic and geographical divisions. That includes divisions related to age, gender, education and disability as well as divisions between regions. An analysis of the readiness of Asia-Pacific countries for digital transformation⁶ shows wide digital divides between countries and the five subregions in the region compared with those of other regions (figure III). While some Asia-Pacific countries such as China, the Republic of Korea and Singapore showed advanced digital transformation status, many other Asia-Pacific developing countries,

⁶ Jongsur Park, Seunghwa Jun and Jeong Yoon Kim, “Methodology for data analysis of digital transformation”, Information and Communications Technology and Disaster Risk Reduction Division, ESCAP Working Paper Series (Bangkok, 2022).

including countries in South and South-West Asia, are lagging behind in alarming ways.

Figure III
Digital divides, globally and among the subregions of Asia and the Pacific



Source: Jongsur Park, Seunghwa Jun and Jeong Yoon Kim, “Methodology for data analysis of digital transformation”, Information and Communications Technology and Disaster Risk Reduction Division, ESCAP Working Paper Series (Bangkok, 2022).

Notes: “Other countries” includes all other countries not included in Europe, North America, Latin America and Caribbean, and the Pacific. Each dot represents a country’s digital transformation score. The length of the box indicates the distribution of the majority of the countries. The horizontal line inside the box indicates the median country score for each region or subregion. Dots outside the box indicate outlier countries (i.e. countries with either a significantly higher or lower score than the majority of the countries inside the box). A larger digital divide is shown by a longer length of the box (i.e. there is a big difference in the majority of the countries inside the box between high and low ranked countries). As can be seen in the figure on the left, the Asia-Pacific region has the largest digital divide.

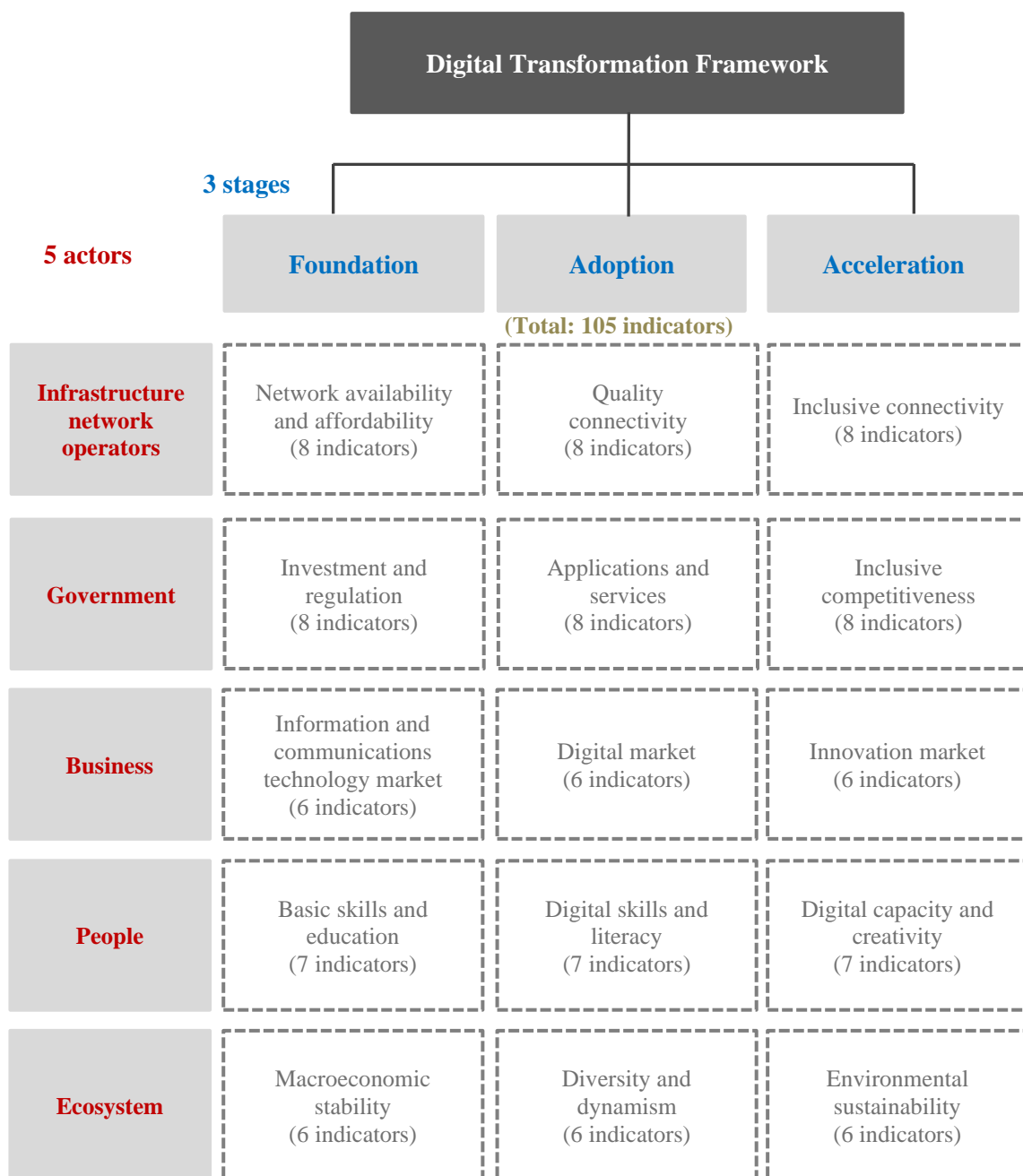
III. The Asia-Pacific digital transformation landscape

11. The accelerating digital transformation is leading to profound changes across the Asia-Pacific region. Many of these changes are deliberate and planned, but others are spontaneous and outpace policy and regulatory reforms. An ongoing policy challenge is to understand the implications of these developments so as to foster innovation and enterprise, while also guiding this transformation in the most efficient and productive direction.

12. But there are also serious risks. At the social and political level, online social network platforms, while fostering better people-to-people communications, have also heightened the risks of polarization. The algorithms of some online social network platforms inadvertently maximize traffic for advertisers by prioritizing the more extreme and provocative posts. This has led to the creation of echo chambers and the spread of misinformation on a significant and alarming scale.

13. To better understand the progress of Asia-Pacific countries with regard to digital transformation, the secretariat developed a digital transformation framework with indicators that assess progress and identify gaps for more targeted regional policy dialogues. The framework encompasses three stages of digital transformation (a) the foundation stage, (b) the adoption stage and (c) the acceleration stage. In each stage, five actors are listed that define the focus and scope of coverage, including infrastructure network operators, government, business, people and ecosystems (figure IV).

Figure IV



Source: Jongsur Park, Seunghwa Jun and Jeong Yoon Kim, “Methodology for data analysis of digital transformation” (see figure III).

14. In a pilot study⁷ using the framework, ESCAP analysed the digital transformation of 107 countries worldwide. Sufficient internationally comparable data were available for 25 countries from the ESCAP region. The digital transformation framework included 105 indicators from eight global datasets.⁸ The relevant indicators were normalized between a value of 1 (low) and 100 (high) and allocated different weightings⁹ in line with previous research and analyses. For each of the actors, scores were added together to form a digital transformation index for each country.

15. At the global level, the preliminary findings indicate that the Asia-Pacific region¹⁰ is the most digitally divided in terms of digital transformation, with the largest difference resulting from countries with advanced information and communications technology (ICT) accelerating their digital transformation and countries with less advanced ICT lagging behind. The digital transformation scores demonstrate a high correlation with countries' income levels, with the majority (67 per cent) of the high-income countries scoring higher than 60, and the majority (71 per cent) of low-income countries scoring lower than 20.

16. Business had the highest correlation with the digital transformation score at all three stages of digital transformation. This underlines the central role of businesses in driving research and development on frontier technologies and as adopters of disruptive technologies for digital transformation.

IV. Governing in a digital way

17. Another crucial element of the digital transformation process is e-government – the delivery of national or local government information and services on the Internet or by other digital means. E-government has far-reaching potential, not just for improving institutional processes and public service delivery but also for ensuring inclusion, participation, accountability and transparency, as well as helping to build public trust.

18. E-government goes beyond the provision of information on websites. As a result of the COVID-19 pandemic, many governments now offer opportunities for online participation, as public service agencies work together in shared whole-of-government responses. Governments have also developed one-stop platforms allowing access to a range of interactive public services.

⁷ Ibid.

⁸ The eight datasets are from the following eight databases: Cisco Digital Readiness Index, Portulans Institute Network Readiness Index, World Digital Competitiveness Ranking of the International Institute for Management Development, Oxford Insights Government Artificial Intelligence Readiness, The Inclusive Internet Index of the Economist Intelligence Unit, Global Competitiveness Index of the World Economic Forum, Global Innovation Index of the World Intellectual Property Organization and ITU World Telecommunication/ICT Indicators Database. See Park, Jun and Kim, "Methodology for data analysis" (footnote 6).

⁹ Network (0.3), government (0.2), business (0.2), people (0.15), and ecosystem (0.15).

¹⁰ Compared to Northern America, Europe, Latin America and Caribbean, and Africa. For further details, refer to Park, Jun and Kim, "Methodology for data analysis" (see footnote 6).

19. Progress in e-government can be assessed using the e-government development index of the Department of Economic and Social Affairs of the Secretariat. The index has three components: the online service index, a telecommunication infrastructure index and a human capital index. The highest proportion of countries with very-high e-government development index values are concentrated in Europe, followed by Asia.

20. Nevertheless, between 2018 and 2020, there was a substantial increase in the average e-government development index value for lower-middle-income countries. Over that period, three Asia-Pacific least developed countries in Southern Asia – Bangladesh, Bhutan and Cambodia – moved from the middle e-government development index group in 2018 to the high e-government development index group.

21. In Bangladesh, success has largely derived from efforts to improve the public sector’s digital connectivity and online service delivery, as well as investments in the digital literacy of public sector employees. In the past few years, the Government has worked on unifying 46,000 virtual government offices and providing information and government services nimbly and efficiently.

22. In Bhutan, Internet connectivity has expanded to approximately a thousand government offices, schools and hospitals, allowing the provision of e-government services, such as online business licensing and customs trade.

23. In Cambodia, expanded telecommunications infrastructure has improved rates of mobile phone penetration. The Government has also been using social media platforms and websites to engage citizens in decision-making.

V. Going digital

24. Asia-Pacific countries have been at the forefront of digital transformation. For example, the Republic of Korea has been a pioneer in the development of fifth-generation (5G) wireless systems network. China and other countries in the region have become the world’s factories for digital hardware as well as for creating digital technology applications and new social media. Overall, digital transformation is strengthening national competitiveness, boosting productivity of businesses and manufacturing, and providing people with new values and services, while advancing the fourth industrial revolution and opening up new opportunities for sustainable development.

25. Digital transformation is not only about the technology applications, it is about people. The core of a digital transformation strategy should be to provide the values and services that people want in a flexible, adaptive and innovative way. With digital technologies now underpinning all aspects of socioeconomic policymaking and implementation processes, new development paradigms and regulatory frameworks that boost interactive cooperation between government, business, people and international communities should be more flexible, adaptive and collaborative.

26. Government and business are critical actors in digital transformation, with their roles focusing, respectively, on guiding and initiating that transformation. Analysis indicates that enhancing the competitiveness of the government and business sectors at all three stages (foundation, adoption and acceleration) is key for advancing digital transformation. Governments can guide Internet operators to co-invest in and share ICT infrastructure, reduce

the complexity of local regulations and administrative processes, and provide timely access to public facilities such as ducts created for utility services. For rural and remote areas where revenues are low, operators often struggle to deploy broadband Internet. In that instance, governments should encourage network sharing.

27. A successful and inclusive digital transformation in Asia and the Pacific does not depend on infrastructure policies alone. It is vital that digital transformation policies also consider the challenges underpinning disparities on the demand side. To enhance usage, Internet costs, handsets and data bundles need to be made more affordable, particularly for those in the lower-income brackets. Towards this end, governments could for example, provide subsidies for devices, Internet subscriptions or mobile coverage. In parallel, tax policies should promote the uptake of Internet subscriptions and internet-enabled devices and data services. It is equally important to put in place initiatives that help to promote Internet adoption and use, literacy and people's capacity, and digital accessibility for all, in particular for persons that are elderly or live with disabilities, with a special focus on women and girls.

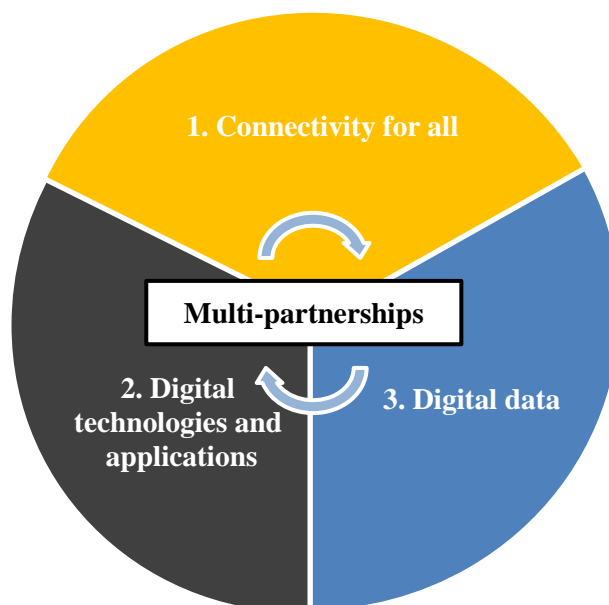
28. It is also critical to foster workforces that have sufficient numbers and include professionals such as digital specialists and big data analysts while also nurturing whole-of-society digital mindsets and literacy among government officials and people, who are the driving force of the acceleration to digital transformation. The Asian and Pacific Training Centre for Information and Communication Technology for Development has been fostering such changes among Asia-Pacific policymakers and civil servants through its Academy of ICT Essentials for Government Leaders training programme.

29. Governments, businesses and civil society also need to cooperate in fostering a digital society that is inclusive of people with disabilities. For example, digital platforms and content need to be technically accessible to people with visual impairments, for example allowing users to adjust fonts and colours and access the information in audio formats. To support access by persons who have hearing difficulties, visual content and virtual conferences should include sign language interpretation and real-time captioning. For this purpose, both governments and businesses should follow standards and universal design principles such as the Web Content Accessibility Guidelines.

30. The pandemic has opened up a unique opportunity to further strengthen partnerships among governments, business sectors and social groups at regional and global levels. Only by working together can countries ensure that these technological breakthroughs will work for the economy, society and environment in an inclusive and sustainable manner.

31. The objective of the action plan for implementing the Asia-Pacific Information Superhighway initiative, 2022–2026 (ESCAP/CICTSTI/2022/INF/1), is to provide Governments with a tool to bridge the digital divide, accelerate digital transformation and address these policy challenges through three focus areas: connectivity for all, digital technologies and applications, and digital data (figure V).

Figure V
Action plan for implementing the Asia-Pacific Information Superhighway initiative, 2022–2026



VI. Issues for consideration by the Committee

32. Members of the Committee on Information and Communications Technology, Science, Technology and Innovation are invited to share national policy perspectives pertaining to the analysis and recommendations emerging from the Asia-Pacific digital transformation report 2022, which will be launched during the fourth session of the Committee.

33. The Committee is invited to propose ways in which the findings and national experiences can support the implementation of the action plan for implementing the Asia-Pacific Information Superhighway initiative, 2022–2026.

34. The Committee may wish to request the secretariat to coordinate multi-stakeholder partnerships to implement the action plan for implementing the Asia-Pacific Information Superhighway initiative, 2022–2026. In this regard, the Committee may wish to express support for the Asia-Pacific Digital Ministerial Conference 2022, co-organized by ESCAP and the Government of the Republic of Korea, with the theme “Shaping our common future”, to be held in Seoul on 9 and 10 November 2022, as an important means of promoting multi-stakeholder partnerships on digital transformation in Asia and the Pacific.