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Review of the implementation of the 2030 Agenda for Sustainable Development in Asia and the Pacific: information and communications technology, science, technology and innovation**Policy priorities for transformation to inclusive digital economies****Note by the secretariat***Summary*

The importance of digital technology and innovation as critical enablers of efforts to achieve the Sustainable Development Goals is particularly apparent in the context of the decade of action for the Goals and is underlined in the report of the High-level Panel on Digital Cooperation. Perhaps in no other region in the world is this borne out to a greater degree than Asia and the Pacific. Some countries have surged ahead as global leaders in frontier technologies while a number of traditional economies are rapidly transforming to digital economies. This technological transition offers opportunities for inclusive engagement in economic activities. For example, the following technologies significantly impact poverty reduction and empower the poor: financial technology is providing new solutions for financial inclusion, e-commerce is providing opportunities for broader engagement of small and medium-sized enterprises and blockchain technology is reducing costs and increasing the efficiency of trading across borders. However, this wave of optimism about the transformative potential of digital technologies is tempered by the growing acknowledgement that the digital divide is widening.

The present document contains a brief review of the state of information and communications technology in the Asia-Pacific region, including an outline of the key transformative opportunities for enabling inclusive digital economies and the key challenges inherent to tackling the growing digital divide. It also contains examples of the operational responses of the Economic and Social Commission for Asia and the Pacific as part of the subregional implementation of the Asia-Pacific Information Superhighway initiative, in support of Central Asia, South Asia, South-East Asia and Pacific connectivity. In addition, it contains suggested policy priorities for accelerating the transformation to inclusive digital economies.

Members and associate members of the Commission may wish to share country experiences on the inclusive digital economy and their views on policy priorities for in the Asia-Pacific region.

* ESCAP/76/L.1/Rev.1.

I. Introduction

1. Since the early 1990s, the Asia-Pacific region has experienced a tremendous socioeconomic transformation facilitated by strong and sustained economic growth. Unfortunately, the gains from this remarkable performance have not always benefited those most in need. The region's combined income inequality, measured by the Gini coefficient, has increased by more than 5 percentage points in the last 20 years, running contrary to almost all other regions.¹

2. Today, as traditional economies are rapidly transitioning to digital economies, there is a risk that this transition could further exacerbate inequalities, because the economic consequences of digital technologies are not necessarily inclusive or beneficial. Notwithstanding, digital technologies could also provide opportunities to support economic inclusion. The challenge for policymakers seeking to steer the evolving digital economies towards inclusivity is to steer digital technologies towards the same objective, so that economic opportunities are available to all.²

3. The widening digital divide undermines the development of inclusive digital economies. There is evidence that growth in the number of Internet users is slowing, with billions of people remaining offline. Furthermore, efforts to reach the unconnected and develop emerging technologies and business models are growing more costly and complex. Additionally, there are huge uncertainties about what this means for the future of work.

4. The following enabling digital technologies for inclusive digital economies are highlighted in the present document:

- (a) Inclusive Internet connectivity;
- (b) Financial technology, or fintech, for financial inclusion;
- (c) Blockchain technology for inclusive trade;
- (d) Inclusive e-commerce.

5. These technologies were selected on the basis of the secretariat's work in assisting member States in the Asia-Pacific region to explore the possibilities of leveraging technologies for transitioning to a digital economy and inclusive development. Additional technologies may be relevant to countries in the region. The same analytical framework can be applied to technologies not covered in the present document.

6. For each technology, a definition is given, the state of play in the Asia-Pacific region is described, and challenges for creating inclusive digital economies are outlined. Areas for future regional cooperation are also proposed.

¹ See *Inequality in Asia and the Pacific in the Era of the 2030 Agenda for Sustainable Development* (United Nations publication, Sales No. E.18.II.F.13).

² See United Nations, "The age of digital interdependence", 2019.

II. Inclusive Internet connectivity

A. State of play in the Asia-Pacific region

7. Driving the digital economy is a fast-growing and rapidly changing information and communications technology (ICT) sector.

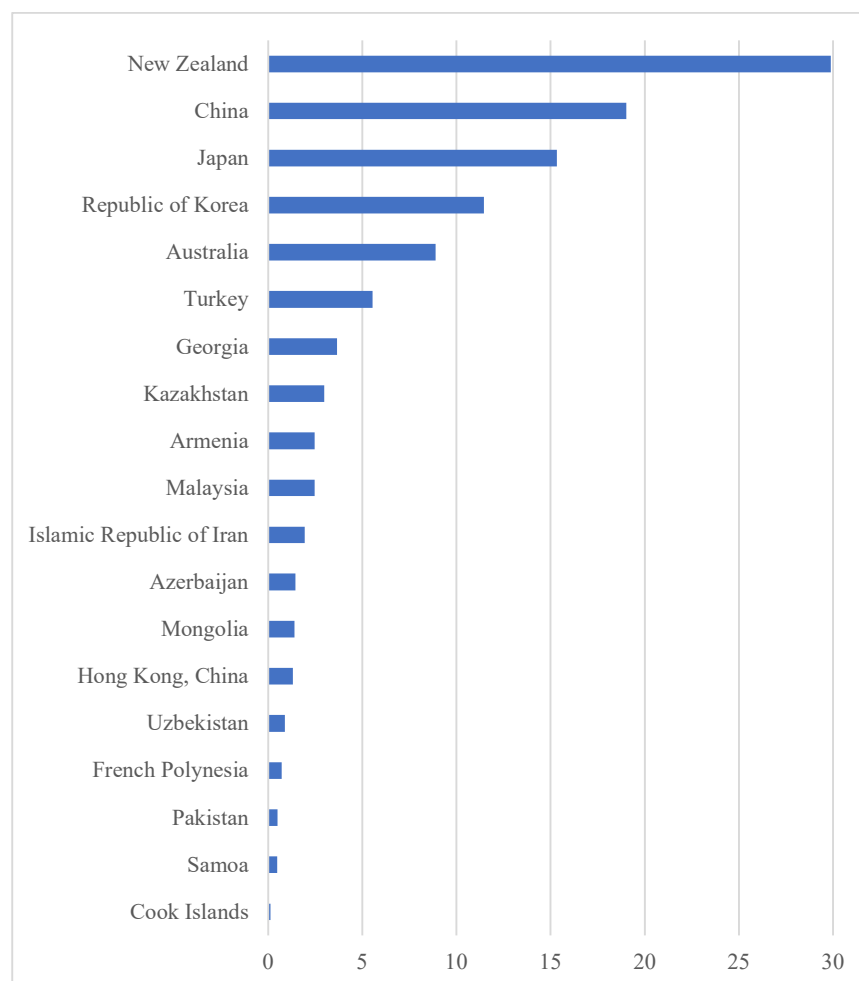
8. Both total and per capita IP and Internet traffic have experienced exponential growth in the past two decades. The global average of monthly per capita Internet traffic grew from 10 megabytes (MB) in 2000 to 13 gigabytes (GB) in 2017 and is expected to reach 44 GB by 2022. Similarly, monthly per capita IP traffic is expected to increase from 16 GB in 2017 to 50 GB by 2022 with average annual growth of 32 per cent. The Asia-Pacific region is expected to lead as one of the fastest growing regions, followed by the Middle East and Africa.³ According to International Telecommunication Union (ITU) statistics, most of the Internet traffic (in exabytes) in the region's developed economies is carried on fixed-broadband networks compared with mobile-broadband networks within country. For example, the ratio of fixed broadband to mobile broadband is 13 times higher in the Republic of Korea (52:4); 10 times higher in Australia (16:1.5) and 4 times higher in Japan (48:10).⁴ In addition, machine-to-machine⁵ Internet data flow has become increasingly prominent in several Asia-Pacific countries with the emergence of the Internet of Things, big data, cloud computing and machine learning (see figure). As a result, the demand for Internet bandwidth is expected to grow exponentially in the next decade. Countries with affordable and reliable regional, subregional and national broadband connectivity will benefit the most from these emerging technologies.

³ See Cisco, *Cisco Annual Internet Report (2018–2023) White Paper* (2020).

⁴ See ITU, *World Telecommunication/ICT Indicators Database*, 23rd ed (2019). Available at www.itu.int/en/ITU-D/Statistics/Pages/publications/wtid.aspx.

⁵ Machine-to-machine mobile network subscriptions are defined by ITU as the number of mobile cellular machine-to-machine subscriptions that are assigned for use in machines and devices (for example cars, smart meters and consumer electronics) for the exchange of data between networked devices and are not part of a consumer subscription. For instance, subscriber identity module (SIM) cards in personal navigation devices, smart meters, trains and automobiles should be included. Mobile dongles and tablet subscriptions should be excluded.

Figure
Machine-to-machine mobile-network subscriptions per 100 inhabitants in selected countries, 2017



Source: Economic and Social Commission for Asia and the Pacific (ESCAP) calculations based on International Telecommunications Union (ITU), *World Telecommunication/ICT Indicators Database*, 23rd ed (2019). Available at www.itu.int/en/ITU-D/Statistics/Pages/publications/wtid.aspx.

B. Challenges

1. Limited access to broadband connectivity

9. Despite these impressive results, challenges remain. In various studies, Economic and Social Commission for Asia and the Pacific (ESCAP) has highlighted the widening digital divide between and within the countries in the region. Out of 26 Asia-Pacific countries with special needs where data is available, 14 have a fixed-broadband penetration rate of less than 2 per cent of the total population.⁶ With the emergence of Internet-bandwidth-intensive technologies, the countries with low bandwidth capacity may find it

⁶ There are 36 member States in Asia-Pacific region classified as countries with special needs, which comprise least developed countries, landlocked developing countries and small island developing States.

increasingly difficult to capitalize on the opportunities presented by such innovations.

10. Among the Asia-Pacific subregions, access to fixed-broadband subscriptions per 100 inhabitants is greatest, on average, in East and North-East Asia and the Pacific (driven by Australia and New Zealand) at 29 per cent. International Internet bandwidth per user is 106 times higher in East and North-East Asia than in the Pacific.

Table 1
Information and communications technology snapshot for Asia-Pacific subregions, weighted average

	<i>Asia-Pacific</i>	<i>South-East Asia</i>	<i>North and Central Asia</i>	<i>South and South-West Asia</i>	<i>East and North-East Asia</i>	<i>Pacific</i>
Fixed-broadband subscriptions per 100 inhabitants with download speed of 10 megabytes per second or greater	13	5	13	1	29	29
Total fixed-broadband subscriptions per 100 inhabitants	14	6	19	3	29	29
Mobile-broadband subscriptions per 100 inhabitants	72	89	81	40	102	124
Percentage of population covered by at least third generation network	98	98	94	96	100	99
International Internet bandwidth per Internet user (bits per second)	153 046	64 585	58 290	59 463	7 533 447	70 825

Source: ESCAP calculations based on ITU, *World Telecommunication/ICT Indicators Database* (see figure).

Note: Data from 2018 or latest year for which data is available.

11. Various digital divides also remain within countries, particularly between urban and rural areas. This gap becomes even more prevalent among lower income countries. For instance, according to the ITU survey database⁷ on ICT household access and individual use, 97 per cent of the urban households and 95 per cent of the rural households in Japan were connected to the Internet in 2018. In contrast, in 2017, only 29 per cent of the rural households in Bhutan had access to the Internet, while more than 70 per cent of the country’s urban households had access. The gender digital divide is another persistent challenge. Statistics from the ITU database⁸ indicate that women are less likely to be connected digitally.

⁷ ITU, *World Telecommunication/ICT Indicators Database*.

⁸ Ibid.

2. Lack of affordable broadband connectivity

12. Affordability is a key driver for expanding broadband access to the unconnected population in the region. According to the latest ITU data, at least 29 ESCAP member States had fixed-broadband subscription prices above the affordability threshold (2 per cent of gross national income per capita) in 2017, and most of these countries were low- or lower-middle-income countries. Even mobile broadband, which has become more accessible at lower prices, is still above the affordability threshold in low- and lower-middle-income countries (see table 2).

Table 2
Prices of fixed and mobile broadband by level of income, three-year average
 (Percentage of monthly per capita gross national income)

	<i>Fixed-broadband (wired) subscription charge</i>			<i>Price of handset-based mobile prepaid broadband plan</i>			<i>Price of universal serial bus (USB)/dongle-based mobile post-paid broadband plan</i>		
	2012–2014	2015–2017	Change (per cent)	2012–2014	2015–2017	Change (per cent)	2012–2014	2015–2017	Change (per cent)
Asia-Pacific	5.4	4.2	-22.3	1.7	1.4	-13.9	8.9	2.5	-72.4
High-income countries	0.8	0.8	5.5	0.7	0.7	5.9	1.1	0.9	-17.6
Upper-middle-income countries	3.5	2.3	-33.5	0.9	0.7	-29.7	12.8	1.1	-91.3
Low- and lower-middle-income countries	7.5	6.1	-19.3	2.1	2.1	0.4	7.5	3.7	-51.0

Source: ESCAP calculations based on ITU, *World Telecommunication/ICT Indicators Database* (see figure).

3. Lack of quality broadband connectivity

13. Another dimension of broadband connectivity is its quality (speed and latency). In line with the challenges related to broadband access and affordability, challenges in providing quality broadband services are evident in low- and lower-middle-income countries in Asia and the Pacific. For instance, average upload/download speed for fixed broadband is three to five times higher in high-income countries than in low- and lower-middle-income countries, and around three times higher for mobile broadband.⁹ The average latency (time it takes to send information from one point to another in milliseconds) on fixed-broadband connectivity is almost twice as low in high-income countries as it is in low-income countries, at 35 milliseconds and 65 milliseconds, respectively. Average mobile-broadband latency is also twice

⁹ See ESCAP, “Estimating the effects of Internet Exchange Points on fixed-broadband speed and latency”, Asia-Pacific Information Superhighway (AP-IS) Working Paper Series (Bangkok, 2019).

as low in high-income countries as it is in low-income countries (58 milliseconds and 121 milliseconds, respectively).¹⁰

C. Areas for future regional cooperation

14. In light of the current divides that exist between Asia-Pacific subregions, as well as between economies in the region, there is a risk that the group of low- and lower-middle income economies could be further marginalized unless these divides are urgently addressed. New financial inclusion opportunities offered by fintech, e-commerce for broader engagement of small and medium-sized enterprises, and blockchain technology for reducing trade costs may be significantly limited if low-income and rural communities are not able to digitally connect to these emerging technology applications. In addition, a widening digital divide could risk further widening the socioeconomic gaps that already exist in Asia-Pacific low- and lower-middle income economies in years to come.

15. In response, the Commission adopted its resolution 75/7 on advancing the implementation of the Asia-Pacific Information Superhighway initiative through regional cooperation in 2019. This implementation is guided by the Master Plan for the Asia-Pacific Information Superhighway, 2019–2022,¹¹ the Asia-Pacific Information Superhighway Regional Cooperation Framework Document, 2019–2022,¹² and technical working groups set up at the request of member States.

16. Under strategic initiative 2 of the Master Plan, the establishment of a sufficient number of Internet exchange points at the national and subregional levels is prioritized to minimize transit costs and improve Internet speed. An Internet exchange point is a physical location where various Internet service providers connect to exchange Internet traffic with one another using copper or fibre-optic cables.¹³ The key role of an Internet exchange point is to coordinate and link all Internet traffic locally within a country (or a group of countries), thereby reducing transit costs of Internet traffic exchanged internationally, reducing the Internet traffic trombone effect and improving the quality access of domestic users through more direct connections to local and cached contents.

17. The majority of the international Internet traffic between Cambodia, the Lao People's Democratic Republic, Myanmar and Viet Nam is found to be exchanged on routes outside the region. According to an ESCAP study, there is a significant difference between the fastest and slowest download speeds among these four countries, at 50.1 megabits per second (Mbps) and 0.15 kilobits per second (Kbps), respectively.¹⁴ Therefore, the policy

¹⁰ See Economist Intelligence Unit, "The Inclusive Internet Index 2019: Executive Summary", 2019.

¹¹ ESCAP/75/INF/5.

¹² ESCAP/75/INF/6.

¹³ See Internet Society, *Collaborative Draft: The Internet Exchange Point Toolkit and Best Practices Guide – How to Maximize The Effectiveness of Independent Network Interconnection in Developing Regions and Emerging Markets* (2014). Available at www.ixptoolkit.org/wp-content/uploads/2016/08/Global-IXPToolkit_Collaborative-Draft_Feb-24.pdf.

¹⁴ ESCAP and National Information Society Agency, *Technical Report: A Pre-Feasibility Study on the Asia-Pacific Information Superhighway in the ASEAN Sub-region – Conceptualization, International Traffic and Quality Analysis, Network Topology Design and Implementation Model* (Bangkok, 2016).

recommendation emerging from the study is that a carrier-neutral Internet exchange point be established to facilitate the exchange of Internet traffic among these four South-East Asian countries. Accordingly, an expert working group meeting is planned for April 2020 to consider the next steps for implementation.

18. In the Pacific, few countries have established neutral Internet exchange points, including Australia, New Zealand and, more recently, Papua New Guinea. In addition, a national Internet exchange point was established in Fiji in 2017. In 2018, the Government of Vanuatu requested ESCAP to conduct a feasibility study on establishing a Pacific Internet exchange point. The secretariat collaborated with the Internet Society to conduct the study and found that a Pacific Internet exchange point is technically feasible and may be established in Fiji, New Zealand and Samoa. The main findings were shared at an expert working group meeting in December 2019, and experts recommended that an operational model of a Pacific Internet exchange point be developed. The secretariat was requested to conduct the follow-up study, and initial findings are expected to be available by the third quarter of 2020.¹⁵

19. Sharing fibre-optic cables along passive infrastructure, such as roads, railways and power grids, is one way of reducing investment costs and supporting the expansion of broadband infrastructure development. For example, according to an ESCAP study,¹⁶ co-deployment of ICT can save up to 30 per cent of government budget allocations for road maintenance costs through the implementation of a toll mechanism and public-private partnerships, subject to the availability of reliable ICT and fibre-optic cables. The Governments of Kyrgyzstan, Kazakhstan and Mongolia recommended that the secretariat prioritize capacity-building initiatives focused on enabling policy for cross-border co-deployment of ICT along passive infrastructures. Consequently, the secretariat is supporting them to deepen their understanding of various financing modalities and define the infrastructure investments they need in order to be disaster risk-informed and socially inclusive. In South Asia, ESCAP and the Asian Institute of Transport Development of India co-organized a subregional workshop on ICT co-deployment. In light of the practical examples of cross-border co-deployment shared at the workshop, experts identified the need for further dialogue to facilitate informed decisions in a mutually beneficial approach across the transport and ICT sectors and across borders.

III. Fintech for financial inclusion

A. Definition and state of play in the Asia-Pacific region

20. Fintech has the potential to empower traditionally marginalized people, especially the unbanked, and drive inclusive economic development. Fintech is technology that supports the delivery of financial services through digital means. While fintech start-ups and solutions are often seen as competing with the incumbent traditional banking system, some financial institutions have chosen to embrace fintech and embed fintech solutions in their core business models, thus becoming digitally transformed banks. Whether fintech competes with or complements traditional financial institutions, the Asia-Pacific region is a global leader in its adoption. Asia-Pacific countries hold the top three spots in the Ernst and Young Global FinTech Adoption Index 2019, with China

¹⁵ See www.unescap.org/sites/default/files/Conclusions%20and%20Recommendations_2.pdf.

¹⁶ ESCAP, *ICT Infrastructure Co-deployment with Transport and Energy infrastructure in North and Central Asia* (Bangkok, 2020).

(87 per cent), India (87 per cent) and the Russian Federation (82 per cent) as global leaders in consumer fintech adoption.¹⁷

21. While fintech has seen mass adoption in several markets in the Asia-Pacific region, emerging markets in the region are also beginning to actively adopt fintech solutions. This is due in part to enabling regulatory environments that promote innovation and to the emergence of “big tech” firms and subsidiaries in the region.¹⁸ The establishment of regulatory sandboxes is one policy example that has directly supported the growth of the fintech industry. Regulatory sandboxes allow for a new product, service, business model or delivery mechanism to be tested for a limited time and within a defined scope. At the same time, this allows the regulator to assess the risks associated with the product or service, such as client protection, impacts on financial stability or other impacts on the financial system as a whole. Asian markets have responded to such initiatives favourably, with a surge in new fintech start-ups and solutions across the region, including in countries with operational sandboxes such as Indonesia, Japan, the Philippines, the Russian Federation, Singapore and Thailand.

22. In emerging markets, fintech is offering innovative solutions to enhance financial inclusion and break down barriers facing last mile clients in accessing finance. These solutions are seen to bring a variety of benefits, both to the client and to the financial service providers themselves. For example, the use of alternative data sources allows financial service providers to curb lending risks through improved decision making while also lending to more clients who may have previously been rejected; the increase in available data also allows providers to better tailor products and services to clients more efficiently and at scale. Fintech solutions also allow for new ways of doing business, such as alternative collateral mechanisms, and new ways of raising capital, such as through peer-to-peer lending. One innovative example can be seen in an ESCAP-supported private sector initiative in Bangladesh called iFarmer, which is a digital agriculture crowdfunding platform allowing urban farm investors to provide capital to rural women cattle farmers.

B. Challenges

23. However, fintech is not necessarily a panacea for financial inclusion. Structural market, sociocultural and regulatory barriers all impact financial inclusion. Last mile clients can face a variety of challenges ranging from lack of energy services for charging digital devices, lack of interoperability of services, financial and digital illiteracy, difficulty of physically visiting the location of financial cash in/out points and lack of the required identification documents to open an account.

24. Sociocultural barriers such as ownership and control over a device or ability to leave the home to reach cash in/out points are also bottlenecks, particularly for women clients. Remaining challenges also include the cost of establishing agent banking networks and the additional cost of digitizing the poor, who may never have used financial services, let alone digital financial services.

¹⁷ www.ey.com/en_gl/ey-global-fintech-adoption-index.

¹⁸ Big tech firms are considered dominate companies in the information technology industry. For example, Ant Financial Services Group in China would be considered both a big tech and a fintech company.

25. As traditional economies transition to digital economies, there is a risk of leaving people behind. In addition, as cash is still king in many rural areas, mechanisms are needed to enable rural clients to access both cash and digital financial services and move towards a more inclusive financial market.

C. Areas for future regional cooperation

26. While the rise of fintech solutions in the Asia-Pacific region is tackling some bottlenecks, regulators and policymakers face a difficult balancing act in supporting the enhancement of financial innovations while ensuring client protection and financial stability. Some considerations for further discussion include the establishment of risk-based proportionate regulations, regulatory sandboxes and innovation offices within central banks.

27. Ensuring risk-based proportionate regulations based on the guidelines of the Financial Action Task Force and the Basel Committee on Banking Supervision would ensure that appropriate customer due diligence and know-your-customer requirements are in place. Given that many fintech solutions are moving towards an experience that is 100 per cent digital, particular consideration should be given to tiered know-your-customer and electronic know-your-customer requirements in jurisdictions that do not have such principles in place. This is also critical for the cross-border flow of funds.

28. The establishment of regulatory sandboxes can help to test and answer a variety of questions, such as the extent to which customers understand the risks associated with a given product, whether a given fintech company understands the financial risks and applies appropriate measures to safeguard client protection, and whether a given fintech solution undermines the financial stability of the country.

29. The establishment of innovation offices within central banks can further support the advancement of fintech while also informing regulation. Innovation offices serve as the communication point between industry and regulators.

IV. Blockchain technology for inclusive trade

A. Definition and state of play in the Asia-Pacific region

30. A blockchain is a distributed ledger technology on which blocks of data are chained and shared among connected computers. In a blockchain, records of transactions are shared and distributed among its users, or nodes, rather than managed by a centralized system. Advocates of blockchain technology claim its decentralized and distributed features make it a transaction solution that is almost tamper proof. Blockchain technology rose to notoriety with the cryptocurrency, bitcoin. However, blockchain technology and cryptocurrencies are not the same. Blockchain technology underpins cryptocurrencies and can be applied to numerous areas including international trade. A blockchain can be categorized as public or private, depending on the level of accessibility. While participation in a public blockchain is usually open to the public, as was the case with bitcoin, a private blockchain is managed by a certain entity or consortium and open only to users with pre-permission.

31. Recognizing the potential value of blockchain applications in international trade, several initiatives have emerged in the Asia-Pacific region and globally. In 2018, International Business Machines (IBM) and Maersk

launched a blockchain-based supply chain platform called TradeLens,¹⁹ in which several trade-related service providers and government agencies of countries in the region have participated. Several member States in the Asia-Pacific region have proactively launched blockchain initiatives to advance international trade. In 2020, the Infocomm Media Development Authority of Singapore launched an open-source blockchain trade platform with partners including the Development Bank of Singapore and the International Chamber of Commerce;²⁰ the Korea Customs Service has initiated the implementation of blockchain technology in customs clearance,²¹ including the exchange of electronic certificates of origin with other countries, on a pilot basis; and the Thai Customs Department has also initiated in the application of blockchain technology to improve its customs procedures.²²

B. Challenges

32. Blockchain technology can be applied to various international trade processes to potentially improve efficiency, security and connectivity, including trade finance, border procedures, shipping and logistics. For example, smart contracts, which are pre-programmed rules that are executed upon meeting pre-defined conditions, can automate transactions and greatly simplify trade procedures. Another example is the application of blockchain technology in trade finance, which can simplify the process and make trade inclusive by making trade finance more accessible to micro-, small and medium-sized, enterprises, which are usually at a disadvantage with regard to participating in international trade.

33. However, the realization of the full potential of blockchain technology does present challenges, including with regard to the scalability of public blockchains, potential security threats and the immutability of private blockchains, the technical interoperability of various blockchain platforms and the legal basis for the use of blockchain technology.

34. The issues of technical interoperability and legality have a direct bearing on cross-border trade when participants are located in distinct customs territories. The issue of interoperability arises from a concern that the growing number of national, regional and global blockchain initiatives are based on various blockchain platforms. When various initiatives are built on multiple platforms, they may not be able to communicate with one another, and this could potentially create a burden for the trading community, which would have to participate in several initiatives with multiple interfaces. The issue of legality involves instituting a legal basis for blockchain transactions, preferably

¹⁹ For more information, see www.tradelens.com/.

²⁰ See Infocomm Media Development Authority, “Convening alongside the annual World Economic Forum annual meeting in Davos, the International Chamber of Commerce (ICC), with 45 million institutional members in 130 countries, has joined the Singapore Government and a growing consortium of key industry partners to accelerate the digitalisation of global trade and commerce”, 22 January 2020.

²¹ See Korea Customs Service, “Korea’s customs’ approach on e-co data exchange”. Available at www.unescap.org/sites/default/files/1.2%20-%20Korea%20Customs%e2%80%99%20approach%20on%20E-CO%20Data%20Exchange.pdf (accessed on 21 January 2020).

²² See Thai Customs Department, “ASEAN single window and cross-border electronic data exchange”, Available at www.unescap.org/sites/default/files/1.4%20-%20ASEAN%20Single%20Window%20and%20Cross-border%20Electronic%20Data%20Exchange.pdf (accessed on 21 January 2020).

in all the countries where blockchain participants are located. Clarity on applicable jurisdictions, especially when a dispute arises, is also needed.

35. Another issue for consideration is ensuring the participation of all the stakeholders in blockchains, especially regulatory agencies. While it would still be valuable to process at least some portion of trade procedures using blockchain technology, the benefits would be limited if other processes were still being processed manually or using other mechanisms. For example, if an inspection agency is not participating in a blockchain initiative, while a customs authority is, not all the regulatory processes can be completed within the blockchain. Similarly, if an inspection agency in an importing country is not participating, while an inspection agency in an exporting country is, the inspection process cannot be completed digitally within the blockchain.

C. Areas for future regional cooperation

36. Blockchain technology has the potential to improve the efficiency of international trade and facilitate cross-border paperless trade in the region and beyond, and to make trade more inclusive.

37. Unlocking the potential of this technology involves certain considerations. First, an effort should be made to comprehensively assess policy, legal and technical issues in using blockchain technology for regional trade. The outcome of the assessment can provide a basis for designing regional cooperation measures.

38. Second, an effort should be made to take advantage of existing regional instruments in operationalizing blockchain-based cross-border trade in the region, in particular the Framework Agreement on Facilitation of Cross-border Paperless Trade in Asia and the Pacific.²³ The Framework Agreement provides an intergovernmental platform for countries in the region, facilitating the development of legal and technical solutions to enable cross-border paperless trade. Such solutions can help in addressing the interoperability and legal issues arising from blockchain technology and other digital technologies.

V. Inclusive e-commerce

A. Definition and state of play in the Asia-Pacific region

39. E-commerce generally refers to the production, advertising, sale and distribution of products by electronic means. E-commerce can occur within and between three basic participant groups: business, government and individuals. There are four main types of e-commerce, namely business-to-business, business-to-consumer, consumer-to-consumer and business-to-government. E-commerce can be domestic or cross-border according to whether the buyer and seller are located in the same country. The scope of cross-border e-commerce includes trade in both goods and services.

40. Globally, cross-border business-to-consumer sales by value of merchandise exports amounted to an estimated \$412 billion in 2017.²⁴ According to various studies, it is estimated that the gross market value of cross-border e-commerce will rise to almost \$1 trillion in 2020, while cross-

²³ E/ESCAP/RES/72/4, annex.

²⁴ See *Digital Economy Report 2019: Value Creation and Capture – Implications for Developing Countries* (United Nations publication, Sales No. E.19.II.D.17).

border business-to-consumer sales by value in the Asia-Pacific region are projected to account for nearly 50 per cent of global sales.²⁵

41. From the perspective of sellers in cross-border e-commerce, the top 10 merchandise export countries globally (measured by business-to-consumer sales) include three countries from the Asia-Pacific region, namely China, Japan and the Republic of Korea.²⁶ In total, the top 10 countries account for approximately 66 per cent of global cross-border business-to-consumer sales.

B. Challenges

1. Scant inclusion of small and medium-sized enterprises in cross-border e-commerce

42. Inclusive e-commerce, which promotes the participation of small firms in the digital economy, is particularly important for the achievement of the Sustainable Development Goals, as it can create new opportunities for traditionally excluded groups. However, various surveys show that in some developing countries in the Asia-Pacific region, only 2 to 10 per cent of small and medium-sized enterprises have utilized e-commerce, and the percentage is much lower when it comes to cross-border e-commerce.²⁷ Small and medium-sized enterprises and small shippers often have a limited capacity to understand the complicated rules in conducting cross-border e-commerce. For instance, small and medium-sized enterprises face the following issues in e-commerce customs clearance: (a) challenges in understanding harmonized system classifications and customs valuation; (b) requirements for importer registration that may not be user-friendly or may require complex documentation; and (c) onerous procedures to claim duties on re-exported (returned) goods, which are typical of e-commerce shipments.²⁸ Similarly, farmers have a very limited capacity to utilize domestic e-commerce, let alone cross-border e-commerce.

²⁵ See, for example, AliResearch and Accenture, “Global cross border B2C e-commerce market 2020: report highlights and methodology sharing”, available at https://unctad.org/meetings/en/Presentation/dtl_eweek2016_AlibabaResearch_en.pdf (accessed on 21 January 2020); and DHL Express, “The 21st century spice trade: a guide to the cross-border e-commerce opportunity, available at www.dhl.com/content/dam/downloads/g0/press/publication/g0_dhl_express_cross_b_order_ecommerce_21st_century_spice_trade.pdf (accessed on 21 January 2020).

²⁶ The other countries in the list are the United States of America, the United Kingdom of Great Britain and Northern Ireland, Germany, France, Canada, Italy and the Netherlands. For more information, see *Digital Economy Report 2019*.

²⁷ See *Information Economy Report 2015: Unlocking the Potential of E-Commerce for Developing Countries* (United Nations publication, Sales No. E.15.II.D.1).

²⁸ See Asian Trade Centre, “RCEP: facilitating trade for e-commerce”, Policy Brief, No. 17–01 (Singapore, 2017).

2. Lack of international treaties or national policies on cross-border e-commerce

43. At the global level, multilateral trade rules and commercial treaties between countries shape the rules of cross-border e-commerce. While the World Trade Organization (WTO) established the Work Programme on Electronic Commerce as early as 1998, negotiations under the auspices of WTO have not yielded concrete results or implementation. Therefore, 76 members of WTO, including 17 in Asia and the Pacific, issued a joint statement on 25 January 2019, confirming their intention to start negotiations on electronic commerce.²⁹

44. Cross-border e-commerce has found its way into regional trade agreements. As of February 2020, there were 88 enforced regional trade agreements that explicitly addressed e-commerce globally. Among these, there were 47 regional trade agreements with at least one party from the Asia-Pacific region.³⁰ The provisions on cross-border e-commerce remain highly heterogeneous, and evidence of the effectiveness of the implementation of the regional trade agreements is unclear.

45. At the national level, given the multi-sectoral nature of e-commerce, comprehensive policies on cross-border e-commerce are scarce in many countries in the region.

3. Traditional border management is suboptimal to support efficient cross-border e-commerce logistics

46. The large volume of cross-border e-commerce parcels is a challenge for many countries, where border agencies were set up before the birth of e-commerce and mainly dealt with traditional trade.

47. Setting up a de minimis threshold in a country, or a valuation ceiling for goods including documents and trade samples below which no duty or tax is charged and clearance procedures including data requirements are minimal, is a measure that would address the challenges of facilitation and compliance and achieve a balance between the costs of assessing and collecting customs duties, on the one hand, and sales taxes and revenues raised, on the other.

48. A few countries in the region, including Australia, Azerbaijan, New Zealand and the Russian Federation, have de minimis thresholds that are among the highest worldwide. In contrast, some other countries such as Bangladesh, India and Indonesia have very low de minimis thresholds.

²⁹ See WTO, “DG Azevêdo meets ministers in Davos: discussions focus on reform; progress on e-commerce”, 25 January 2019.

³⁰ See WTO Regional Trade Agreements Database at <https://rtais.wto.org/UI/PublicMaintainRTAHome.aspx>; Mark Wu, “Digital Trade-Related Provisions in Regional Trade Agreements: Existing Models and Lessons for the Multilateral Trade System” (Geneva, International Centre for Trade and Sustainable Development; and Washington, D.C., Inter-American Development Bank, 2017); and José-Antonio Monteiro and Robert Teh, “Provisions on electronic commerce in regional trade agreements”, WTO Working Paper, No. ERSD–2017–11 (Geneva, WTO, 2017).

C. Areas for future regional cooperation

49. To facilitate cross-border e-commerce logistics, it is crucial for customs and border-crossing agencies to provide essential support for small and medium-sized enterprises and small shippers to conduct business if they are to be included in the digital economy. Whenever appropriate, de minimis arrangements should be put in place to simplify import and export procedures. Furthermore, Governments should adopt international best practice, as recommended in the WTO Agreement on Trade Facilitation (especially the provisions on expedited shipments) and the Immediate Release Guidelines of the World Customs Organization.

50. As multilateral trade rules and commercial treaties will substantially shape the rules of cross-border e-commerce in the future, Governments in the Asia-Pacific region should actively participate in the discussions and negotiations. Furthermore, it is important for Governments in the region to review their readiness to adopt supranational rules and regulations related to cross-border e-commerce.

51. At the national level, Governments should consider setting up national policies to guide the development of cross-border e-commerce. As an example, China has been at the forefront of comprehensive policymaking on cross-border e-commerce and, since 2012, has promulgated 13 regulations and rules and 1 law related to e-commerce.

VI. Issues for consideration by the Commission

52. The Commission may wish to discuss issues raised in the present document, including the opportunities and challenges for utilizing specific technologies to develop inclusive digital economies, and share experiences and lessons learned with regard to creating more inclusive Internet connectivity and digital economies.

53. The Commission may also wish to consider and provide further guidance on the following issues:

- The policy priorities that should underpin inclusive Internet connectivity and digital economies addressed in the present document, such as infrastructure sharing and Internet traffic management.
- Regional cooperation priorities for deliberation and decision-making at the next session of the Committee on Information and Communications Technology and Science, Technology and Innovation, scheduled for September 2020.