



Economic and Social Council

Distr.: General
21 June 2022

Original: English

Economic and Social Commission for Asia and the Pacific

Committee on Information and Communications Technology,
Science, Technology and Innovation

Fourth session

Bangkok and online, 30 August–1 September 2022

Item 5 of the provisional agenda*

**Assessment of information and communications
technology capacity-building needs in Asia and the Pacific**

Assessment of information and communications technology capacity-building needs in Asia and the Pacific

Note by the secretariat

Summary

The Asian and Pacific Training Centre for Information and Communication Technology for Development was established in 2006 as a regional institute of the Economic and Social Commission for Asia and the Pacific (ESCAP) with a mandate to build and strengthen the capacity of members and associate members of ESCAP to leverage information and communications technology (ICT) for the purpose of socioeconomic development.

In 2020, an external evaluation of the Centre's programmes and operations recommended that the Centre reposition itself to support member States in navigating the digital era by empowering government efforts in carefully targeted thematic areas with the greatest potential to support the implementation of the 2030 Agenda for Sustainable Development and the localization of the Sustainable Development Goals. Towards that end, the evaluation recommended that the Centre should conduct an assessment of the ICT capacity-building needs in Asia and the Pacific. The assessment was intended to help the Centre to select thematic priority areas, create new flagship programmes, identify opportunities for greater collaboration with ESCAP member States and enhance relationships with existing regional and international organizations.

The present document contains information on the findings of the ICT capacity-building needs assessment in Asia and the Pacific. The research was conducted by LIRNEasia (a digital policy think tank active across Asia and the Pacific), on behalf the Centre, between September 2021 and March 2022.

* ESCAP/CICTSTI/2022/L.1.

I. Introduction

1. The present document contains information on the findings of the information and communications technology (ICT) capacity-building needs assessment in Asia and the Pacific. The review was conducted for the Asian and Pacific Training Centre for Information and Communication Technology for Development in response to the recommendation of an independent evaluation.

2. Based on the findings, the Centre will select thematic priority areas, create new flagship programmes, identify opportunities for greater collaboration with States members of the Economic and Social Commission for Asia and the Pacific (ESCAP) and enhance relationships with existing regional and international organizations.

II. Methodology

A. Data collection

3. The ICT landscape review and capacity-building needs assessment focused on 29 low-income and lower-middle-income countries in the region.¹

4. Three data collection approaches were used: (a) desk research, (b) a survey and (c) interviews with key informants. Desk research occurred throughout the research period. Sources included the websites of multilateral agencies, Governments, the private sector and civil society. The government websites of focal countries were searched first and then an open key-word search was conducted to identify relevant ICT policy-related documents. The total number of documents reviewed was 144 in focal countries and 34 in benchmark countries.² The scope of the review was limited to English-language publications.

5. An online survey was administered to representatives from government ministries and/or agencies of the 29 focal countries. The survey contained questions on their ICT-related strategies, priorities and capacity-building needs. A total of 33 key informant interviews were also conducted including with: (a) country, regional and international stakeholders; (b) ESCAP staff; (c) Governing Council members and other ESCAP members; (d) private sector representatives; (e) civil society representatives; and (f) academics.

B. Capacity-building framework

6. The assessment was conducted using a framework developed by the researchers to guide and provide structure to the data collection. In this framework, the overall economy is divided into five focus areas: digital government (making government efficient and focused on citizens); digital infrastructure; sectoral and thematic applications (ranging from agriculture to climate change and more); emerging technologies (a vast field that includes

¹ Low-income and lower-middle-income countries: Armenia; Bangladesh; Bhutan; Cambodia; Kiribati; Kyrgyzstan; Lao People's Democratic Republic; Micronesia (Federated States of); Mongolia; Myanmar; Nepal; Pakistan; Papua New Guinea; Philippines; Samoa; Solomon Islands; Sri Lanka; Tajikistan; Timor-Leste; Tonga; Uzbekistan; Vanuatu; and Viet Nam. Upper-middle income countries: Azerbaijan; Fiji; Maldives; and Thailand.

² For the full list of documents, see www.unapcict.org/node/2036.

artificial intelligence, Internet governance, user-generated content on platforms and many other areas); and empowerment of target groups.

Figure I
Capacity-building framework

		Focus area								
		Digital government	Digital infrastructure	Sectoral and thematic applications					Emerging technologies	Empowerment of target groups
				Agriculture	Education	Health care	Climate change	Etc.		
Capacity-building objectives	Developing policy capacity									Policy capacity that is not specific to a focus area – e.g. funding digital initiatives, institutional arrangements, intergovernmental coordination
	Developing technical capacity									Technical skills that are not limited to a focus area – e.g. project management, monitoring and evaluation, procurement, and other non-sector specific technical skills

7. The researchers assumed that training programmes were needed at two levels: at a policy level (to suit the needs of very senior policymakers) and at a technical level (to suit the needs of the mid-level government officials). Policy capacity is the ability to imagine the broad impacts of a digital technology on the economy or a sector of the economy, the challenges and opportunities it creates, and the necessary enabling environment (including which laws and/or policies are needed). Technical skills include operationalizing policies (for example, the technical skills to run a government cybersecurity monitoring centre) as well as broader technical skills such as project management and procurement.

8. In each of the focus areas, specific ICT-related topics have been identified (table 1).

Table 1
Focus areas and topics

<i>Focus area</i>	<i>Topic</i>
1. Digital government	<ol style="list-style-type: none"> 1. National policies related to the digital delivery of government services 2. National open data policies especially as they pertain to government data 3. Interoperability frameworks, policies regarding enterprise architecture for government 4. ICT and ICT-enabled procurement policies 5. Culture (creation of local content) 6. Rule of law and democracy 7. Digital governance (licensing, tariff, interconnections, peer-to-peer data sharing) 8. Other
2. Digital infrastructure	<ol style="list-style-type: none"> 1. Incentivizing and enabling infrastructure investment and rollout (e.g. fifth-generation (5G) wireless system network; national and international backhaul spectrum) 2. Stimulating meaningful access to broadband Internet services among the population 3. Cloud computing, data centres and supporting infrastructure 4. Digital data use, re-use and sharing and data management infrastructure 5. Key public infrastructure and other measures to enable trust/security in that infrastructure 6. Other
3. Sectoral and thematic applications	<ol style="list-style-type: none"> 1. ICT in agriculture, fishery, livestock 2. ICT in education 3. ICT in health care 4. ICT related to climate change, green ICT, disaster management 5. ICT for e-trade and supply chains, logistics, maritime transport 6. ICT for fintech 7. ICT for energy 8. ICT for tourism 9. Business operations, private-public partnership 10. Start-ups, innovation 11. Other
4. Emerging technologies	<ol style="list-style-type: none"> 1. Artificial intelligence 2. Internet of things 3. Blockchain 4. Cybersecurity – national level 5. Cybersecurity – individuals

<i>Focus area</i>	<i>Topic</i>
	6. Data protection/privacy
	7. Platform economy (competition, taxation, labour, content moderation, freelancing)
	8. Digital transactions and payments
	9. Governance of social media (including disinformation and misinformation, hate speech, utilizing social media to further governance)
	10. Other
5. Empowerment of target groups	1. ICT for improving efficiencies of small and medium-sized enterprises
	2. ICT to empower women, increase women's labour force participation, women entrepreneurs
	3. ICT to empower racial, ethnic, language minority groups
	4. ICT to empower indigenous communities
	5. ICT to empower persons with disabilities
	6. Other
Cross-cutting – policy level	1. Funding digital initiatives
	2. Institutional arrangements, intergovernmental coordination
Cross-cutting – technical level	1. Project management
	2. Monitoring and evaluation
	3. Procurement
	4. Change management
	5. Other technical skills

Abbreviation: ICT, information and communications technology.

III. Key findings

A. Information and communications technology policy environment review

9. The study examined the ICT policy environment in the region using the framework described in figure I and table 1. The key highlights of the survey and desk research are described in the following paragraphs.

10. Researchers found that all five focus areas (digital government, digital infrastructure, sectoral and thematic applications, emerging technologies and empowerment of target groups) were covered in member States' national policy documents. In those policy documents, emerging technologies was mentioned the most while empowerment of target groups was mentioned the least.

11. **Digital government.** In this area, 75 per cent of the countries had national policies related to the digital delivery of government services as well as interoperability frameworks and policies regarding enterprise architecture for government (including other technical aspects of e-government), while 58 per cent of the countries were in the process of drafting or did not have national policy documents on open data.

12. **Digital infrastructure.** Most of the countries did not have policies on incentivizing/enabling infrastructure investment and rollout (e.g. fifth-generation (5G) wireless system network; national and international backhaul spectrum) or digital data use, re-use and sharing and data management infrastructure. More than half of the countries had policies related to cloud computing, data centres and supporting infrastructure.

13. **Sectoral and thematic applications.** More than half of the countries had policies on ICT and education and half had policies on ICT and health care, but 75 per cent were in the process of drafting or did not have documented policies on ICT and agriculture or ICT for e-trade and supply chains.

14. **Emerging technologies.** In this area, 83 per cent of the countries had one or more policy documents related to cybersecurity and data protection/privacy. With regard to blockchain and platform economy (competition, taxation, labour and content moderation), 83 per cent of the countries were in the process of drafting or did not have related national policy documents.

15. **Empowerment of target groups.** In this category, only 33 per cent of the countries had policies related to leveraging ICT to empower racial, ethnic, language minority groups and persons with disabilities. Half of the countries had policies on ICT for improving efficiencies in small and medium-sized enterprises.

16. Key informant interviews conducted by the researchers revealed several obstacles countries faced with regard to implementing ICT-related policies in the region. Obstacles included (a) the lack of skills to develop legal and regulatory frameworks, (b) low engagement of academics in ICT policy formulation in developing countries, (c) the lack of coherent policies across ministries and (d) the lack of attention to implementation.

17. Table 2 contains a summary of the main findings of the ICT policy environment assessment.

Table 2
Summary of findings of the information and communications technology assessment

	<i>Digital government</i>	<i>Digital infrastructure</i>	<i>Sectoral and thematic applications</i>	<i>Emerging technologies</i>	<i>Empowerment of target groups</i>
Most popular policy areas (based on survey and desk review)	National e-government policies related to the digital delivery of government services are available in most of the countries	Stimulating meaningful access to broadband Internet services among the population Key public infrastructure and other measures to enable trust/security that infrastructure Cloud computing, data centres and supporting infrastructure	ICT and education ICT and health care	Cybersecurity	ICT to empower women, increase women's labour-force participation, women entrepreneurs
Least popular policy areas (based on survey and desk review)	National open data policies	Incentivizing and enabling infrastructure investment and rollout (e.g. fifth-generation (5G) wireless system network, national and international backhaul spectrum) Digital data use, re-use and sharing, and data-management infrastructure	ICT in agriculture, fishery, livestock ICT for e-trade and supply chains	Platform economy (competition, taxation, labour, content moderation, freelancing) Blockchain	ICT to empower racial, ethnic, language minority groups

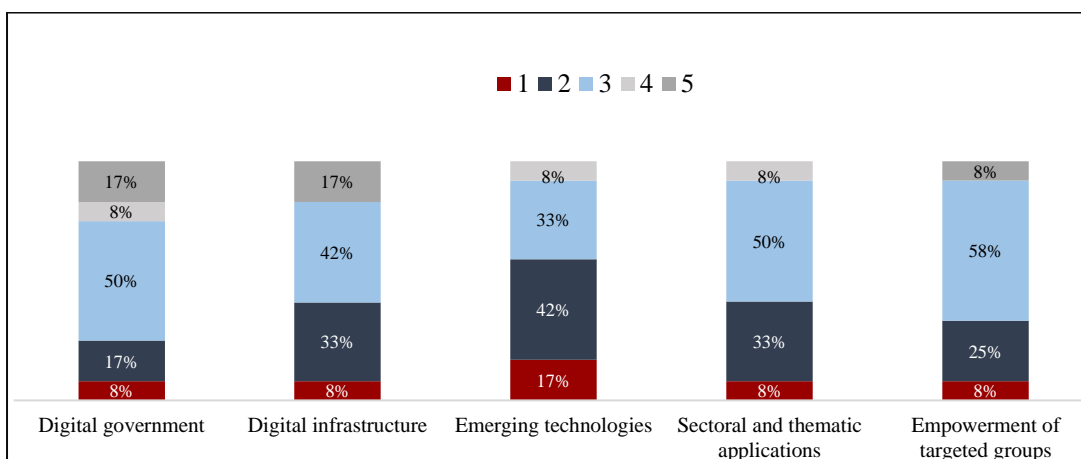
Abbreviation: ICT, information and communications technology.

B. Information and communications technology capacity-building needs

18. This section provides an overview of the key findings on the ICT capacity-building needs in government, based on the survey and desk research.

19. The greatest needs were found in the area of emerging technologies; 59 per cent of the countries indicated that their middle- and high-level policymakers had very low to low capacity on emerging technologies. Furthermore, not a single country indicated that their policymakers had a high level of capacity when it came to emerging technologies (figure II).

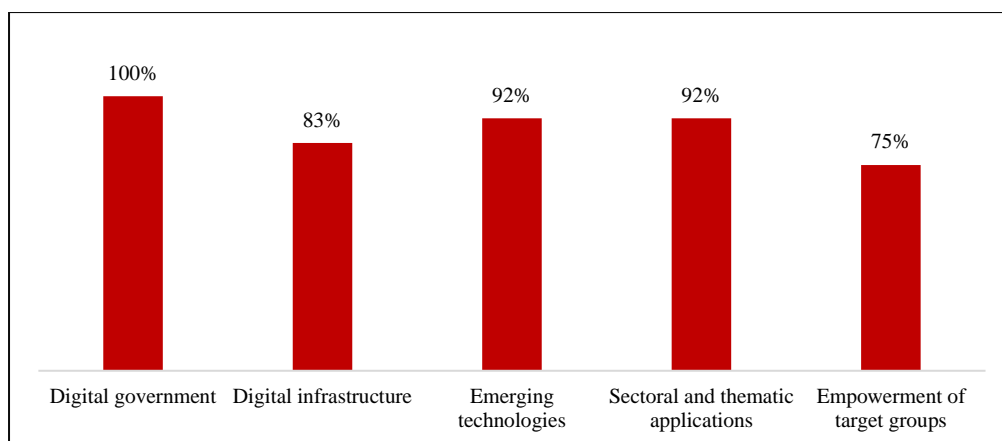
Figure II
Capacity level of mid- and high-level government policymakers



Notes: 1 = very low capacity. 2 = low capacity, in other words only among a handful of people or institutions. 3 = some capacity exists, in other words, capacity is reasonably spread across government institutions that need it. Updating policies or designing new policies require external/new technical assistance. 4 = sufficient capacity spread across a relatively high percentage of the policymakers that need it. Updating or designing new policies require minor (outside) technical assistance; most policies can be designed and implemented by the institutions. 5 = very high levels of capacity across the relevant institutions. Sufficient to meet the challenges of a digital economy.

20. The survey looked into whether Governments were addressing ICT capacity-building in their national documents related to each focus area. All countries (100 per cent of surveyed countries) indicated that ICT capacity-building needs were being addressed in national documents related to digital government, and 75 per cent of the countries had national documents that addressed capacity-building needs related to using ICT for empowerment of target groups (figure III).

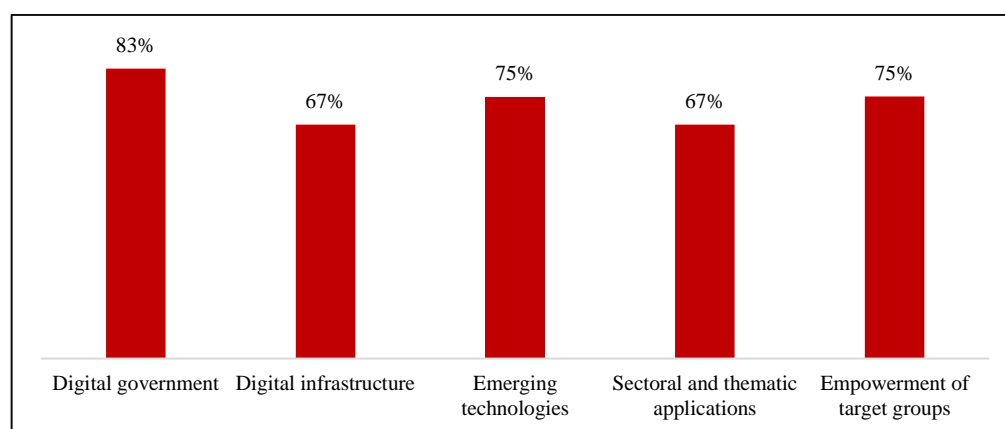
Figure III
Percentage of countries with information and communications technology capacity-building addressed in their national documents, by focus area



21. The survey also gathered data about ICT capacity-building programmes conducted for middle and senior level government employees or high-level policymakers in the past four years. Those programmes could include programmes organized by government ministries and/or agencies and/or non-governmental entities such as academia, the private sector or civil society. The majority of the countries (83 per cent) conducted programmes on digital government; fewer countries (67 per cent) conducted capacity-building programmes related to digital infrastructure or sectoral and thematic applications (figure IV).

Figure IV

Percentage of countries that conducted capacity-building programmes for policymakers in the last four years, by focus area



22. During key informant interviews, respondents explained some of the challenges with regard to addressing the ICT capacity-building needs of government policymakers. For example, older government officials are resistant to the digital transformation of government services. Such situations were described by respondents from Armenia, Nepal, Solomon Islands and Sri Lanka. Meanwhile, higher-level government officials have low levels of knowledge regarding digital technology developments. Further, most of the skill gaps are at the regulatory level, not the policy level (for example, on spectrum auctions). According to the key informants, government officials also need to improve their skills to use monitoring and evaluation tools. Even though government officials gain skills through training programmes organized by various external parties, such skills are difficult to utilize as the government priorities are different.

23. Table 3 provides a summary of the most common and least common topics for ICT capacity-building for government officials, based on the survey and desk research.

Table 3
Summary of capacity-building topics for government officials

	<i>Digital government</i>	<i>Digital infrastructure</i>	<i>Sectoral and thematic applications</i>	<i>Emerging technologies</i>	<i>Empowerment of target groups</i>
Most common capacity-building needs currently addressed in national documents	National e-government policies related to service delivery	Incentivizing and enabling infrastructure investment and rollout (e.g. fifth-generation (5G) wireless system network, national and international backhaul spectrum) Stimulating meaningful access to broadband Internet services among the population Cloud computing, data centres and supporting infrastructure	ICT and education ICT and health care	Data protection/privacy	ICT to empower women, increase women’s labour-force participation, women entrepreneurs
Topics not commonly addressed in national documents	ICT and ICT-enabled procurements	Digital data use, re-use and sharing and data-management infrastructure	ICT for e-trade and supply chains	Blockchain Artificial intelligence	ICT to empower racial, ethnic, language minority groups

Abbreviations: ICT, information and communications technology.

C. Prioritizing topics for the Centre’s information and communications technology capacity-building programmes

24. One of the main aims of the ICT capacity-building needs assessment was to guide the Asian and Pacific Training Centre for Information and Communication Technology for Development in identifying priority areas or topics for which new capacity-building programmes can be developed in the future. As shown in table 1, there are numerous topics on ICT capacity-building (36 topics under the five focus areas) that may be covered by the Centre in its work. Given the Centre’s limited resources to support programme development, it is necessary to prioritize the topics based on the demand from member States.

25. To identify and prioritize topics for capacity-building, the researchers examined four indicators gathered from the survey and desk research. These indicators (table 4) take into account expressed demand (as indicated/expressed by responses to specific survey questions answered by respondents) as well as implied demand (as indicated by the existence of policy documents on the particular topic).

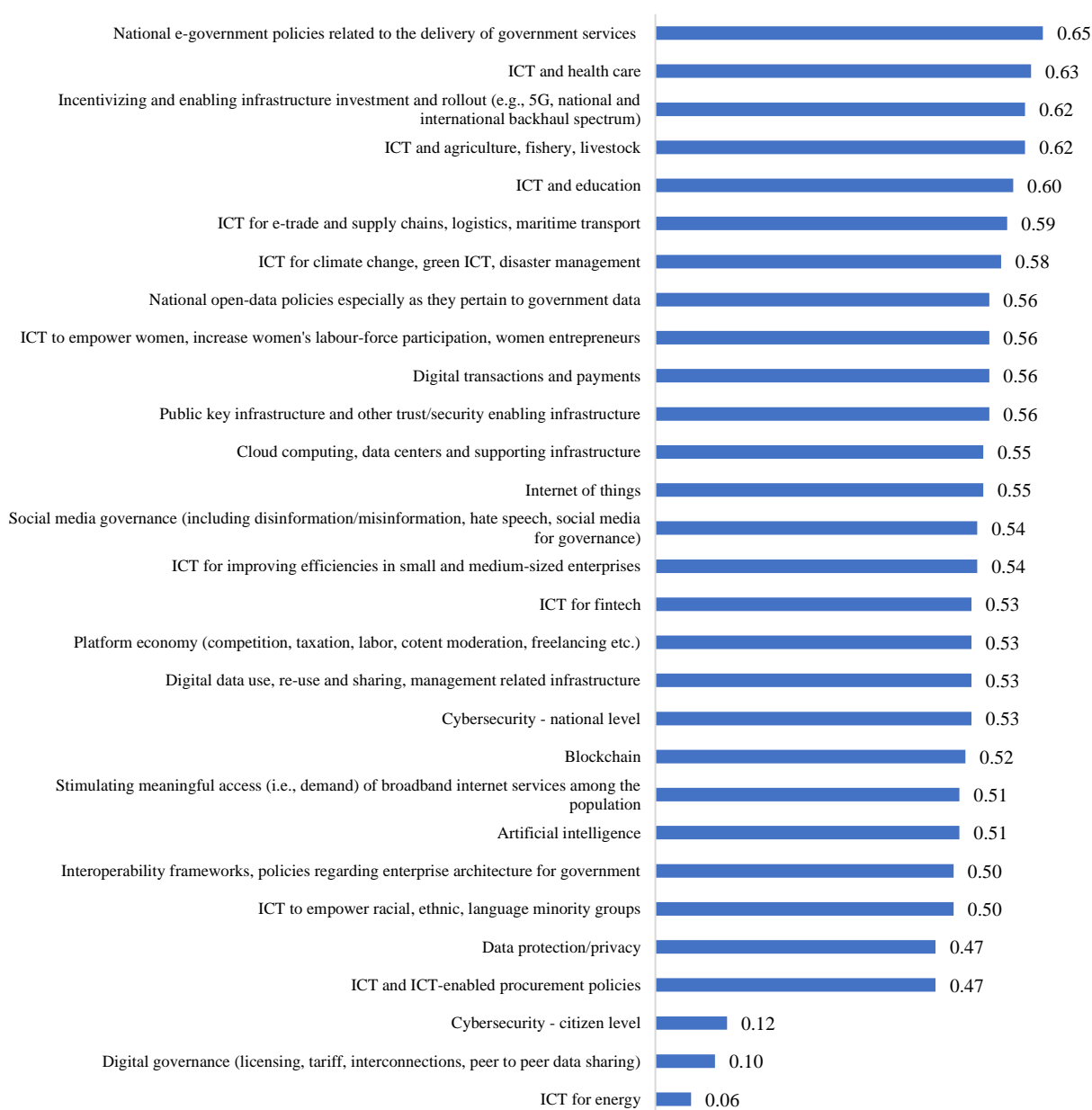
Table 4
Selected indicators used to identify priority topics for capacity-building

<i>Data gathering method</i>	<i>Specific indicator</i>
Survey responses	Question: Within the focus area, what are your training priorities for the next five years? Select all applicable topics.
Survey responses	Question: Does your country have one or more national documents (e.g. laws, policies, strategies, road maps or frameworks) or do you anticipate that your country will have, in the next two to five years, a national document that provides a path for development in the following area/topic? Yes, No, Coming in the future
Desk review	Data: Percentage of countries which mentioned the topic in policy documents.
Survey responses and desk research	Question: Does the document you mentioned or any other national/local government human resource document address information and communications technology capacity-building?

26. By taking into consideration all four indicators (i.e. equal weight applied to each indicator), a list of priority topics can be determined for the Centre's future programmes. The topics include the following: (a) national e-government policies related to service delivery; (b) ICT and health care; (c) incentivizing and enabling infrastructure investment and rollout (e.g. 5G wireless network, national and international backhaul spectrum); (d) ICT for agriculture, fishery and livestock; (e) ICT and education; (f) ICT for e-trade and supply chain, logistics and maritime transport; (g) ICT and climate change, green ICT and disaster management; (h) key public digital infrastructure and other measures to enable trust/security in that infrastructure; (i) digital transactions and payments; and (j) ICT for women's empowerment and women entrepreneurs and to increase women's labour-force participation (figure V).

27. Figure V shows a more comprehensive list of prioritized topics for capacity-building.

Figure V
Prioritized topics for capacity-building



IV. Issues for consideration by the Committee

28. The assessment of ICT capacity-building needs in the region was conducted to provide guidance to the Asian and Pacific Training Centre for Information and Communication Technology for Development in developing its programme of work. Given the importance of this exercise, the Committee on Information and Communications Technology, Science, Technology and Innovation may wish to take the following actions:

(a) Provide further guidance and identify existing and emerging capacity-building needs of policymakers and civil servants in the region with respect to leveraging digital technologies for sustainable development;

(b) Highlight good practices and lessons learned with regard to the effective application of digital technologies for sustainable development across the region that can be reflected in the Centre's work;

(c) Provide guidance on impactful and demand-driven ICT capacity-building programmes that should be developed by the Centre in the future.