BENEFITING FROM THE DIGITAL ECONOMY

Cambodia Policy Note

WORLD BANK GROUP

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July 2018

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Foreword

Thanks to rapid and sustained growth, Cambodia has become one of the world's leaders in poverty reduction and shared prosperity. Cambodia's success so far has ridden on openness to trade and investment, preferential trade treatment, and an abundance of low-skilled, low-cost labor. This facilitated the establishment of an export-oriented and foreign-owned garment sector, which—together with tourism, agriculture, and construction—has been driving growth over the past two decades.

Several factors suggest that Cambodia will not be able to rely on its current drivers of growth going forward. With the country becoming more prosperous, it is receiving less generous donor financing, and preferential trade treatment is expected to phase out eventually. At the same time, rising wages are making it increasingly difficult for Cambodia to keep exporting unprocessed rice and low-end garments. Meanwhile, around the globe, automation is displacing jobs, and digital technologies are transforming certain sectors. Coinciding with the possibility of diminished economic prospects are the rising expectations of Cambodian citizens, fueled by the rapid spread of information through mobile phones, the internet, and social media.

In light of these factors, Cambodia's current drivers of growth need to be diversified. While the country's economic outlook remains positive, Cambodia could begin to explore new drivers of growth that will create jobs and boost prosperity over the next 20 years. The country's next economic transformation will rest on its ability to empower domestic entrepreneurs and citizens with capabilities and tools for the modern economy of tomorrow.

Drawing from the knowledge gaps identified in the *Cambodia Systematic Country Diagnostic*, the *Cambodia Policy Notes* assess four relatively under-analyzed policy areas: Entrepreneurship and Innovation, Digital Economy, Microfinance and Household Welfare, and Social Assistance. These topics are interrelated and will be crucial for catalyzing or complementing reforms in traditional sectors. For example, digital platforms are expected to play a key role in enabling local entrepreneurs to participate in global value chains more effectively. Financial technology (fintech) can provide expanded access to finance for both enterprises and individuals as well as facilitate the growth of e-commerce. Social assistance could help mitigate shocks for households and contribute to building a stronger human capital base to take advantage of new opportunities and safeguard the impressive economic gains of the last two decades.

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Acknowledgements

Digital Economy

Key Messages

- **While mobile penetration in Cambodia has surged in recent years, internet subscriptions remain low.** Fixed-broadband subscriptions, at 0.6 per 100 inhabitants in 2016, were well below regional and global averages, and most mobile broadband subscriptions operate in 2G and 3G services since 4G coverage remains limited.

- **Digital adoption at the firm level also remains low.** Fewer than one-quarter of businesses had a web presence in 2017, well below the world median of 46 percent. Cambodia also has a very low number of secure servers per million people. In addition, the limited uptake of digital financial services, lack of IT skills, and incomplete legal framework are likely to constrain the development of Cambodia's digital economy.

- **Digital government is incipient, and efforts are siloed and fragmented.** In a global comparison, Cambodia falls in the second quintile for online provision of government services. Several institutions are involved in digital government development, with no clear leadership. Despite the recent establishment of a Government Data Center, Cambodia does not have a guiding framework and lacks security standards for websites and cloud services.

- **For Cambodia to benefit from the digital economy, it needs not only to invest in infrastructure but also to develop complementary regulations, skills, and institutions.** Priority areas to facilitate digital development include: (i) closing the digital gap by enhancing spectrum reallocation and mandating passive infrastructure sharing among telecom operators; (ii) elaborating a Digital Skills Readiness Strategy; (iii) adopting laws in e-commerce, cybersecurity, and data protection and privacy; and (iv) aligning efforts toward implementation of the Digital Government Strategy.

Introduction

Following two decades of stellar growth and poverty reduction, Cambodia's next wave of growth is expected to come from increasing value added as well as nurturing new sectors such as the digital economy. Over the past two decades, facilitated by preferential trade treatment and strong foreign direct investment inflows, growth and job creation have taken place in activities with relatively limited value added, such as garment manufacturing, rice cropping, and construction. Now as a lower-middle income economy and in the context of rapidly increasing wages against stagnant productivity and rising external competition, Cambodia will need to develop new sources of growth. In particular, technological adoption by economic actors could play a critical role in boosting productivity and diversifying the economy.

In recent years, the Cambodian authorities have issued several policy documents related to digital development. Overall, the objectives and high-level program goals are generally consistent with international good practice and envisage partnerships between the Government and private sector at multiple levels. The Rectangular Strategy Phase III 2013-2018 highlights the need to further develop e-Government and encourage the private sector to invest in technology. This was followed in 2014 by the approval of the Cambodia ICT Master Plan 2020—which aims to improve ICT industry and human resources development, internet connectivity, cybersecurity, and government e-services—and in 2016 by the Telecoms and ICT Policy—which outlines policy measures and associated targets to expand ICT infrastructure and develop ICT human capacity. In addition, the Cambodia e-Government Master Plan 2017-2022 has been drafted, although not yet adopted. The draft outlines programs to provide quality information and digital services, in collaboration with prospective beneficiaries; connect with people on public policies and decisions, in particular through social media; and increase government efficiency by establishing basic foundations for digital government (e.g., cloud, enterprise architecture, intensive staff capacity building) and a government portal on which ministries can host their services.

Numerous institutions across the Government are tasked with implementing these policies and strategies. These agencies include: Ministry of Economy and Finance (MEF), Ministry of Post and Telecommunications (MPTC), Ministry of Commerce (MOC), Ministry of Information (MOI), and Council for the Development of Cambodia (CDC). A working committee on Digital Economy has also been established. While digital development is identified as a Government priority, an important next step would be a systematic assessment of potential economic and social benefits, review of the status of the measures proposed in these plans, and evaluation of any impacts they may have had to date.

This policy note responds to a request from the Royal Government of Cambodia for the World Bank to assess the current state of Cambodia's digital economy and identify policies to develop it further. Firms and individuals need to prepare to face technological disruptions such as robotization, which are likely to affect the nature of production processes and jobs, even as they open new opportunities and markets. This policy note applies the analytical framework presented in the World Bank's *World Development Report 2016: Digital Dividends* to identify challenges and suitable policy options, and it is intended to inform the preparation of the upcoming Rectangular Strategy Phase IV (2018-2023).[1]

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1   World Bank Group, 2016.

Context and Main Challenges

Cambodia has made substantial progress in delivery of basic digital infrastructure, but provision of next-generation services is limited

Cambodians have embraced mobile technologies, with a dramatic increase in subscriptions over the past decade. With very little infrastructure remaining after the civil conflict, Cambodia bypassed rebuilding the fixed-line market and quickly launched into alternative technologies, jumpstarting its telecommunications infrastructure with mobile phones. Mobile cellular subscriptions in Cambodia increased from less than 10 per 100 inhabitants in 2005 to 125 as of 2016, above the ASEAN average (Figure 1, left panel), although less than half of the subscriptions are estimated to be currently active. In contrast, fixed-broadband subscriptions, at 0.6 per 100 inhabitants in 2016, were well below the regional and global averages (Figure 1, right panel).

Although basic digital infrastructure is in place, its speed, quality, and capacity must be increased to meet the demands of the digital economy. Most mobile broadband subscriptions operate in 2G and 3G services since 4G coverage remains limited. At 50 percent of the population, LTE/WiMAX coverage, bandwidth per internet user, and other indicators remain below regional and global averages (Table 1). Low fixed-broadband adoption in Cambodia may be due to a combination of factors, including limited availability of optical fiber in rural areas, the low number of households with a computer, and the relatively low price of mobile-broadband internet compared to fixed-broadband internet.

Despite significant progress in recent years, Cambodia still has a long way to go in digital adoption and technological readiness. The nature, pace, and extent of digital development will be determined by a combination of technical and non-technical factors, such as regulations, skills, and institutions (the so-called "analogue complements"). According to the World Bank´s Digital Adoption Index which measures the global spread of technology among people, businesses, and governments, Cambodia is currently at the lower end of the regional scale in the East Asia and Pacific (EAP) region, particularly with regard to adoption by businesses and government (Figure 2).

Figure 1. Mobile access is high, and mobile broadband has improved, but fixed broadband remains low
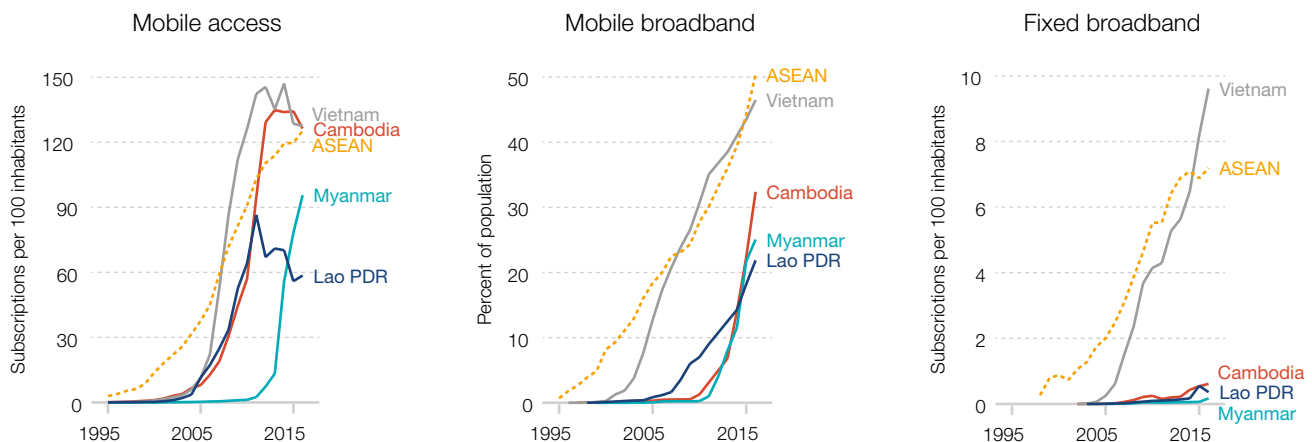
Source: ITU, 2017.

Table 1. Cambodia underperforms on several measures of digital development compared to regional and global averages

Performance		Cambodia	Asia & Pacific	World
Above average	Mobile-cellular subscriptions (per 100 inhabitants)	124.9	98.9	101.5
	Mobile-broadband prices 500 MB (% of GNI per capita)	1.1	2.7	3.7
	Mobile-broadband prices 1 GB (% of GNI per capita)	2.2	5.4	6.8
Average	Active mobile-broadband subscriptions (per 100 inhab.)	50.2	47.4	52.2
	3G coverage (% of population)	80.0	87.6	85.0
	Fixed-broadband prices (% of GNI per capita)	13.5	14.5	13.9
Below average	Fixed-broadband subscriptions (per 100 inhab.)	0.6	11.3	12.4
	LTE/WiMAX coverage (% of population)	50.0	73.6	66.5
	Mobile-cellular prices (% of GNI per capita)	7.7	3.2	5.2
	Households with computer (%)	10.5	37.8	46.6
	Households with internet access (%)	26.0	45.5	51.5
	International internet bandwidth per internet user (kbit/s)	23.6	48.0	74.5

Source: ITU, 2017.

Figure 2. Digital adoption in Cambodia remains low, especially for businesses and government

Digital Adoption Index (and sub-indexes), relative to global average
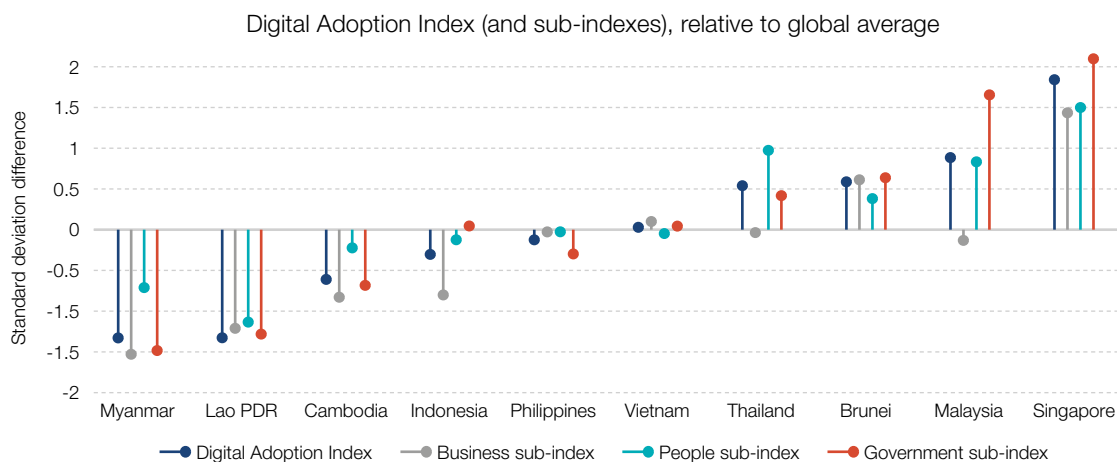
Source: World Bank, 2018.

While digital adoption by people has surged in recent years, internet penetration remains low. As mentioned above, the expansion of fixed-line internet services in Cambodia has been largely overshadowed by the strong focus on mobile services. Cambodia currently has one of the lowest fixed internet broadband penetration rates in the region. While the number of internet users has increased in recent years to reach approximately one-quarter of the population, digital literacy remains low. Anecdotal evidence suggests that many users navigate exclusively through Facebook and are unlikely to fully exploit the potential of the World Wide Web.

Digital adoption by firms is constrained by challenges in accessing financial services as well as by lack of skilled staff and an adequate legal framework

Little quantitative information is available on the actual size and scope of Cambodia's digital economy today. The extent and composition of Cambodia's digital economy has not yet been mapped. E-commerce platforms are available, including Alibaba, and locally based services for food delivery and ride-hailing apps like PassAPP are increasingly popular. Social media influencers and new payment platforms are also emerging in Cambodia, particularly in Phnom Penh. However, no systematic information is available on the size of these emerging sectors and the employment generated.

Digital adoption at the firm level appears to be lagging other countries. Fewer than one-quarter of businesses had a web presence in 2017, well below the world median of 46 percent. Cambodia also has a very low number of secure servers per million people (Figure 3).

Figure 3. Digital adoption by firms remains significantly below the median for the world
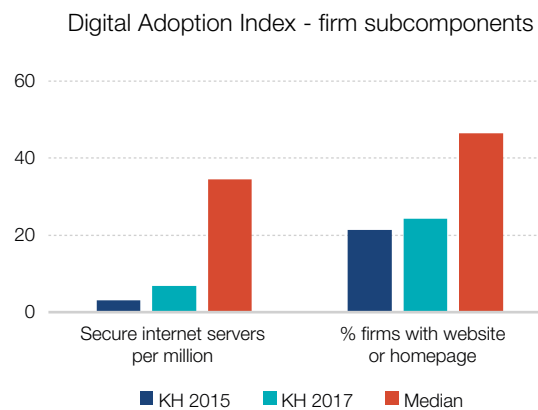
Digital Adoption Index - firm subcomponents

■ KH 2015   ■ KH 2017   ■ Median

Note: The global median refers to both 2015 and 2017.
Source: World Bank, 2018.

The limited uptake of digital financial services in Cambodia is likely to constrain the development of the digital economy. In 2016, only 1 percent of adults in Cambodia used a mobile phone or the internet to access an account at a financial institution—the lowest rate in the world, according to the World Bank´s Global Findex (Figure 4, left panel). Around 16 percent of Cambodians made a digital payment in 2016 using payment platforms like PiPay, which is still well below the EAP average of 58 percent. Cambodia´s lack of a guiding framework for developing digital financial services and digital payment services is a root cause for the low uptake. While some financial institutions have introduced mobile services, authorization is granted on a case-by-case basis due to the lack of transparent guidelines, which will likely delay the introduction of digital financial services by other operators. In addition, Cambodia does not have a National Payment System, which limits exchange among domestic operators.[2]

Another challenge is the lack of a workforce with sufficient IT skills. According to Digital Rain, two-thirds of businesses in the IT sector reported being unable

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2   Some of these aspects are discussed in more detail in a companion Policy Note on Microfinance and Household Welfare. Access to finance, particularly for tech entrepreneurs, is also a significant challenge and is discussed in greater detail in a companion Policy Note on Entrepreneurship and Innovation. The Government has flagged this area as a priority and has established a Capacity Building and Research Fund (USD 8-10 million per year, sourced from a one percent tax on gross revenues of telecom services providers), but issues include governance, eligibility, monitoring and evaluation of firms, and how to meet the demand for technical assistance for participating firms.

Figure 4. Cambodia has been lagging in the use of digital payments

Used a mobile phone or the internet to access a financial institution account in the past year (% age 15+)

% of adults who made or received digital payments in the past year

Source: World Bank Global Findex, 2017; Mastercard e-wallet survey, 2016.
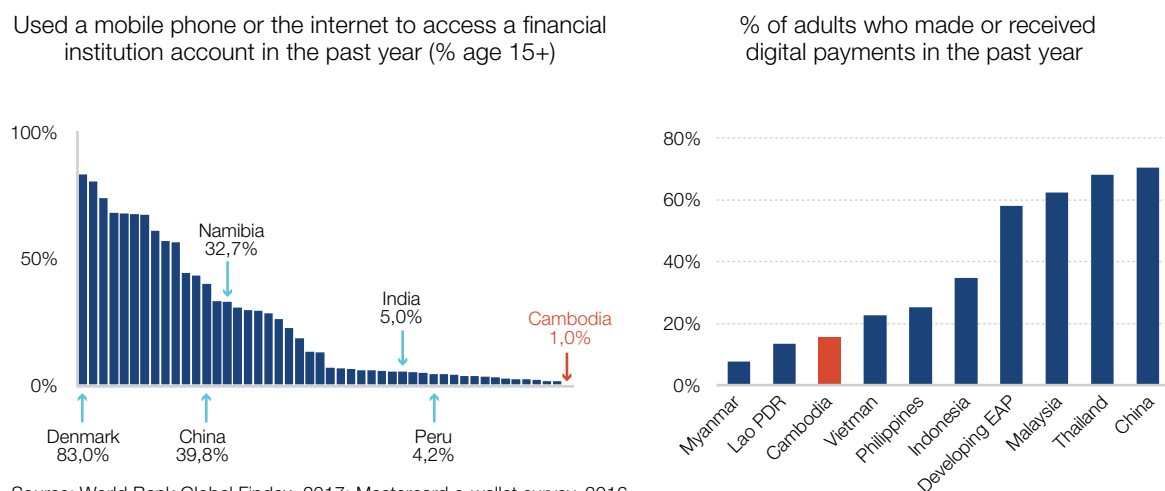
Table 2. Cambodia does not have a supportive legal framework for the digital economy

Status of the legal framework related to the digital economy, by topic			
	e-transactions and e-signature	data protection and privacy	consumer protection	cybercrime prevention
Brunei D.	Yes	No	Yes	Yes
Cambodia	Draft	No	Draft	Draft
Indonesia	Yes	Yes	Yes	Yes
Lao PDR	Yes	No	No	Yes
Malaysia	Yes	Yes	Yes	Yes
Myanmar	Yes	No	Yes	Yes
Philippines	Yes	Yes	Yes	Yes
Singapore	Yes	Yes	Yes	Yes
Thailand	Yes	Yes	Yes	Yes
Vietnam	Yes	Yes	Yes	Yes

Source: World Bank staff elaboration in discussion with authorities.

to hire staff with adequate IT skills.[3] The short supply of qualified employees at the senior and managerial level results in very high remuneration packages, which jeopardizes the potential to promote Cambodia as a new international outsourcing location for IT services. Moreover, most large firms in the sector reportedly prefer to hire individuals with soft skills and provide training in IT skills, which is not feasible for startups that do not have the resources to provide extensive training. Instead, they rely on the few experienced programmers who can work independently. This problem is compounded by low employee retention rates in the sector.

3   Markova and Wray, 2016.

Finally, digital adoption by firms is also constrained by the lack of a supportive legal framework for e-transactions, data protection and privacy, consumer protection for online purchases, and cybercrime prevention. Cambodia´s incomplete legal and regulatory framework for e-transactions hurts consumer trust in digital services. In January 2018, the government issued a Decree on Digital Signatures, but the draft e-commerce and cybersecurity laws have not yet been adopted, and data protection and privacy issues have not been addressed (Table 2).

Digital government remains fragmented

The current state of digital government is largely siloed and fragmented. Two government-wide e-government programs have been attempted in Cambodia, with mixed results. At present, Cambodia does not have a unified national government portal. Instead, there are approximately 60 websites, all developed independently without reference to standards for user interface, look-and-feel, development approach, technical platform, or security. The result is a variety of user interface styles, many of which resemble earlier generations of website design. The typical government website is simple and focused on providing information. Although most have at least partial dual-language support for English, most of the content is in Khmer only. There are also no standards for website security. The Ministry of Posts and Telecom (MPTC) is using part of the Capacity Building and Research Fund (financed by a 1 percent levy on the net revenues of telecom companies) to develop a Lab that will focus on website development, hosting, and standardization. Globally, Cambodia falls in the second quintile for online provision of government services according to UNDESA's Online Service Index.

The MPTC has established a National Data Center, but it is unclear whether it will be able to reduce fragmentation among agencies. The National Data Center hosts the government email platform, a Content Management System, and some agency websites.

However, it is unclear whether MPTC has the capacity to provide large-scale data center services at a sufficient level. Other agencies are investing in their own data centers, and several use private cloud services for data storage. For example, the MEF is developing multiple data centers to support the Financial Management Information System as well as tax applications. Cambodia does not have an overall government data center or cloud services policy framework.

Some online services are available to citizens and businesses. The most mature of these services is the business registration process on the Ministry of Commerce website. The process can be completed entirely online, including payment.[4] Another end-to-end process available online is the issuance of single-entry tourist visas. Visitors can apply for the visa online and pay with a credit card. The approval letter is emailed to the recipient, who can then present the letter upon entry into Cambodia.

While tax registration and payment can be performed online to some degree, taxes cannot be filed electronically. Registration can be partially completed online, but the taxpayer still needs to visit the General Department of Taxation (GDT) to complete the process. An e-payment service is available but is limited to specific banks, and the service is only available to customers of specific ISPs: EZECOM and CellCard. E-customs is transactional but not connected with other systems.

The absence of a centralized multilateral payments platform linking all banks and billers is a key constraint to more versatile online services delivery by government and private companies. While power bills in urban areas and water bills in Phnom Penh can be paid online, this service is only available through certain bank channels (e.g., ABA Bank) and third-party payment facilities (Wing). The government and private companies could provide many more services online if a centralized multi-lateral payments platform linking all banks and billers could be developed.

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4   Payment can be made offline, but the receipt must be physically submitted before registration can be completed.

Several institutions are involved in digital government development. The Department of E-government in MPTC's General Department of ICT provides technical direction to implement the government's agenda by supporting the efforts of an Inter-Ministry Technical Working Group—the platform for interagency technical collaboration that helped develop the draft E-Government Master Plan.[5] The Ministry of Interior is responsible for policies and regulations related to identification, a central element in both digital government and the digital economy in general.[6] A new identification card with a blank chip has been introduced, but functionality has not been developed, and there is no e-signature. Finally, the MEF serves as a gatekeeper for decisions on ICT investments across agencies.

Overall planning and budgeting for digital government are not systematic. Cambodia has a decentralized Treasury Single Account. However, the Financial Management Information System does not have a budget planning and formulation module, and there is no e-procurement. In addition, each agency makes its own decisions on solutions and infrastructure investment and includes them as part of their budget proposals. These decisions are not discussed by an inter-institutional Committee or subject to central scrutiny, although funding decisions are ultimately processed by MEF. The absence of central review and coordination has resulted in redundant infrastructure and data communication channels, duplication of efforts, and inefficient deployment of software and licensing, which undermines data compatibility and system interoperability and makes re-engineering costlier. In addition, since ICT spending is spread across the entire government and appears in different spending categories, expenditure tracking and comparison to global benchmarks are more difficult.

Policy Options

To benefit from the digital economy, Cambodia needs to establish several enabling factors. In addition to broader business climate reforms—including business registration, financing, and related reforms—it will be important for Cambodia to: (i) invest in connectivity infrastructure; (ii) develop digital skills; (iii) adopt a legal and regulatory framework for privacy, data protection, e-commerce (including e-transactions), and the wider "e-enabling" environment; and (iv) build institutions and leadership, as well as universal standards for e-government platforms and applications. Policies are detailed in Table 3 and discussed below.

The financing and budget implications for each policy option must be analyzed, especially to identify possible funding mechanisms and the potential for private sector private financing. Where public financing is mobilized because private sector engagement is not optimal or available (e.g., to catalyze the rollout of connectivity infrastructure), the investment and economic rates of return must be calculated to ensure value for money for the Government. Efforts to develop coordinated digital government platforms may trigger upfront capital costs, for example to build e-government platforms and applications, but will generate significant ongoing capital and operational cost savings. The wider net economic impacts from improved connectivity, widespread availability of efficient digital government services, and an expanding digital economy should also be calculated as part of the impact assessment for each Policy Area. In principle, policy options related to the adoption of regulation, such as those for the short term under Policy Area (iii), are expected to be broadly cost-neutral from a budget perspective.

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5   The Technical Working Group reports to a nominal Inter-Ministry Policy Working Group comprising Under Secretaries of State from all ministries and chaired by the Minister of MPTC. In principle, this committee is expected to ensure cross-ministry ICT policy coordination, but its activities and impact are limited. In practical terms, the Policy Working Group largely defers to the Technical Working Group on digital government matters.
6   The Minister of Interior chairs the National Steering Committee on CRVS and Identification (NSCI), and its General Department of Identification acts as the secretariat to the committee. In 2016, the NSCI put forward the National Strategic Plan of Identification (2017-2026), which proposed integrating and consolidating all current civil registration and identification schemes into a single structure, supported by a single ICT-based platform. However, funding to this has not yet been allocated.

Table 3. Policy options to support digital development in Cambodia

Objectives	Short-term options (1-2 years)	Medium- and long-term options (3+ years)
i. Close the digital divide by coordinating investment in and use of connectivity infrastructure	• Enhance spectrum reallocation and management to support further mobile broadband rollout in rural areas • Promote or mandate passive infrastructure sharing among telecom operators, particularly for fixed broadband • Enable co-location of optical fiber during the planning and implementation of other infrastructure projects	• Introduce fees or licenses for cloud service provision and software development
ii. Support the development of digital skills	• Undertake a systematic assessment of the digital skills gap and develop a Digital Skills Readiness Strategy	• Promote continued professional development and support cost-sharing and cooperation among firms
iii. Complete the regulatory framework governing the digital economy, to boost digital adoption by firms	• Expedite the adoption of an up-to-date E-commerce law and Cybercrime law • Prepare a Data Protection and Privacy law • Introduce a framework on the use of mobile banking and payments	• Implement the national payment system strategy
iv. Align efforts toward the implementation of a Digital Government Strategy	• Prepare a time-bound, costed implementation plan for the Digital Government Strategy • Develop an integrated digital platform for government services, a data center, and a government cloud • Consider establishing a Coordinating Agency for Digital Development	• Integrate the national ID to support digital authentication of identity and facilitate e-transactions • Streamline digital government-related investment decisions as part of the Public Investment Management discussions • Introduce a core set of technical and functional standards for ICT investments

In the first policy area, new investments are needed in the infrastructure that serves as the foundation for the digital economy. Cambodia has achieved widespread basic mobile connectivity but needs to meet rapidly rising demand for higher-capacity and faster internet services. Key challenges to be addressed include increasing mobile broadband provision for rural and remote areas and ensuring consistent quality of service; investing in fixed broadband in urban areas to meet the rapidly growing demand for high-bandwidth applications, including video streaming, large data processing, and e-government applications; and laying the groundwork for connected devices (internet of

things), including sensor networks, transport systems, and security and logistics systems.

Spectrum reallocation and improved management are required to support further mobile broadband rollout in rural areas. This involves reassigning the 700 Mhz band, which is currently used for broadcasting, and managing the reallocation of already assigned spectrum on a technology-neutral basis. In addition, the Government should mandate passive infrastructure sharing among operators, particularly for fixed broadband. Passive infrastructure accounts for up to 80 percent of investment costs for infrastructure rollout.

New infrastructure investments could also be better coordinated across sectors as part of project planning and implementation for transport or energy networks, to enable co-location of optical fiber and facilitate rights of way. Finally, authorities should carefully consider the need for multiple license requirements and new taxation.

The second policy area focuses on developing the digital skills necessary for the benefits of the digital economy to be shared widely. Authorities are considering deploying resources from the *Capacity-Building and Research Fund for Skills Development*. In partnership with business community representatives, the Government should also undertake a systematic assessment of the skills gap and develop a *Digital Skills Readiness Strategy* to address current and future workforce needs. The assessment should include an assessment of the availability of IT skills in non-IT sectors to anticipate needs and prevent brain drain from an already under-resourced IT industry. Firms in the IT sector would also benefit from increased cooperation and cost sharing for training and professional development courses (Table 4).

Within the third policy area, completing the legal and regulatory framework for e-commerce, privacy, and data protection and cybercrime—together with other measures aimed at improving the business environment—would encourage digital adoption by businesses. The incomplete legal and regulatory framework for e-commerce, including for e-transactions, undermines trust in digital services. The adoption of laws related to e-commerce and cybercrime should be expedited. The Government should also draft a law for data protection and privacy. In addition, the Government should introduce a framework for the use of mobile banking and payments and implement a national payment system.

The fourth policy area supports successful implementation of the Digital Government Strategy by aligning Government efforts and improving interagency coordination. E-government requires strong leadership, a high degree of coordination to provide the supporting infrastructure, and a combination of app development and business process changes to deliver services to people. The Government needs to prepare a time-bound, costed implementation plan for the Digital Government Strategy, focusing first on e-government enablers such as digital ID, payment platforms, and open data. This should be accompanied by a monitoring framework to review progress and outcomes on a systematic basis. It could be beneficial for the Government to establish a Coordinating Agency for Digital Development—similar to those established in the United Kingdom, Singapore, Malaysia, and Thailand—to drive the preparation of the framework and its implementation. Finally, investment decisions related to e-government should be streamlined and discussed within the public investment management process while considering alternative models for infrastructure and service delivery, such as public-private partnerships.

Successful implementation of the strategy also requires reforms specific to e-government. The Government should develop an integrated digital platform for government services, connecting all agencies. Population, business, and land registries must be current, secure, and interoperable. The government could facilitate this by establishing a central data center or cloud service that features public and private access, depending on the data management requirements. The Government also needs to integrate digital authentication of identity with the national ID to facilitate e-transactions, including the delivery of e-government services. In addition, a manageable list of priority apps and public services to be offered online, including at the subnational level, should be identified.

In addition, to ensure effective returns as well as the interoperability needed to integrate government data and deliver services, a set of technical and functional standards for ICT investments should be adopted. Virtually every government on a path toward successful digital transformation has established these

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7   Vuorikari, et al., 2016.

standards. For example, the United States and Australia have standards based on an Enterprise Architecture Reference Model, New Zealand and the United Kingdom have Interoperability Frameworks, and Vietnam's eGovernment standard is based on the *The Open Group Architecture Framework*. The policy framework and specific standards developed by Cambodia need to be identified through further analysis, but the following areas should be considered: architecture, technical, networking, security, information, ICT service management, data management and sharing, and data center and cloud services.

Table 4. Relevant skills for the digital economy

Types	Description	Target	Examples
Basic digital/ICT skills	Skills needed to use digital technologies (e.g., send email, find work-related information on the Internet, ability to use digital apps and non-specialized software, awareness and ability to stay safe in cyberspace)	All citizens and workers	EU: Digital Competence Framework for Citizens (DigComp)[7]
Digital/ICT complementary skills	Soft skills required to carry out work in a technology-rich environment and to address the expanding number of opportunities for ICT-enabled collaborative work (e.g., communicate on social networks, brand products on e-commerce platforms, or analyze data gathered from the web)	Middle-skill to high-skill professionals	USA: Partnership for 21st Century Skills

USA: Agenda for New Skills for Jobs |
| Advanced and specialist skills | Skills required to drive innovation and to support digital infrastructure and the functioning of the digital ecosystem (e.g., program software, develop applications, manage networks, data analytics) | Industry- and occupation-specific | Skills for Information Age (SFIA) Singapore's

Workforce Qualification scheme |

Source: Authors´ elaboration using different sources.

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