THE
WORLD
WE
WANT

Cambodian Youth Perspectives

Edited by

OU VIRAK
LAURA BECKWITH
MICHAEL RENFREW

The World We Want

Edited by

OU VIRAK
LAURA BECKWITH
MICHAEL RENFREW

The World We Want

Foreword

Despite the observable and positive changes throughout the kingdom, Cambodia is consistently cast as a nation perpetually saddled by the weight of the Khmer Rouge regime and the legacies of genocide. This is despite the fact that over 30% of the country's population is under the age of 15 making it one of the "youngest" countries in Asia and a majority of the population was born after the signing of the 1991 peace agreement. Nevertheless, forty years after the fall of the Khmer Rouge, Cambodia is regularly framed as a "post-conflict" state, seemingly perpetually locked by many scholars and analysts in a position variously conceptualized as "victim," "unstable," or "damaged."

While the role of historical factors in the analysis of socio-economic and political development has a long and distinguished history and provides much-needed context and analytical value for understanding national development, analysis and understanding of Cambodia has historically leaned overwhelmingly and unjustifiably on the side of historical structure rather than agency. The absence of genuine recognition of real agency in Cambodia - by its people, its government, and its civil society - results in an erroneous picture of the realities of both Cambodia today and the trajectory of its future development.

Even positive connotations can inadvertently fail to recognize the progress of contemporary Cambodia, as these often lean heavily on the Angkorian era and, in particular, the 900 year old temple complex that remains the country's national symbol. Today's Cambodia is replete with entrepreneurism, ingenuity, and talent meriting genuine recognition and real acknowledgment. It is time to focus on that agency, to re-frame contemporary understanding of the country, and more closely examine the progress and potential of present-day Cambodia. In particular, as the kingdom continues its trajectory of growth and development, such agency will necessarily elevate its status and operation with regional and global order. Set within this reality one must ask themselves to explore the questions facing Cambodia beyond its own sovereign borders; including questions of aid, investment, trade, national relations, and intra-national operations. To this end we are proposing a series to explore the policy of these possibilities in considering "The World We Want".

In order to address these issues and to grasp better the realities and opportunities of contemporary life in the kingdom, and the world beyond, Future Forum, with support from the United Nations in Cambodia and The SecDev Foundation, has produced an edited volume examining 18 different topics exploring Cambodia's opportunity in the developmental context of the global order.

We consider this to be the first book that brings together a collection of local experts to identify such features with a view to examining their potential for defining "The World We Want."

Authors have examined these topics with a view towards prescribing tangible policy recommendations for the purpose of promoting pride, progress, and development.

A Note on Future Forum

Future Forum is Cambodia's primary independent public-policy think-tank, founded by OU Virak in 2015.

Our vision is of a just, democratic, dynamic, and prosperous Cambodia shaped by the needs of its people. To make that vision a reality, our mission is to nurture a community of young thinkers, develop positive policy solutions and engender critical debate.

We employ evidence-based policy debate, analysis, and recommendations to inspire Cambodian people (especially youth) to achieve democratic, political, and socio-economic change that will benefit all people of Cambodia. By adopting a measured, analytical, and considered approach, we identify underlying policy recommendations to help shape Cambodia's discourse, and rather than simply identifying problems, we adopt a solution-oriented approach, and use research to equip key decision-makers with detailed, specific, constructive policy solutions to Cambodia's issues.

Acknowledgements

Contents

Chapter 1 | Digital Rights and its Importance to Cambodia's Future

Virak OU

As the internet becomes ever-more woven into our lives, a new term has emerged to highlight the importance of how the internet is governed. 'Digital rights' refers to the rights of individuals in relation to digital technologies and their use. It covers things like privacy rights, data protection and the right to free expression online. It is essentially 'human rights on the internet' -- and understanding the myriad ways in which it might impact daily life is important for all citizens.

We can't escape the internet, given that so many education, business and government services are moving online -- not to mention our personal communications and social media channels. But ensuring the internet is a positive force in our lives, and a place that benefits everyone as equally as possible -- that takes a lot of work and constant effort.

To start, let's consider what makes a "good internet environment" in the sense of being a positive force across each country and the world. One common view is that we need an internet that is *open, inter-operable* and *accessible*. If we can achieve this, we're at the starting point to help protect and ensure people's digital rights:

> **Open** -- An open internet is one free from control by any one group. The systems and infrastructure are neutral, allowing unhindered exchange of data.

> **Inter-operable** -- The systems and infrastructure follow standards that apply in all regions and countries, thus helping to ensure the open flow of information.

> **Accessible** -- This refers to fair and affordable access; an internet that is available to all without unreasonable restrictions.

In addition to these three core principles, the internet should be secure (confidential) and resilient (no single point of failure).[1] With these principles in mind, we can now list out the specific components of digital rights that most often impact people's lives. These include:

- Freedom of expression
- Privacy and data protection
- Right to anonymity and encryption of communications
- Intellectual property rights
- Right to be forgotten (personal information removed, the 'right to delete')

---

[1] More on these 'five ideals' can be found here: https://www.newamerica.org/cybersecurity-initiative/reports/idealized-internet-vs-internet-realities/the-five-ideals/

- Protection of minors (safe access)

While there is no one agreed over-arching definition of digital rights, there is common acceptance that citizens need to be familiar with all of the above components, and just as importantly, they should be involved in policy discussions that determine their rights and responsibilities in the digital world.

Freedom of expression: This is a cornerstone of citizens' individual rights, guaranteed in several international laws and treaties. Free speech online is very similar to other, offline media. However, there are specific concerns and issues related to freedom of expression on digital media.[2] For example, the role and responsibilities of digital intermediaries (companies like Facebook and Google) in protecting or guaranteeing freedom of expression is a point of great debate. These companies have their own terms and conditions to control the content on their platforms, which may differ from what individual users or national governments want to see distributed online. In addition, the rise of hate speech online means we must reinforce understanding that free expression does not harm or defame our fellow citizens.

Privacy and data protection: In many countries, laws on privacy rights have not kept pace with the great changes in how 'digital life' and online services are based on user data. The reality of digital, connected devices is that they allow governments, companies and cyber criminals to easily collect our personal data and track our movements and communications. More countries are drafting laws to address concerns in this area, with the EU's General Data Protection Regulation (GDPR) and its many guidelines considered the most developed legal framework to protect citizens' privacy and data online.[3]

Right to anonymity, encryption: Governments around the world, concerned over issues like terrorism and hate speech, have threatened to restrict encrypted communications and worked to remove anonymity in online communications. In practice, this includes forcing people to register their online and social media accounts using their real names. However, real-name registration is potentially a risk for marginalized groups like LGBT youth, ethnic minorities and women who live in socially conservative societies. Real-name registration can greatly restrict some people from free communication online.[4]

Intellectual property rights: Patents, trademarks and copyrights long predate the internet and digital technologies. Advancements in digital technologies have made piracy and copyright infringements both much easier and potentially more lucrative, requiring those who want to protect their IP to invest time and money to protect their assets.[5]

---

[2] A brochure by the American Bar Association summarize many of the issues related to freedom of expression online: https://globalfreedomofexpression.columbia.edu/wp-content/uploads/2020/12/FreedomOfExpressionOnlineAndOffline5Feb2018.pdf

[3] The GDPR article on Wikipedia is a good starting point for more information: https://en.wikipedia.org/wiki/General_Data_Protection_Regulation

[4] More information on the link between encryption and anonymity online: https://www.mediadefence.org/ereader/publications/advanced-modules-on-digital-rights-and-freedom-of-expression-online/module-4-privacy-and-security-online/encryption-and-anonymity-on-the-internet/

[5] An introduction to online IP issues: https://www.businessgoing.digital/enforcing-ip-rights-in-a-digital-environment/

Protection of youth and the right to be forgotten: The 'right to be forgotten' refers to private information about a person, such as digital images, being removed from servers and internet searches. This is particularly relevant to debates about protecting youth on the internet, given the proliferation of child pornography and other forms of child abuse online. Given the ease with which children go online and interact with the wider world, the issue of protecting youth will continue to be a focus of digital rights discussions.

This issue is emerging in new and unforeseen ways. For example, amongst the 'normal' cyber risks facing youth today, phishing to cyberbullying, remote areas in Southeast Asia face a growing threat of human trafficking agents using social media chat to entrap youth, mainly young women (often, though not always, the trafficking is for the China bride market).

Writing about human traffickers using chat to lure women in northern Vietnam, the NGO Blue Dragon Children's Foundation finds: "Common deceptions include the promise of well-paying jobs, or posing online as a potential boyfriend to entice victims into meeting face to face. This means that most Vietnamese young people are readily online and, without proper supervision or knowledge, are vulnerable to approaches from traffickers."

Clearly, young women need better knowledge on digital risks and how to access support online in cases of grooming, entrapment, harassment or threats.

Social media giants including Facebook, Google, Twitter and TikTok have recently committed to help women and girls tackle the abuse and threats they face online.[6] The social media companies have found that women in particular need training in two areas: 1) controlling their social media privacy settings and protecting accounts from hackers, and 2) understanding how to report malicious/abusive content.

Even as we wait for social media giants to improve their products by making privacy and digital safety choices more accessible and easy to use, there is still a great deal of education and awareness raising that can improve the online experiences of citizens in high-risk digital communities.

In other words, the issues of digital rights are not obscure or arcane -- they relate to the real world that people experience when they go online, and the real-world consequences of their decisions and interactions. An understanding of digital rights is now fundamental to ensuring that people experience a positive internet -- as we've all seen how the internet has great potential for negative consequences. People need to be aware of digital safety, digital literacy and digital rights in order to be strong and effective digital citizens.

In Cambodia today, we can see how many of the above issues have relevance for people's lives. The popularity of Facebook, TikTok and other social media platforms are strong indications of young people wanting to express themselves and to connect to their peers. Social media has 'democratized' information

---

[6] See: https://www.theguardian.com/society/2021/jul/01/social-networks-facebook-google-twitter-tiktok-pledge-to-tackle-abuse-of-women-online?CMP=Share_AndroidApp_Other

at the level of people producing and distributing whatever they want, outside of traditional media channels. However, this is not without the significant risks of fake news, hate speech, and criminalization of some forms of online expression -- a fact contested by many, who feel the criminalization extends beyond harmful content to legitimate expressions of opinion.

These issues are further explored in several of the chapters in this book which deal with developments in digital culture that will have a significant impact on Cambodia's future. As the articles by these young researchers show, there are numerous 'every day' developments in Cambodia that are shaped by digital safety and digital rights.

In chapter 3, Heang Kosal imagines a future where blockchain transactions are possible down to the smallest of economic exchanges because Cambodians of all backgrounds have the digital literacy and digital safety skills to ensure they can participate in the digital economy, which features a cyber security and data privacy legal framework that adequately protects consumers.

Vanly Keomuda (In chapter 4) and Theang Soriya (chapter 5), in separate chapters, write about the need to aggressively confront the gender digital divide and the reality of gender-based violence online, which combine to make the digital world a much more threatening place for women and girls then for their male relatives. Women need stronger digital safety skills and the confidence to demand that policy-makers and social media platforms support them in protecting privacy and dealing with abusive online behaviour.

In chapter 6, Sokunthea Hang and Pagna Ukthaun in their chapter on digital citizenship education, and Dechkunn Chay in his research on cyber security policy, both note that Cambodia youth achieved very low scores on the UNDP's Cambodia Digital Literacy Assessment survey in 2020. The lowest scores were in the digital safety category -- meaning youth are not able to protect their accounts and online identities from hackers and fraudsters. These writers correctly note that improved digital safety skills, and digital citizenship competencies in general, are a required foundation for Cambodia to achieve a sustainable and equitable economic growth.

Taken together, these chapters clearly demonstrate the value of including youth voices in public debates on internet governance and the laws and policies that shape the digital world. In neighbouring countries like Vietnam and Thailand, Youth Internet Governance Forum (YIGF) committees and events have helped to promote youth involvement in public policy debates.[7] While there is not yet a YIGF movement in Cambodia, this would be a valuable contribution for corporate and civil society donors to support.

A positive and enabling digital culture is central to Cambodia's future development -- and this rests on informed, aware digital citizens with a strong foundation in digital safety and digital literacy skills.

---

[7] The Vietnam YIGF group held a national event in early November 2021. They have a Facebook page at: https://www.facebook.com/yigfvietnam

Chapter 2 | Blockchain and the Future of Inclusive Digital Payment in Cambodia

Kosal HEANG

Future Scenario

One evening in March 2030, Kaneka—a young mother to an 8-year-old son, is sitting with her husband talking about the COVID-19 crisis that happened years ago. During their dinner, her son quietly listens to the story. She tells him how at they had a difficult time generating income through buying and transporting vegetables to sell at the town's market:

"We were so worried about getting infected but we had no choice and needed to earn an income. Fortunately, we got vaccinated since we were categorized as a high-risk group. Despite the fear we lived with during the pandemic, every time we got home with some money, we always felt so happy even though the money we earned was not a lot.

To be honest, if you ask me what makes me happy, my answer will be, when I count each banknote one by one. I like counting and carrying it. The more I count, the better I feel. At that time, however, cash was not encouraged because of the fear that it could transmit COVID-19 when an infected person carried it and gave it to others. I heard a lot about something called electronic and digital payment, and mobile app banking in the market. Back then I did not know exactly what it was but your dad and I thought that we wanted to use it too. We both had no financial or digital literacy so we were reluctant to try.

It was not until you turned 2 years old, I remembered that there was a digital literacy program introduced by the National Bank of Cambodia that collaborated with a microfinance institution that operated in our location. They taught us some basic knowledge about financial education and digital literacy and linked it to the utilization of digital payments as the means to do transactions. They introduced us to Bakong as the digital payment platform. We had no bank account but through Bakong we could do financial transactions with other people who have it. We had our QR code displayed at our store and customers could quickly pay via the QR code system. No more cash! As we got to know more about the payment system, we decided to open a formal bank account since it was easier for us to deposit our money. In just 5 years, Bakong has gradually become popular. It's like what happened to Wing a decade ago. Now, everyone knows Bakong and uses it.

Kaneka and her husband now own an organic fruit and vegetable store in a district 30km away from the central town of Kampong Cham Province. It is a wholesale store which also delivers produce to the market. Their business has prospered thanks to their early adoption of digital payments which has allowed them to invest in new technology such as a solar powered cooling system with enough capacity to ensure the freshness of vegetables and fruit.

Introduction

In an effort to digitize its economy by 2023, Cambodia has prioritized modernizing the country's finance ecosystem. The National Bank of Cambodia (NBC) has been undertaking several initiatives to develop its payment system capabilities and the latest development is the project Bakong which seeks to utilize the alternative technology known as Blockchain. This project is aimed at promoting financial inclusion and facilitating payments with Cambodian Riel (NBC, 2020a). However, Bakong brings along some challenges that need to be addressed.

The following chapter will discuss those challenges and propose policies that can support Cambodia to successfully achieve its efforts to build a digital economy and in particular to improve financial inclusion. The paper will briefly introduce the rationale for and deployment of Bakong as well as the way forward whereby digital payments becomes the primary platform for financial transactions among the Cambodian population, regardless of geographical location, whether urban or rural. The chapter will also explain how Cambodia can achieve this goal by 2030 using the current Bakong payment system as the base case scenario and the desired scenario will be Bakong 2.0, the future of inclusive digital payment. This paper argues that to arrive at Bakong 2.0, NBC will need to establish Bakong National Digital Payment (BNDP) as a body within the central bank responsible for the operation and development of Bakong, creating an enabling regulatory framework and ensuring sufficient digital infrastructure nationwide.

Context Analysis

What is Bakong?

Over the past two decades, the Royal Government of Cambodia (RGC) has put a lot of effort into improving the financial system in the country. NBC has been mandated to play the roles of a catalyst, an operator and overseer in the financial system under the Law on the Organization and Conduct of the National Bank of Cambodia promulgated in 1996. As a catalyst, the NBC is responsible for the development and innovation of a payment system that can ease remittance transfer and facilitate financial inclusion. As an operator, it facilitates the operation of the settlement and clearinghouse service as a National Clearing House as well as promotes sufficient payment and financial relations with public bodies. As an overseer, it ensures the safety and

efficiency of the payment system by creating the regulatory framework, conducting monitoring and assessment on financial risk as well as maintaining public trust in the domestic currency. There has been a gradual introduction of payment systems, for example, FAST in 2016 (Fast and Secure Transfer), CSS in 2017 (Cambodia Shared Switch), Bakong in 2020 (NBC, 2020a) and the most recent one is the Retail Pay system, officially launched on 26 January 2021 (Vireak, 2021).

Among these payment systems, Bakong has drawn significant attraction. This is in part because Cambodia is the first country in ASEAN to roll out a payment system using Blockchain technology (Sinay et al., 2020). The National Bank of Cambodia started its experiment on several technologies including Distributed Ledger Technologies (DLT) in 2017 to address the problems regarding interconnectivity and interoperability, payment efficiency, financial inclusion and the ease of Khmer Riel cash payments (NBC, 2020a). In July 2019, the pilot test of Bakong was using Hyperledger Iroha, a blockchain platform commissioned by the Linux Foundation Hyperledger Project developed and maintained by SORAMITSU (SORAMITSU, 2020).

On 28 October 2020, Bakong was officially launched with an initial 18 financial institutions participating (SORAMITSU, 2020). Bakong is a mobile application using blockchain in its backend that allows financial institutions (FIs) with existing mobile applications to integrate their backends through an open application programming interface (API). This system is expected to eliminate the need for FIs to develop their digital customer interface, thereby lowering the costs, and in turn facilitating interoperability which enables digital transfers across financial service providers (FSPs) in Cambodia and internationally with more security (NBC, 2020a).

The launching of Bakong, however, generated a great deal of confusion. Some view Bakong as a cryptocurrency, while others see it exactly the same as the Central Bank Digital Currency (known as CBDC). In fact, Bakong is none of these. According to Chea Serey, Director General of the National Bank of Cambodia, Bakong is the backbone of a payment system that aims to reduce transaction costs, increase transaction speed and enhance security (RadioFinance, 2020). It is better understood as quasi-CBDC which uses fiat-backed currency with its operation supported by blockchain technology. NBC does not produce any digital currencies, for example, Bitcoin or Ethereum (RadioFinance, 2020).

Why is Bakong important?

It is widely acknowledged that blockchain and other distributed ledger technologies (DLT) will potentially transform a wide range of industries. Advancements in blockchain in a wide range of sectors are pushing governments to consider policy responses, and to some extent, whether to embrace blockchain technology within their own institutions (OECD, 2019). However, distributed ledger technology is still in its infancy in terms of development and deployment. Yet, it is widely

thought to have the potential to deliver a new wave of innovation to the financial technology ecosystem by offering a 'trustless' distributed system to exchange value (IFC, 2019).

Emerging markets may opt for more rapid adoption of blockchain due to their underbanked populations, higher banking risks, and lower bank penetration (IFC, 2019). This is true for Cambodia which is why such technology has been adopted to improve the financial ecosystem (The Asian Banker, 2020). The launching of Bakong was part of the solution to some of the challenges related to current digital payments and the high unbanked population (NBC, 2020a).

The existing payments ecosystem is characterized by constrained interoperability as it is based on individual agreements between FSPs (NBC, 2020a). Even though the Fast and Secure Transfer (FAST) system allows real-time settlements, its use is limited because FSPs are the ones who provide customers with the ability to access the system. The majority of FSPs are not willing or are financially constrained to invest in the development of an interface application (Madan, 2020). Slow progress among the financial institutions led to the rapid deployment of Bakong (NBC, 2020a). Bakong is also expected to bring new opportunities for people, especially the unbanked or underbanked population to get into the formal financial system. The entrance of this segment of the population will create new opportunities for Cambodian businesses in turn (Fintech Singapore, 2020). In terms of an innovative payment system, Bakong positions Cambodia as a leader in payment initiatives, though blockchain has not yet been fully explored (Lewis, 2020). NBC also expects that this project will be another catalyst, further promoting financial inclusion and increasing the use of Riel in Cambodia (NBC, 2020a).

Challenges of Bakong

Despite its potential benefits, there are some challenges associated with Bakong and its future with respect to upscaling its adoption and achieving its original goals, in particular financial inclusion. The challenges confronting the deployment of Bakong are initially at the level of adoption. Though there has not been an official statistic showing the level of adoption and recognizing how recently it has been released (October 2020), some information regarding the level of adoption is still thought to be important. In a Global Seminar on the Challenges and Benefits of Digital Payments held on 23 June 2021, National Bank of Cambodia (NBC) Director-General, Chea Serey, said that the uptake of the Bakong digital payment app is less than what was hoped for though in general there has been an increasing use of digital payments during the COVID-19 outbreak. Despite Bakong being a free service, the uptake level is rather slow (Firn, 2021). She added, "So far, there are 100,000 registered Bakong wallets with 5 million users reached indirectly through member bank mobile apps." (Firn, 2021).

The slow adoption of Bakong is attributable to the lack of awareness and financial literacy (Firn, 2021). This indicates there is a lot to be done by NBC and other stakeholders, especially those in

the financial service industry. Firstly, Bakong has limited capability of Bakong to reach more users and make good on its promised goals. From a business perspective, there has been inadequate outreach activities including advertising and raising awareness of Bakong in the general population. that the outreach program to raise awareness of Bakong from both NBC and its participant financial institutions seems limited. Future plans on research and development (R&D) of the blockchain technology in payment systems has also not been mentioned.

Secondly, the NBC has yet to clearly define the scope, role and responsibility of department or unit who will lead the development of Bakong. There has been a small team handling the Bakong project but it is insufficient for NBC to achieve its goals. In Bakong's white paper, there is an absence of a clear organizational structure to undertake the Bakong project despite the need for sufficient human resources to ensure the sustainable operation of the project. In addition, a specific timeline of project activities which can serve to assess whether the level of uptake of deployment is on track is not in place. The lack of an organizational structure and sufficient human resources raises a question of the current and future capability of NBC to sustain the operation and ensure the success of Bakong. Currently, Bakong is partnering with SORAMITSU whose role is on system development and maintenance of the distributed ledger technology (NBC, 2020a) which appears not to be a significant challenge to NBC for now. However, how Bakong evolves in the future is uncertain. NBC will certainly face difficulty in ensuring the achieving its goals and the efficiently maintaining the system in the long run if it has no clear organizational structure and not enough human resources.

In addition, there is potential for unexpected outcomes to impede progress against Bakong's main goals, one of which is to promote financial inclusion. The most recent evidence on the unwanted effects of financial services still questions the pro-poor effects of financial development, particularly in Cambodia (Seng, 2020). If not carefully implemented with appropriate supporting measures and stakeholders' involvement, the deployment of fintech products like digital payment systems might compromise efforts to address financial inclusion and widen the digital gap among the population (Raghuveera, 2020). For instance, both digital skills and financial literacy are positively associated with fintech products (e-banking and digital payment) awareness and adoption (Morgan and Trinh, 2017). In Cambodia, the financial literacy rate is low compared to other countries in the region. Its financial literacy scores are only 11.5 out of a total possible score of 21. This score is much lower than the 30-country average score of 13.3 and those of some other developing Asian economies, for example, Malaysia at 12.3 and Thailand at 12.8 (Morgan and Trinh, 2017, p.6). This is problematic because financial literacy plays an important role in promoting financial inclusion (Atkinson and Messy, 2013). In terms of the average level of digital literacy, Cambodia is the lowest in ASEAN (Kusumastuti and Nuryani, 2020).

Given these factors, the deployment of a new payment system will not be able to reach the mass population, especially those in rural areas, and those who with insufficient digital and financial literacy. This can widen the digital gap between urban and rural populations in Cambodia, and exacerbating financial exclusion of those who cannot use the system. Additionally, Cambodia still faces a number of challenges as a result of weaknesses in the adoption of industry 4.0 including limited basic and digital infrastructure (World Bank, 2018). Another key challenge is related to the regulatory framework. The current regulatory framework is unable to support a financial system that is trust-based and dynamic. For example, practices related to protecting consumers are inadequate and ineffective but time-consuming. Though NBC has regulation requiring the FIs to reveal the consumer complaints on their websites, among the top ten banks only ACLEDA bank has detailed information showing complaints made to the bank (You, 2019). In addition, comprehensive data protection legislation has not yet been enacted in Cambodia and thus, there have been no regulatory and enforcement authorities in charge of handling, overseeing or implementing matters of data protection (DLA Piper, 2021). Indeed, data protection and cybersecurity policies are imperative to build consumer trust and facilitate digital payment, specifically for the usage of digital financial services (World Bank, 2018). Without sufficient support from the government, the digital payment ecosystem, and the private sector on its own cannot overcome the challenges and costs of adoption (You, 2019).

Policy Recommendations

To realize the main objectives of Bakong, such as promoting financial inclusion and increasing the use of the Riel in Cambodia, NBC needs to consider three policies: (1) the creation of Bakong National Digital Payment as a body within the central bank, (2) fostering an enabling regulatory environment and (3) ensuring sufficient digital infrastructure.

Bakong National Digital Payment (BNDP)

To fulfill the promise of Bakong as an influential technology in digital payments, the NBC will have to consider the transfer of Bakong from a project to a program under a body within the central bank. This body should be equipped to handle the operation and development of Bakong while the NBC maintains its core roles in terms of supervision and oversight of the development of the payment system. This will improve efficiency in terms of sustainability and operability in the future. The establishment of the Bakong National Digital Payment (BNDP) should appear like a separate department in the central bank with full integration with other departments. This change will address the difficulty of Bakong currently being handled by only a small team. Mobilizing more human resources to operate Bakong is important because the mere deployment

of Bakong is not enough to ensure its success. A business oriented with diverse team functions including a research and development team, public relations and a product design team will ensure the success of the new product.

Indeed, the business model is not just for business. It is important that any organization that wishes to be relevant, and to deliver value at scale and sustain itself, must clearly articulate its business model and evolve as it grows. Even though government agencies are not working for profit, they are finically supported by tax and other state revenue which means they should be held accountable to deliver value to citizens (Kaplan, 2011). In this case, one of Bakong's objectives is to promote financial inclusion, which is under the mandate of NBC. Therefore, ensuring the success of Bakong is part of the state's responsibility and thus more effort is needed from the NBC to make sure that Bakong can provide value at scale to citizens, especially the unbanked population.

Another important thing to be developed in BNDP is strong R&D. Though currently SORAMITSU oversees the blockchain technology component, NBC should invest in developing more human resources in this technology as it relates to the application of CBDC. Though Bakong is not exactly a CBDC but rather the backbone of the payment system, NBC should be ready for the prospective development of a CBDC, as it is a global trend. Over the last several years, many countries around the world have poured resources into research and development of CBDC seeking to improve financial services and products, especially for underserved communities (Barr et al., 2021). Whether NBC is to move to CBDC or not in the future, research will play an important role in making sure that NBC is prepared and holds adequate knowledge to meet changes in the global financial landscape. All of these initiatives require sufficient human resources and investment as well as a clear organizational structure from the NBC.

Fostering an Enabling Regulatory Environment

There is an emerging consensus that the future enabler of Cambodia's economy will be the digital economy. So far, Cambodia has established a basic digital infrastructure and has created an enabling environment via policy changes (Madan, 2020). For example, Cambodia has developed the groundwork for its digital transformation in order to stimulate national productivity and tap into new sources of growth since the early 1990s. A series of policy measures such as the Rectangular Strategy (Growth, Employment, Equity and Efficiency), the 2020 ICT Masterplan, the Telecommunications and ICT Development Policy, the Industrial Development Policy 2015-2025 (IDP) have been put in place. Additionally, the NBC's provisions for the management of payment service providers, 2019 Laws on Electronic Commerce and Consumer Protection, have all helped to create a conducive ecosystem for digitization in Cambodia (Madan, 2020). The National Financial Inclusion Strategy (NFIS) 2019-2025 was also introduced and adopted by the Council of

Ministers in the Plenary Session on July 12, 2019. This strategy serves as a roadmap in guiding the priority action plans of NBC and other agencies to promote financial inclusion (NBC, 2020b).

However, more tasks remain in order to lay the foundation of a digital economy including the establishment of cybersecurity and data protection policies as a means to facilitate digital payments and build consumer trust in the use of digital financial services (World Bank, 2018). NBC must enhance consumer protection so as to gain trust from consumers in its financial system. On top of this, Cambodia needs wide-ranging financial protection legislation for consumers. NBC must take a leading role to establish a regulatory framework to safeguard the financial rights and interests of consumers (You, 2019). The government also needs to prioritize the completion of the regulatory framework governing the digital economy such as finalizing the Cybercrime Law, preparing a Privacy and Data Protection Law, and especially introducing a framework on the use of mobile banking and payment. These must all be supported by an enforcement mechanism to ensure the rule of law, transparency and accountability.

For Cambodia to leverage the benefits of the digital economy, it is necessary to invest in both infrastructure and the development of complementary regulations, skills, and institutions. For instance, the issue of financial exclusion can result from regulatory constraints and geographical factors (supply-side), and low levels of financial literacy and linguistic challenges (demand-side) (Atkinson and Messy, 2013). According to a study from the World Bank (2018), for Cambodia to improve its digital development, it must address a number of priority areas relating to both the supply-side and demand-side. This includes closing the digital gap by enhancing spectrum reallocation and mandating passive infrastructure sharing among telecom operators as well as elaborating a Digital Skills Readiness Strategy (World Bank, 2018). NBC must massively strengthen its financial inclusion program by focusing on financial and digital literacy education. In the digital era, financial education is even more crucial for people as technology brings new financial products. Digital literacy is also important to provide an understanding of digital transactions thereby ensuring a safe consumer environment (O'Brien, 2021). This means financial literacy needs to go hand-in-hand with digital literacy.

However, digital literacy is not well developed in the NBC financial inclusion strategy which means the demand side of the payment system service will still need to be developed. There must be sufficient investment in financial and digital literacy for those who live in rural areas, especially youth. The NBC will need to ensure a balance between the supply- and demand-sides through intervention, facilitation and policy formulation. Indeed, the Central Bank has to ensure that any introduction of new technology does not exclude marginalized groups but rather actively promotes the inclusion of low-income households (Barr et al., 2021). The NBC needs to have a unified roadmap for financial inclusion in order to facilitate coordination between various stakeholders and ensure the accountability of all relevant ministries (Wyman, 2017). NBC will

oversee coordination and cooperation among the ministries involved to ensure the quality of actions taken.

Currently, there is not enough investment on the demand side which is needed to grow users and drive usage, especially amongst those who are unbanked and have limited or no understanding of either financial or digital literacy. Investing in educating customers and users on the use of digital devices and the financial system is important (RadioFinance, 2020). NBC will need to mobilize support, resources and cooperation with the private sector, in particular the financial service providers (FSPs) to run financial and digital literacy programs for their clients and non-clients. A mandatory policy should be implemented to make sure each financial institution has a specific program on financial education for their respective clients, which is also accessible to non-clients who reside in their target geographical location. So far, NBC has introduced its 2019-2025 Financial Inclusion Strategy, which includes a financial education curriculum for the formal education program (NBC, 2020b). The program on financial education among the financial institutions will complement the efforts of the NBC to improve financial inclusion through financial and digital literacy in Cambodia leading to an increase in the number of users of fintech products, such as Bakong. It is estimated that Cambodia's GDP could increase by as much as 32% if the financial inclusion gap was closed (Wyman, 2017, p.4). Bakong will serve as one of the main policy tools in promoting financial inclusion.

Sufficient Digital Infrastructure

In addition to improvements in the policy environment, investments in hard infrastructure are needed to enable wider usage of the Bakong payment system. Over the past decade, Cambodians have enthusiastically embraced mobile technologies as shown by a considerable surge in subscriptions. However, most mobile broadband subscriptions are operated using 2G and 3G services because 4G coverage is still limited. According to the World Bank (year), for 50 percent of the population, LTE/WiMAX coverage, bandwidth per internet user, and other indicators remain below regional and global averages. Furthermore, the adoption of fixed-broadband adoption is low due to the inadequate supply of optical fiber in rural areas, the small number of households with a computer, and the relatively low price of mobile-broadband internet compared to fixed broadband Internet (World Bank, 2018). Nonetheless, it is worth noting that Cambodia has a high rate of mobile phone adoption (above average both regionally and globally with 124.9 mobile phones per 100 people (World Bank, 2018) and 10.7 million phones with internet connectivity (Kem et al., 2019). However, many Cambodian people living in rural areas are still excluded from this rapid rise in mobile phone and internet access (You, 2019).

The government should therefore take a more proactive role to improve its digital infrastructure such as internet connectivity and electricity, especially in rural areas. In urban areas, eight out of

ten Cambodian people had a mobile phone, while in rural areas only six out of ten had a mobile phone. Meanwhile, 51 percent of those who live in urban areas used the internet compared to 31 percent in rural (LIRNEasia, 2019). To address this disparity and move towards widespread adoption of digital-based payments, all Cambodian people, regardless of the geographical difference—whether they live in urban or rural areas, must have stable access to the internet.

Conclusion

In conclusion, this chapter argues that in order for the National Bank of Cambodia to achieve what has been set out in its white paper regarding the establishment of Bakong, some challenges have to be addressed. This includes the ability of the Central Bank to ensure the sustainability and operability of the Bakong payment system, powered by blockchain and distributed technology, together with the inadequacy of the current regulatory framework and digital infrastructure as well as the low level of financial and digital literacy among the Cambodian people. If these challenges are not fully addressed, the development of a new payment system might widen the digital gap between those who can harness the benefits of a digital economy and those who cannot. Simply put, at present, the development of the financial system is not inclusive. If Cambodia wishes to modernize digital payments and meet the expected goals of the NBC — including financial inclusion, it needs to establish the Bakong National Digital Payment (BNDP) as a body that addresses the constraints regarding NBC's capability to operate and develop Bakong. Second, enabling factors such as the regulatory framework and the digital infrastructure must be addressed. If this can be achieved, in 2030 Cambodia will enjoy the fruits of Bakong 2.0 where the financial ecosystem boasts an inclusive and robust high technology payment system.

References

Atkinson, A., and Messy, F. (2013). Promoting Financial Inclusion through Financial Education: OECD/INFE Evidence, Policies and Practice. Retrieved from: https://www.oecd-ilibrary.org/promoting-financial-inclusion-through-financial-education_5k3xz6m88smp.pdf

Barr, M., Harris, A., Menand, L and Thrasher, K. (2021). Should Central Banks Use Distributed Ledger Technology and Digital Currencies to Advance Financial Inclusion? Retrieved from: https://papers.ssrn.com/sol3/Delivery.cfm?abstractid=3849051

DLA Piper. (2021, March 21). Data Protection Laws of the World: Cambodia. Retrieved from: https://www.dlapiperdataprotection.com/system/modules/za.co.heliosdesign.dla.lotw.data_protection/functions/handbook.pdf?country-1=KH

Fintech Singapore. (2020, October 30). Cambodia's Central Bank Pioneers Digital Currency in South East Asia with Launch of Bakong. Retrieved from: https://fintechnews.sg/44810/blockchain/cambodia-pioneers-digital-currency-in-south-east-asia-with-launch-of-bakong/

Firn, M. (2021, June 24). Bakong digital payment app uptake proving slower than hoped. *Khmer Times*. Retrieved from: https://www.khmertimeskh.com/50880123/bakong-digital-payment-app-uptake-proving-slower-than-hoped/

IFC. (2019). Blockchain Opportunities for Private Enterprises in Emerging Markets. Retrieved from: https://www.ifc.org/wps/wcm/connect/2106d1c6-5361-41cd-86c2-f7d16c510e9f/201901-IFC-EMCompass-Blockchain-Report.pdf?MOD=AJPERES&CVID=mxYj-sA.

Kaplan, S. (2011, April 19). Business Models Aren't Just for Business. *Harvard Business Review*. [blogpost] Retrieved from: https://hbr.org/2011/04/business-models-arent-just-for

Kem, B., Sou, J., Ng, Z. and Chan, P. (2019). Startup Kingdom: Cambodia's Vibrant Tech Startup Ecosystem. Retrieved from: https://responsiblefinanceforum.org/wp-content/uploads/2019/11/Cambodias-Vibrant-Tech-Startup- Ecosystem-2019.pdf.

Kusumastuti, A., and Nuryani, A. (2020). Digital Literacy Levels in ASEAN (Comparative Study on ASEAN Countries). Conference Paper: Proceedings of the 13th International Interdisciplinary Studies Seminar, 30-31 October 2019, Malang, Indonesia Retrieved from:

https://www.researchgate.net/publication/339897308_Digital_Literacy_Levels_in_ASE
AN_Comparative_Study_on_ASEAN_Countries

Lewis, S. (2020, October 19). There's a New, Cutting-Edge Payments System and It's from
Cambodia. Asian Development Bank. Retrieved
from: https://seads.adb.org/solutions/theres-new-cutting-edge-payments-system-and-
its-cambodia

LIRNEasia. (2019). AfterAccess: ICT access and use in Asia and the Global South (Version 3.0).
Retrieved from: https://lirneasia.net/wp-content/uploads/2019/05/LIRNEasia-
AfterAccess-Asia-3.0-update-28.05.2019.pdf.

Madan, N. (2020). G2P and International Digital Remittances During COVID-19 Early Lessons
from Cambodia. UNESCP. Retrieved from
https://www.unescap.org/sites/default/d8files/eventdocuments/Cambodia_Final%20r
eport%20G2P%20and%20International%20Digital%20Remittances_03032021.pdf.

Morgan, P.J. and Trinh, L. Q. (2017). Determinants and Impacts of Financial Literacy in
Cambodia and Vietnam. Asian Development Bank. Retrieved from:
https://www.adb.org/sites/default/files/publication/325076/adbi-wp754.pdf.

National Bank of Cambodia (NBC). (2020a, June). White Paper: PROJECT BAKONG Next
Generation Payment System. Retrieved from:
https://bakong.nbc.org.kh/download/GUIDE_BOOK_FA_7.pdf.

National Bank of Cambodia (NBC). (2020b). National Bank of Cambodia: Annual Report
2019. Retrieved from:
https://www.nbc.org.kh/english/publications/annual_reports.php

O'Brien, C. (2021, February 23). Financial inclusion, financial consumer protection, and
Financial education policies in CLMV. OECD. Retrieved from:
https://www.oecd.org/financial/education/presentations-webinar-on-fe-and-fcp-in-
CLMV-countries-2021.pdf.

OECD. (2019). The Policy Environment for Blockchain Innovation and Adoption 2019 OECD
Global Blockchain Policy Forum: Summary Report. Retrieved from:
https://www.oecd.org/finance/2019-OECD-Global-Blockchain-Policy-Forum-Summary-
Report.pdf.

RadioFinance. (2020, November 11). Cambodia's Serey clarifies: "Bakong is not a digital currency". Retrieved from: https://www.radio.finance/episodes/nbcs-serey-bakong-is-not-a-cbdc-it-is-a-backbone-payment-system-built-on-dlt.

Raghuveera, N. (2020, June 10). Central Bank Digital Currency can contribute to financial inclusion but cannot solve its root causes. Atlantic Council. Retrieved from: https://www.atlanticcouncil.org/blogs/geotech-cues/central-bank-digital-currency-can-contribute-to-financial-inclusion-but-cannot-solve-its-root-causes/

Seng, K. (2020, September). The Poverty-Reducing Effects of Financial Inclusion: Evidence from Cambodia. Retrieved from: https://www.eria.org/uploads/media/discussion-papers/4-The-Poverty-Reducing-Effects-of-Financial-Inclusion_Cambodia.pdf.

Sinay, J.B., Tumengkol, E.A. and Zendra, O. (2021, April 4). Payment Systems in the Digital Age: Case of ASEAN. ASEAN. Retrieved from: https://asean.org/?static_post=payment-systems-digital-age-case-asean" https://asean.org/?static_post=payment-systems-digital-age-case-asean

SORAMITSU. (2020, October 28). Kingdom of Cambodia Launches Central Bank Digital Currency, Co-Developed with Fintech Company SORAMITSU. Retrieved from: https://soramitsu.co.jp/bakong-press-release.

The Asian Banker. (2020, November 10). Background Notes on "Cambodia's national mobile payments and digital currency platform- Bakong".Retrieved from: https://www.theasianbanker.com/press-releases/background-notes-on-cambodias-national-mobile-payments-and-digital-currency-platform-bakong

Vireak, T. (2021, January 26). Central Bank rolls out Retail Pay system. *The Phnom Penh Post.* Retrieved from: https://www.phnompenhpost.com/business/central-bank-rolls-out-retail-pay-system.

World Bank. (2018). Benefitting from the Digital Economy. Cambodia Policy Note. Retrieved from: https://documents.worldbank.org/curated/en/100841543598854492/pdf/128267-REVISED-Digital-Economy-web.pdf.

Wyman, O. (2017). Accelerating Financial Inclusion in South-East Asia with Digital Finance. Asian Development Bank. Retrieved from: https://www.adb.org/sites/default/files/publication/222061/financial-inclusion-se-asia.pdf

You, S. (2019). Cashless Cambodia. In, Udom, D.S., Murg, B.J., Ou, V. and Renfrew, M. (Eds) Cambodia 2040: Culture and Society. Konrad Adeneur Siftung Cambodia and Future Forum.

Chapter 3 | Bridging Gender Digital Divide: A Path to an Inclusive Digital Economy in Cambodia

Keomuda VANLY

Future Scenario

In a small village located in a remote province in Cambodia, Chenda is sitting in her humble home taking care of her family business. Chenda's business is different from most traditional small businesses' operations. Instead of writing down her orders on paper, keeping a book record, and doing paper-based inventories, Chenda is scrolling through her phone to catch up with the real-time orders being placed, while tracking her products' delivery to her customers. Running a small business at home has become easier now that her business has been digitalized. Digitalization removes the geographical barrier, allowing her to have bigger market access and to conveniently accept online money transfers without having to go to the nearest money transfer agency. On top of that, Chenda is also taking an online course on how to integrate her small business directly into the global value chain without the need to participate through multinational companies.

Still impressed by how the internet and digital technologies have been able to change her business, Chenda sees that her sister is hurrying back from school to tell her about today's lesson on digital literacy. According to her sister, digital literacy has now been embedded in the school curriculum starting from primary school. Not only was her sister taught about the importance of having access to the internet and the proper attitude that one should have when interacting on social media, but her sister was also taught in-depth on the different experiences of men and women when it comes to internet usage.

Hearing her sister talk enthusiastically about her digital literacy class and seeing her business today, Chenda could not help but reflect on how much has changed since 2020 and all the possibilities that have opened up since she first got access to the internet. During the global pandemic of Covid-19, when face-to-face interaction was almost impossible, everything started to be digitalized and go online. For other people, switching to an online platform seemed simple; unfortunately, Chenda did not have the same privilege. It was not only because she was living in one of the most remote areas of the country, making online connectivity a challenge, but also because she did not have adequate knowledge of how to adapt to digitalization. The online world felt uncomfortable and unfamiliar, as the content online did not fit her interests and needs; this discouraged her from going online. Luckily, 2021 was a breakthrough year. The gender digital

divide started to gain attention after Cambodia began to try to find solutions for how to bridge the digital divide and promote inclusive usage of the internet as a part of the country's transformation towards the digital economy. While implementing the Digital Economic and Society Framework (2021-2035), Cambodia started to collect gender-disaggregated data on internet usage and integrate information and communication technologies (ICTs) in its school curriculum (in both formal and vocational education) with the aim of developing digital literacy and confidence in its young citizens. The Royal Government of Cambodia (RGC) cooperated with mobile phone operators to expand the availability of internet broadband and offer an affordable price for internet usage, as well as working with civil society to launch campaigns to change attitudes about internet usage. The campaigns include creating a positive perception among women and girls regarding the use of the internet as well as raising public awareness of the barriers that hinder women and girls from going online. Thanks to these initiatives, Cambodia started to narrow the gender digital divide, and develop digital literacy and a positive digital attitude amongst its citizens.

Taking advantage of all of the transformations, Chenda maximized her opportunity by actively participating in the digital literacy training that was provided in her village as part of the Cambodian government's campaign to transform Cambodia's citizens into digital citizens. Now in 2035, Chenda feels more comfortable online and is able to find the information needed for her business and herself, while proudly witnessing her sister getting better knowledge in digital literacy. Thinking back to all the changes, Chenda is thankful that she and her sister, as women, were not left behind in Cambodia's digital transformation, but instead the process has taken into account the barriers that she faced as a woman trying to adapt to a new digital age.

Introduction: Narrowing the gender digital divide in Cambodia

Chenda's story provides a good example of the social and economic opportunities that ICTs such as digital networks and platforms, mobile phones, internet services, and fixed broadband can provide to an economy. Such opportunities are recognized by Cambodia and the RGC aims to transform Cambodia into a digital economy by 2035 in order to achieve the vision of being a middle-income country by 2030 and a high-income economy by 2050 (Supreme National Economic Council, 2021).

While digital technologies are playing an integral part in the development of Cambodia's digital economy, Chenda's story also shows that the benefits of the technological transformation have not been distributed equally amongst social groups. One of the groups being left behind is women who are facing social constraints, ranging from the lack of digital knowledge to societal norms, which hinder them from having access and being able to meaningfully enjoy the benefits that ICTs have to offer. While internet usage and coverage increased twofold between 2015 and 2020, the

gender digital divide persists. In 2019, 48 percent of women worldwide were using the internet compared to 58 percent of their male counterparts, representing a gender gap of 17 percent (ITU, 2020; Picot and Spath, 2020). Likewise in Cambodia, data from 2018 showed that there was a 20 percent gap between men and women in terms of mobile phone ownership (male: 78%, female: 62%) and around 34 percent gap in internet usage (male: 45%, female: 30%) (LIRNEasia, 2018). With such a gap in access and use of digital technologies and the internet, the gender digital divide has been recognized as one of the barriers to achieving gender equality and might potentially exacerbate existing gender inequality. For this reason, the 2030 Agenda for Sustainable Development has also included narrowing the gender digital divide in target 5B of SDG goal 5: Promoting gender equality and women's empowerment [1] (United Nations, 2021, p. 5).

As the RGC is working on transforming Cambodia into a digital economy, narrowing the gender digital divide in the country should be promoted so that Cambodian women and girls can enjoy the benefits that digital technologies have to offer, as reflected in Chenda's story. Therefore, this paper will assess the gender digital divide in Cambodia and outline possible policy solutions to narrow the gender digital divide in the country, thus contributing to Cambodia's transformation to an inclusive digital economy.

Context Analysis

Gender Digital Divide: the definition

The notion of gender digital divide is still relatively new and goes against the prevailing view that digital technologies, such as ICTs, are "neutral and rigid." That is, ICT tools are commonly viewed to be "socially-neutral, useful, and can be used regardless of the social, economic, and political contexts" (Stamp, 1989 as cited in Huyer and Sikoska, 2003, p.16). If ICTs are considered gender-neutral, it is naturally assumed that women were able to benefit equally from them. Such a belief, however, overlooks the social context that digital technologies are operating in; the ability to utilize and benefit from ICTs is constrained by the socio-cultural context (UNESCAP, n.d.; Huyer and Sikoska, 2003).

In spite of the continuing debate, the gender digital divide is commonly defined (in binary terms), as the gap between women and men in access to ICT (Picot and Spath, 2020). The discussion of ICT access has evolved beyond looking at the 'haves' and the 'have-nots' to a more complex discussion of access that takes into account the basis of psychological, material, skills, and usage factors (UNESCAP, n.d.; Antonio and Tuffley, 2014). For this reason, the gender digital divide can be better understood as "inequalities between women and men in terms of digital technology

---

[1] Target 5.B: "Enhancing the use of enabling technology in particular information and communications technology, to promote the empowerment of women"

and use" (USAID, 2020, p. 4). By taking into account the technology and social context of access to ICT, Liff and Shepherd (2004) have identified four types of access that affects the gender divide: technical access, ability to use access, take-up of access, and impact of access, as described in the Box 1 below:

Box 1. Key dimensions of Internet access affecting gender divides

- *Technical access*: where men and women can and do get access to an Internet-ready device; the type of device involved; and the quality of the connectivity.
- *Ability to use access*: the extent to which men and women know other people who use the Internet and can provide help; the skill levels they perceive they have reached; their comfort/discomfort with ICT-based systems; and worries about potential negative consequences of access (e.g. fraud or viruses).
- *Take-up of access*: whether men and women are Internet users; any variation in length of use; how much use they make of access; and what range of activities they use it for.
- *Impact of access*: the degree to which Internet use has changed patterns of activities; any views as to the significance of this, in this context focusing on the extent to which access is being used in ways that challenge or reinforce gender stereotypical behaviour.

Source: Liff and Shepherd, 2004

Gender Digital Divide in Cambodia

There are few to no studies that directly address the topic of the gender digital divide in Cambodia. The existing discussions on the topic can be found in studies related to the gender digital divide in developing countries more broadly or as part of the discussion of the digital divide in Cambodia in general. The lack of studies on the gender digital divide in Cambodia contributes to an incomplete understanding of the challenges that Cambodian women face when adopting and adapting to digital technologies. This could potentially exacerbate the existing gender inequalities in the country, especially as Cambodia is moving towards a digital economy.

Evidence of gender digital divide in Cambodia

The gender digital divide in Cambodia, due to limited data, could be summarized as the result of the issues related to technical access and the ability to use access based on the framework by Liff and Shepherd (2004). In terms of technical access, in 2019, the number of internets and mobile phone subscriptions in Cambodia has increased to 84 percent internet subscriptions and 177 percent mobile subscriptions. However, as mentioned above, the 2018 survey showed that there remained a 20 percent gap and 34 percent gap between women and men in mobile phone ownership and internet usage respectively (LIRNEasia, 2018; Kong, 2019). On top of that, a 2016

study on 2,000 Cambodian participants also found out that men are more likely than women to use the internet on their phones with 42 percent of men, while only 24 percent of women responded that they used or had used the internet on their phones (Phong et al., 2016). The survey by LIRNEasia (2018) found that the main reason for Cambodian people not using the internet is that they do not know how to use it (41% of the sample population) as well as that they do not have access to the internet devices like computers and smartphones (23% of the sample population). Even though the survey did not disaggregate between women and men on the reason for not using the internet, various studies have shown that digital literacy is one of the main barriers for women to adopt digital technologies (Picot and Spath, 2020). To begin with, in terms of acquiring ICT skills through general or formal education, Cambodian women and girls tend to be at the disadvantage, as they tend to have high dropout rates in secondary and high school, while the ICT curriculum in Cambodia starts at high school level in grade 11 and 12. This means that girls are missing out on receiving ICT training as well as STEM education that is required for them to acquire ICT skills. Other barriers that hinder women from acquiring ICT skills include the time availability issue of women due to their role in engaging in unpaid domestic works and the lack of gender-sensitive ICT content (UNDP, 2020; Touch, 2018). Moreover, women tend to have less interest in ICT, as digital technology has been gender-stereotyped as a male domain; therefore, women are not encouraged by their parents and surroundings to pursue ICT skills (Marsan and Sey, 2021; Touch, 2018). For women that have access to the internet and online platform, online crimes such as online harassment and online gender-based violence also serve as a barrier that limits women's online participation and prevent women from practicing their ICT skills (Touch, 2018). LIRNEasia (2018) found that 29 percent of female Cambodian internet users (aged 15-65) have experienced online harassment compared to 23 percent of their male counterparts, mostly in the form of being cyberstalked. Of the Cambodian women that have experienced online harassment, 11 percent reported reducing the usage of the particular website, while 7 percent deleted the application.

Bridging gender digital divide: why it matters?

As Cambodia is moving towards a digital economy, ICTs and digital technologies will become more integrated into our society and economic development. Therefore, bridging the gender digital divide will provide opportunities for women to be included in the socio-economic development of Cambodia, thus improving the economic development of Cambodia as a whole. A report by Plan International (2018) suggested that global GDP would rise between 13 - 18 billion USD if an additional 600 million women are connected to the internet in 3 years (p. 6).

Secondly, as the economy has become more digitalized, equipping women with the necessary resources and skills to adapt to the new digital economy would improve their financial inclusion and employment opportunities, thus contributing to women's economic autonomy. In terms of

financial inclusion, having adequate digital skills and access would allow women to better access financial services that are increasingly digitalized (Sorgner et al., 2018 as cited in Picot and Spath, 2020). Currently, women in developing countries like Cambodia are less likely than men to have a bank account and therefore less likely to have access to mobile banking. This hinders their ability to manage their finances and fully engage in economic activities (OECD, 2018).

In terms of employment opportunities, better digital inclusion will allow women to successfully navigate the labor market and improve their ability to find employment opportunities that match their skill set. Furthermore, digital technologies can also help Micro, Small and Medium Enterprises (MSMEs) to expand and reach a wider range of customers; while reducing the cost of expensive marketing and sales expenditures (OECD, 2018; Touch, 2018). Amongst all the MSMEs in Cambodia, women are estimated to own and manage around 61 percent; however, most women-owned MSMEs tend to be micro and unregistered (less than 2% of women-owned businesses obtain registration) (Pact, 2019). For this reason, bridging the gender digital gap will offer women entrepreneurs opportunities to leapfrog to more advanced technologies as well as bringing their businesses from the informal to formal economy.

ICT and gender mainstreaming policies in Cambodia

Promoting gender equality and enhancing women's participation in all sectors has long been on the agenda of the RGC. Therefore, as Cambodia is moving towards a digital economy, the discussion on women's participation in the digitalization process has also emerged in policy papers, especially in the long term policy framework, the Digital Economy and Society Framework (2021-2035) and the 5th Gender Mainstreaming Strategic Plan, Neary Rattanak V (NR5) (2019-2023) of the Ministry of Women's Affairs (MoWA). The Digital Economy and Society Framework has mentioned the need to create programs to support women's participation in the digital sector as one of the policy measures to mitigate the challenges in Cambodia's digital transformation (SNEC, 2021, p.94). At the same time, NR5 also mentions the need for the development of the professional skills of women to be in line with the needs of a digital economy as one of the objectives of the strategy for women's economic empowerment (MoWA, 2021, p.27). On paper, the acknowledgement of support for women's participation in Cambodia's digital transformation shows that Cambodia recognizes the barriers that women face when adopting new digital technologies. It further reflects Cambodia's political will in promoting an inclusive digital economy. Even so, the discussion of support for women's digital adoption in the two policy frameworks only focuses on reskilling women through vocational training. The policy frameworks do not mention the means to address other barriers that women might face in digital adoption such as online gender-based violence and other aspects of digital literacy such as digital ethics and digital safety.

Yet, the main concern in narrowing the gender digital divide lies in the operation and implementation of the policy papers. The operation/implementation gap has long been the main shortcoming of Cambodia's gender mainstreaming strategy (MoWA, 2014a). The top two challenges in implementation are the limited alignment between line ministries and key activities set in Neary Rattanak, and the gender budget constraint. Firstly, the implementation of the Neary Rattanak Strategic Plan relies on the implementation and monitoring of the line ministries; therefore, respective line ministries need to regularly establish their Gender Mainstreaming Action Plans (GMAPs) implemented by the Gender Mainstreaming Action Groups (GMAGs) in the line ministries (JICA, 2018). However, the GMAPs tend not to link to the overall strategic plans of the line ministries. Furthermore, the line ministries also have limited capacity to implement their respective GMAPs as well as having a low commitment to implementing the GMAPs due to the perception that gender equality is the work and responsibility of MoWA (USAID, 2016). Secondly, it has also been reported that there has been a limited budget to implement gender-related plans and activities, posing a challenge for gender mainstreaming activities in Cambodia (USAID, 2016; MoWA, 2014b). Because of the challenges in implementation, women and girls could potentially be left out of Cambodia's digital transformation. For this reason, a practical commitment is required for bridging the gender digital divide in the country.

Policy Recommendations

Building a digital economy is part of Cambodia's plan to become a middle-income country by 2030 and a high-income economy by 2050. However, for Cambodia to be on the right path for inclusive digital economic development, the country must build a strong digital foundation that allows both women and men to be included and be able to contribute to the country's digitalization process. The following recommendations provide solutions to bridge the gender digital divide in Cambodia. All the recommendations would require close cooperation and commitment from all relevant stakeholders, including the government, NGOs/civil society, and private sector actors.

Collecting gender-disaggregated data and gender-specific indicators on ICT

Having adequate data plays a very important role for policymakers to get a more accurate understanding of the gender digital divide in Cambodia in order to include gender issues in ICT policies, plans, and strategies. However, there is still a lack of gender-disaggregated data and gender-specific indicators to assess women's involvement in digital technology in Cambodia. This requires policymakers to cooperate with civil society organizations, especially women's rights organizations, and private sector actors, such as mobile operators and internet service providers, to develop a better data collection strategy that is disaggregated by gender.

The existing data focuses on some of the barriers that women face that hinder them from using ICT such as the education attainment rate, time constraints, and socio-cultural barriers, while the data collected on internet users and mobile phone ownership tends to be reported at the household level. Although the data is useful, it is not enough to construct gender-related indicators and to monitor and evaluate gender-related issues in ICT policies. UNESCAP (n.d.) recommends that gender statistics on ICT should be collected at an individual level; that is, collected directly from women and girls rather than their family members. In addition, the data collected should include qualitative and quantitative data on the differing patterns of access and use of ICTs for men and women. Policymakers can refer to existing toolkits like GSMA's "Toolkit for Researching Women's Internet Access and Use" to help craft gender indicators along with the "UN Minimum Set of Gender Indicators" (GSMA, 2018; Sey and Hafkin, 2019). Because individual-level micro-data needs to be collected from women themselves regarding their ICT experience, big data[2] collection and analytics plays a very important role in collecting the data needed for the gender digital divide in Cambodia. Access to big data will allows policymakers to track longitudinal change and understand the pattern of access and online behavior (UNICEF, n.d.). Furthermore, private sector actors like mobile phone operators and internet service providers should be involved in recording detailed data related to their customers, disaggregated by gender. This may include ownership of devices, the amount of time spent online as well as the type of activities that woman and men do online. The data collection should be done anonymously in order to protect the users' privacy.

Gender-disaggregated data should be used to update the existing Digital Economy Policy Framework and Gender Mainstreaming Strategy and could be shared with the Supreme National Economic Council (SNEC)[3] and line ministries, on a quarterly basis to provide an up-to-date picture of the gender digital divide in Cambodia. The utilization and sharing of data amongst stakeholders should be done in a secure manner with consideration for data protection and privacy requirements (OECD, 2018). Civil society organizations can play an important role in monitoring the usage of the data collected and ensuring that gender-disaggregated data would contribute to measures that address the gender digital divide in Cambodia.

Improving gender mainstreaming strategy and implementation

At the policy level, RGC should continue prioritizing gender mainstreaming in Cambodia's economic development, with close cooperation between MoWA and line ministries such as the

---

[2] Big data is defined as "large volumes of high velocity, complex, and variable data that require advanced techniques and technologies to enable the capture, storage, distribution, management and analysis of the information." (UN Women, 2018)

[3] SNEC is "the highest-level government body mandated to provide the Prime Minister with recommendations regarding policies and strategies for socioeconomic development" (ADB, 2013). The body is responsible for the coordination and establishment of the Digital Economy and Policy Framework.

Ministry of Economic and Finance, Ministry of Labor and Vocational Training, and Ministry of Post and Telecommunication (SNEC, 2021). In order for the gender-mainstreaming strategy to be implemented effectively, first, the GMAGs in each respective line ministry should be involved in their respective strategic plan in order to monitor that the plan is drafted with gender sensitivity and responsiveness. Furthermore, the GMAPs should be linked with the overall strategic plan of the line ministries or serve as an extension to the overall strategic plan. It is also essential to ensure that sufficient gender budgeting is allocated to implement the activities in GMAPs of each line ministry. In addition to mainstreaming gender at the level of the strategic plan, gendered indicators should also be developed in the monitoring and evaluation plans to track the effectiveness of implementation. The monitoring of the plan's implementation involves close coordination among stakeholders, including the government and non-state actors such as the development partners and civil society. Second, in order to ensure effective implementation and monitoring of GMAPs in line ministries, the GMAGs and officials should be equipped with adequate capacity to conduct gender analysis and advocacy. This requires internal training for officials on gender-sensitive project planning and implementation.

Promoting ICT skills and digital literacy for women

One of the main barriers for women to access ICT is their lack of digital skills and literacy; therefore, women's skills development in ICT should be integrated into formal education, through capacity development training, and public campaigns.

Incorporating digital literacy in formal education

In the formal education system, the government of Cambodia should introduce digital literacy in the school curriculum from the primary school level, which has the highest enrolment rate of both girls and boys. This will enable female students to be familiar with ICTs from a young age, as well as online ethical behavior and safety. An early introduction to ICT will help them to identify if they are interested in tech-related fields. The government should expand the existing STEM programs like the New Generation School and E2STEM to the primary and secondary levels as well.

Additionally, for ICT-related education to be successful, the government should ensure adequate digital equipment in the classroom and a sound and relevant ICT curriculum is set in place. The UNDP Assessment report (2020) suggests that the content of the ICT curriculum that is currently introduced in grades 11 and 12 is out of date and lacking "a clear and logical coherence" (p.37). Furthermore, the current curriculum only introduces high school students to open-source software programs like Openoffice and the Ubuntu Linux operating system that might cause a challenge for students when they try to adapt to the Microsoft ecosystem dominant in the ICT market. For this reason, the government should consider revising the current curriculum to be

up to date by working closely with international donors, I(N)GOs and civil society partners to develop and revise the digital education curriculum as well as acquiring relevant digital tools and software for formal digital education. On top of ICT skills, digital literacy education should also be developed with a focus on digital citizenship. The curriculum should include digital ethics, promoting understanding of digital safety, and increasing understanding of the differences between men and women regarding their online experience.

Incorporating digital literacy through capacity development training for women

Besides developing digital literacy through formal education, women in the labor market can also develop their ICT skills through capacity development training. The capacity development training, similar to the formal education curriculum, should focus on information literacy, digital skills, critical thinking, and complex problem-solving skills. Such training could be conducted through a home-based government program at the sub-national level with the cooperation of development partners, local NGOs, the private sector, and women-owned business associations to upskill the current workforce.

In addition to organizing training at the local level, developing ICT skills and digital literacy for women could also be done through Women Development Centers (WDCs) at the local level. There are 14 WDCs under the management of MoWA in Cambodia, located in different provinces in the country that provide training to women on vocational skills such as financial literacy, small business management, sewing/tailoring and beautician skills (MoWA, 2019). Annually, the 14 WDCs provide vocational training to around 3,000 women; therefore, incorporating digital literacy in the curriculum of WDCs would allow Cambodia to reach out to more women and equip them with better digital literacy, thus preparing them to become digital citizens (MoWA, 2021). One of the challenges that WDCs face, however, is regarding their structure and budget, which does not allow WDCs to move beyond providing vocational training (MoWA, 2019; Vanly, 2020). For this reason, an adequate budget allocation from MoWA with the support of development partners is needed in order for digital literacy and ICT skills to be incorporated into the WDCs' training curriculum.

Conducting an awareness-raising campaign regarding women owning and accessing mobile phones and the internet

Bridging the gender digital divide in Cambodia requires the public to contribute to providing a safe online space for women. For this reason, it is very important for the government, with the support of civil society such as women's rights organizations, to organize awareness-raising campaigns about the gender digital divide. The campaign should be conducted with the objective to promote social and behavioral change in order to change gender stereotypes surrounding technology and ICT tools in Cambodia. The campaign should focus on raising awareness of the

barriers that women and girls face that hinder them from accessing mobile phones and the internet as well as promoting ethical online behavior that aims to mitigate online gender-based violence and harassment. The campaign should also encourage women, girls, and their family members to feel comfortable with ICT. The campaign should also provide tips and solutions for how the public can contribute to narrowing the gender digital divide in Cambodia such as how to be mindful online and information related to reporting platforms and hotlines to contact when the public witnesses online gender-based violence. The campaign can be done at the local level and through an online campaign. Sub-national institutions like the Women and Children's Consultative Committees (WCCCs), Commune Committee for Women and Children (CCWCs), and Women and Children Focal Point (WCFP) should be tasked with promoting awareness of the gender digital divide at the local level due to their close association with local communities.

Providing inclusive service

Besides collecting gender-disaggregated data of their consumers, private sector actors like mobile phone operators and internet service providers can help to bridge the gender digital divide by providing affordable choices for internet service and mobile phones for women, especially for women with low incomes in order to promote physical accessibility. Furthermore, internet service providers should also produce more content that is tailored to women's interests and needs. Gender-disaggregated data of women's online behavior can help to inform the creation of this content. The government could also support affordable pricing of internet and mobile phones services through digital tools market expansion and the promotion of free-market competition in the market of digital devices.

Conclusion

The gender digital divide in Cambodia remains wide, in terms of both usage and the barriers that women are facing such as the lack of ICT skills, which makes it difficult for women to adapt to and adopt ICT. This is compounded by a lack of interest in digital tools due to gender stereotypes, online harassment, and time constraints due to disparities in domestic labor. As Cambodia is building its digital economy, the issue of the gender digital divide should be integrated into the country's ICT policies, plans, and strategies, so that the digital economy in Cambodia will be inclusive and beneficial to all social groups, particularly women. The story of Chenda at the beginning of the chapter is a good reflection of the future reality when the gender digital divide is narrowed. To bridge the gender digital divide, Cambodia should 1) ensure that there is sufficient data on the issue through the collection of gender-disaggregated data and the development of gender indicators, and 2) improve upon the existing gender mainstreaming policy and its implementation, to include effective monitoring and evaluation, as well as equipping line ministries with adequate capacity to carry out gender-related activities. On the

digital literacy side, Cambodia should promote ICT skills and digital literacy for women through formal education, capacity development training, and awareness-raising campaign. At the same time, Cambodia can bridge the technical access issue by expanding the market for digital tools and promote free-market competition. With the commitment and close cooperation from all relevant stakeholders, including the government, NGOs/civil society, and private sector actors, it is possible for Cambodia to achieve gender equality in ICTs.

References

Antonio, A., and Tuffley, D. (2014). The Gender Digital Divide in Developing Countries. *Future Internet*, *6*, 673–687. https://doi.org/10.3390/fi6040673

GSMA. (2018). *A Toolkit for Researching Women's Internet Access and Use*. [Toolkits]. Retrieved from: https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2018/05/GSMA-Women-and-Internet-Research-Toolkit_WEB.pdf

Huyer, S., and Sikoska, T. (2003). *Overcoming the Gender Digital Divide: Understanding ICTs and their Potential for the Empowerment of Women*. Instraw. Retrieved from: http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/SHS/pdf/Overcoming-Gender-Digital-Divide.pdf

International Telecommunication Union (ITU). (2020). *Measuring Digital Development: Facts and figures 2020*. Retrieved from: https://www.itu.int/en/ITU-D/Statistics/Documents/facts/FactsFigures2020.pdf

Japan International Cooperation Agency (JICA). (2018). *Project on Gender Mainstreaming for Women's Economic Empowerment: Project Completion Report*. Retrieved from: https://openjicareport.jica.go.jp/pdf/1000036814.pdf

Kong, M. (2019). *Long-Term Policy Framework for Cambodia's Digital Economy* [Consultation Workshop]. Retrieved from: https://set.odi.org/wp-content/uploads/2019/11/Presentation-on-Concept-Note-of-DE.pdf

Liff, S., and Shepherd, A. (2004). An Evolving Gender Digital Divide?. Oxford Internet Institute, *2*, 1-8. Retrieved from: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1308492

LIRNEasia. (2018). *AfterAccess: ICT access and use in Asia and the Global South*. Retrieved from: https://lirneasia.net/wp-content/uploads/2018/10/LIRNEasia-AfterAccess-Asia-Report.pdf

Marsan, G. A., and Sey, A. (2021). Women's Participation in the Digital Economy. *Economic Research Institute for ASEAN and East Asia*, *2020*(09), 5. https://think-asia.org/handle/11540/13359

Ministry of Women's Affairs (MoWA). (2014a). *Cambodia Gender Assessment 2014: Leading the way (Executive Summary)*. Retrieved from: http://www.undp.org/content/dam/cambodia/docs/DemoGov/NearyRattanak4/Neary%20Rattanak%204%20-%20Summary_Eng.pdf

Ministry of Women's Affairs (MoWA). (2014b). *Gender: Gender Mainstreaming, Institution, Partnership, and Policy Context*. Retrieved from:

https://www.kh.undp.org/content/dam/cambodia/docs/DemoGov/NearyRattanak4/Neary%20Rattanak%204%20-%20PB%20Gender%20Mainstreaming_Eng.pdf

Ministry of Women's Affairs. (2019). *Cambodia Report*. The 25th Anniversary of the Fourth World Conference on Women and the adoption of the Beijing Declaration and Platform for Action (1995). Retrieved from: https://asiapacificgender.org/sites/default/files/documents/Cambodia%20(English).pdf

Ministry of Women's Affairs (MoWA). (2021). *Neary Rattanak V: Five Year Strategic Plan For Strengthening Gender Mainstreaming and Women's Empowerment*. Retrieved from: https://www.mowa.gov.kh/detail/5955

Organisation for Economic Co-operation and Development (OECD). (2018). *Bridging the digital gender divide: Include, upskill, innovate*. Retrieved from: http://www.oecd.org/going-digital/bridging-the-digital-gender-divide.pdf

Pact. (2019). *Listening to Cambodian Young Women Entrepreneurs.* Retrieved from: https://www.pactworld.org/library/listening-cambodian-young-women-entrepreneurs

Phong, K., Srou, L., and Solá, J. (2016). *Mobile Phones and Internet Use in Cambodia 2016* [Research Report]. USAID. Retrieved from: https://asiafoundation.org/wp-content/uploads/2016/12/Mobile-Phones-and-Internet-Use-in-Cambodia-2016.pdf

Picot, M. D., and Spath, K. (2020). *Women and the Future of the Digital Economy in Asia: Decent work for all?* (p. 33). Friedrich-Ebert-Stiftung. Retrieved from: http://library.fes.de/pdf-files/bueros/singapur/16217.pdf

Plan International. (2018). *Digital Empowerment of Girls*. Retrieved from: https://plan-international.org/publications/digital-empowerment-of-girls

Sey, A., and Hafkin, N. (2019). *Taking Stock: Data and Evidence on Gender Digital Equality in Digital Access, Skills, and Leadership*. The EQUALS Research Group. Retrieved from: https://unu.edu/media-relations/releases/new-equals-research-group-report-unveils-persistent-digital-gaps-and-the-complexity-of-gender-equality-in-ict-access-skills-and-leadership.html

Supreme National Economic Council (SNEC). (2021). *Digital Economy and Society Policy Framework Cambodia*. Retrieved from: https://data.opendevelopmentcambodia.net/en/library_record/digital-economy-and-social-policy-framework-of-cambodia-2021-2035/resource/d29b116e-ffe2-48ba-8222-5bbdc2772c51

Touch, S. (2018). Women in Cambodia's Digital Economy: Key Challenges and Opportunities. In *Digital Insight*. KAS Cambodia. https://www.kas.de/en/web/kambodscha/single-title/-/content/digital-insigh-1

UN Women. (2018). *Gender equality and Big Data*. Retrieved from: https://www.unglobalpulse.org/wp-content/uploads/2018/03/Gender-equality-and-big-data-en-2018.pdf

UNDP. (2020). *Assessment of Digital Literacy for Employability and Entrepreneurship among Cambodian Youth*. Retrieved from: https://www.kh.undp.org/content/cambodia/en/home/library/assessment-of-digital-literacy-for-employability-and-entrepreneu.html

UNESCAP. (n.d.). *An Enabling ICT Policy Environment for Women Entrepreneurs in Cambodia.* Retrieved from: https://www.unapcict.org/sites/default/files/2020-02/Cambodia%20WIFI%20P%20Module_0.pdf

UNICEF. (n.d.). *Using big data for insights into the gender digital divide for girls: A discussion paper.* UNICEF Gender and Innovation Evidence Briefs - Insights into the Gender Digital Divide for Girls. Retrieved from: https://www.unicef.org/eap/media/8326/file/%20Using%20big%20data%20for%20insights%20into%20the%20gender%20digital%20divide%20for%20girls:%20A%20discussion%20paper%20%20%20.pdf

United Nations. (2021). *Goal 5 | Department of Economic and Social Affairs*. [website]. Retrieved from: https://sdgs.un.org/goals/goal5

USAID Cambodia. (2016). *Cambodia Gender Assessment.* Retrieved from: https://banyanglobal.com/wp-content/uploads/2017/06/Cambodia-Gender-Assessment-Report.pdf

USAID. (2020). *The Gender Digital Divide Primer*. Retrieved from: https://www.usaid.gov/sites/default/files/documents/GDD_Primer.pdf

Vanly, K. (2020). *Women Empowerment in Cambodia: An Analysis on Economic and Political Participation of Women under Neary Rattanak IV Strategic Plan (2014-2018)* (Unpublished Bachelor's thesis)*.* Royal University of Phnom Penh. Available from : https://www.academia.edu/44766306/Women_Empowerment_in_Cambodia_An_Analysis_on_Economic_and_Political_Participation_of_Women_under_Neary_Rattanak_IV_Strategic_Plan_2014_2018_

Chapter 4 | Online Gender-based Violence on Young Women and Girls in Cambodia

Soriya THEANG

Future Scenario

A Letter to My Sister on the Anniversary of her Death
01/07/2040

Dear Sister,

How have you been living in heaven? I'm here doing fine and so are our parents. We hope you can forgive us. After you took your life and left us (after we failed to see the seriousness of your experience with sextortion and online grooming), things have changed a lot here. It's too late, I know and I am sorry. Yet, your last confession letting us know your experience serves as our family's and nation's strength to fight online gender-based violence against young women and girls and secure their future to be free online.

Our parents have joined and now are co-leading the Parents for Child Safety program in our community—a national initiative involving parents in preventing online violence and exploitation. The internet service provider our parents are working for has also joined the government and law enforcement in their initiative to combat online violence. Speaking of which, now we have a young female Cambodian as the head of the Anti-Human Trafficking and Juvenile Protection Department and a queer head technician in the Cybercrime Unit. We also see new faces with diverse backgrounds joining the two bodies, who will lead other ASEAN technicians in our annual regional cooperation and capacity building activities. Changes and updates to our previous laws and policies have meant that our authorities can enforce laws better. These changes were made with the participation of all stakeholders especially young women and girls in the policy-making process, plus we have systematic data on online gender-based violence.

Things have changed in the educational system as well. Students can learn online safety skills by themselves or private tutoring through apps or Massive Open Online courses provided by the Ministry of education, Youth and Sport. Back at my job as a teacher, I now teach a class on violence prevention that focuses on gender norms, gender equality, children's wellbeing, and coping mechanisms for unsafe situations. These efforts in combating online violence on young women and girls cannot get you back but can guarantee a better future for the next generation.

Love, Your sister

Introduction

Since the introduction of digital technology, the world has been modernized and transformed. Cambodia is no exception, trying to embrace technology for better development. Technology has facilitated the everyday lives of people, for instance in communication — FaceTiming. Yet, problems enabled by technology do come along — an important example being online gender-based violence (eGBV).

During the Covid-19 pandemic, for young people especially, technology has become an indispensable tool for them to keep up with their education and stay connected with the world. Many young people spend much of their time online. With this disruptive development, comes issues like online child safety. A recent interview with children by Joining Forces and CRC-Cambodia found that 15% of all children interviewed reported to have been contacted by strangers on social media, while 2% reported having been asked to share intimate pictures or videos or to perform inappropriate acts in front of their webcam (Child Fund et al., 2020, p.5). In the first quarter of 2021 when the pandemic surged strikingly, there were at least 30 reported cases of child exploitation and the sharing of pornographic pictures of young girls and women via the internet in Cambodia (APLE, 2020, p.32). Technology-facilitated gender-based violence against women and girls has proven to be difficult to combat, as perpetrators could commit violence from anywhere in the world and are able to remain anonymous (Fialova and Fascendini, 2012). Moreover, given better accessibility and affordability of digital technologies, abusers can commit the violence with less effort, and more rapid multiplication makes abuses difficult to trace or stop further circulation.

What will be the future of online gender-based violence in Cambodia? And what will it take to free Cambodians from online gender-based violence? This book chapter will review and analyze existing literature in order to answer the above questions and to shape a better future for gender equality in Cambodia. The chapter will look at the creation of the tech industry from a gender perspective in the first section of context analysis. In the next section, the practice of online safety will be discussed, followed by the third section on capacity building of internet users. In the last section of context analysis, national policies and the governance of cybercrimes against children will be reviewed, followed by policy solutions.

Context Analysis

Gender and Technology

As the tech industry has been monopolized and dominated by mostly straight, white, middle-class, Euro-American males (Reed, 2018), its cultural assumptions, values, and ideas have been unintentionally and intentionally built into hardware, software, and digital cultures. Accordingly, digital infrastructures are gendered, material, and embodied (Easter, 2018) in ways that enable online gender-based violence to exist, reflecting and reinforcing inequality and hierarchy that subordinate women, girls, and other marginalized groups (Citron, 2009; Wajcman, 2004). As part of the tech industry, social media platforms' bodies, structure, and management have shaped the functions of technology to create what Chang (2018) has described as "brotopia". In 2020, about 23% of the tech roles at so-called GAFAM companies were held by women (Google 23%, Apple 23%, Facebook 23%, Amazon not reported, Microsoft 20%) (Richter, 2021). This gender gap in the tech industry translates into negligence of the experience of women, girls, LGBTQ+, and other marginalized users, and helps to perpetuate technology-facilitated harassment, abuse, and harm.

In 2018, Amnesty International released a report showing that "Twitter can be a toxic place for its female users" from the UK and US and showing various forms of abuse such as targeted harassment, doxing, and sharing sexual or intimate images of a woman without her consent (Amnesty International, 2018, p.7). In 2017, a year before the release of the report, notably Twitter's workforce was 38.4 percent women of which 17.3 percent were technicians (Twitter, Inc, 2019). Similarly, in Cambodia, Telegram groups were found to be selling pornographic pictures and videos of both children and adults, most of which were girls and women (APLE, 2020). In those online groups, there were pornographic materials already stored in shared folders on Google Drive or Dropbox for offenders to preview before purchasing at prices ranging from USD 30 to USD 100 (Li, 2021). Though Telegram has adopted a 'zero tolerance' method towards such crimes, there is still a loophole; child sexual abuse materials (CSAM) which are distributed and shared between two users in private conversation cannot be reported and are therefore not subject to being banned by the service (Cyber Peace Foundation, 2020). In other instances, perpetrators use end-to-end encryption or delete the groups after giving the members enough time to download the content (Taing, 2020). These digital violations —online gender-based violence included— are part of the continuum of violence that is the cause and effect of inequalities and social control women and girls and other marginalized groups experience both online and offline.

Online Safety and Its Practice

In 2018, slightly more than one in four or 26 percent of people, mostly young and adult female users aged 15 to 65 years old, experienced harassment online including being called offensive names and cyberstalking (LIRNEasia, 2018, p.63). Cyberstalking is the most common type of online harassment while Facebook was the most frequently used platform. Almost half of the online harassment cases were committed by someone the victims did not know (LIRNEasia, 2018, p.62). Regarding online violence against children, a report by the Cambodia National Council on Children (2019) strikingly showed there was a 490% increase in the reporting of child sexual abuse materials, from 25,332 in 2017 to 123,896 in the first 11 months of 2018 (p.10).

In the first quarter of 2021, there were at least 30 reported cases of child exploitation and the sharing of pornographic pictures of young girls and women via the internet, while in 2020 there were 64 reported cases of distribution of CSAM and adult pornography for online grooming (cyber solicitation of children for sexual purposes), sexting and sextortion, and other forms of online abuse — committed by local and foreign perpetrators (APLE, 2020, p.32). Recently there was an online sextortion case found by Action Pour Les Enfants (APLE). The teacher of a 15 year old girl started to groom her online, then asked for nude pictures of her, and forced her to give him a large amount of money in return for not posting her photo publicly online (APLE, 2020, p.30). In another example, a girl in elementary school, in addition to experiencing sextortion, was threatened in order to coerce her to perform sexual acts in front of a webcam by a man in Turkey who contacted her through social media (Li, 2021). With social media usage increasing among the younger population and education shifting online, cases of online child abuse would be expected to surge as well. Vann Khemreth, a child protection specialist from Friends-International, told Khmer Times that "many children and parents do not have enough knowledge on internet literacy and ethics which have been driving online child abuse" (Taing, 2020). Parents are often not aware of the effects that social media websites, online games or chat rooms have on the sexual beliefs and practices of children (Baury, 2018).

Whether online safety is an important topic for youth varies according to the region. In the capital, young people between 15 and 35 years old seem to be aware of their safety online, a report on Digital Economy found (Chan et al., 2021). Of the respondents, 43.1 percent strongly agree, 34.9 percent agree, and 18.0 percent somewhat agree with having a concern regarding potential hacking with the intent to steal personal data while using digital platforms, goods and services. Similarly, 40.7 percent strongly agree, 37.3 agree, and 16.4 percent somewhat agree with having a concern regarding possible scams that can emerge from using digital platforms, goods, and services (Chan et al., 2021, p.29). In rural areas, a different story is unfolding. Though internet usage is surging, many Cambodians still lack basic awareness of what the internet is,

based on the AfterAccess report (LIRNEasia, 2018, p.30). In practice young people's ability to safeguard themselves, their peers, or colleagues against harmful digital adversaries such as scams, phishing, or security breaches is low—especially compared to other ICT skill areas according to a UNDP report 2020 (see Table 1). The low rate of safety skills reflects challenges in the formal education system including limited class hours, insufficient facilities, and unsuitable curricula (UNDP, 2020, p.8). In addition, the report revealed that insufficient English capability is the top challenge for young people related to ICT learning followed by lack of internet connectivity and hardware facilities (p.8).

Table 1: Summary Statistics of ICT Scores for Different Competence Areas

Competence areas	Mean		
	High School	**University**	**Employed**
Hardware/Software	52.3	49.9	45.4
Information literacy	45.3	52.9	53.1
Content creation	50.0	48.0	62.8
Safety	36.8	38.1	43.2
Overall	47.3	17.9	50.6

Source: (UNDP, 2020)

Users' ICT Capacity Building

Formal education plays a role in building and enhancing youth's capacity in ICT skills. In 2015, the Ministry of Education, Youth and Sport (MoEYS) started to incorporate new ICT-related subjects in the curriculum from grade 4 to grade 12, while at the same time technology-related learning platforms were introduced and integrated into classrooms for educators and students (Heng, 2018). For instance, MoEYS App Scan is a tool for students to independently learn different subjects such as mathematics, physics, chemistry, history, and so on to complement in-class learning (APKPure, n.d).Furthermore, teachers are equipped with resources to improve their lesson plans on the Krou Website which hosts resources covering topics such as science, language, mathematics, social science, and others for levels from primary to higher education (MOEYS, n.d).

However, these open educational resources, which have been endorsed by MOEYS for educators and students to access digital and multimedia teaching and learning materials, seem to exclude the subject of digital safety for users. At the university level, basic digital literacy is provided as a one-semester subject covering mostly basic computer operations (UNDP, 2020). Moreover, the ICT curriculum at the university level is not standardized, leaving each university the freedom to develop its own curriculum and standards. Most of the available ICT learning materials are English-based resources, making it challenging for Cambodian youth due to their low level of English proficiency (Chan et al., 2021). All in all, ICT knowledge on safety skills provided by formal schools does not meet the demand of internet users, resulting in low rates of users' digital literacy skills on ICT safety.

Limitations in the provision of safety knowledge from formal education results in users' shift to informal sources such as Youtube tutorials, online documents, and website exploration. Learning occurring through other platforms is mostly through self-study, and through the use of YouTube video tutorials mostly (UNDP, 2020). Youth from urbanized areas have a much higher rate of regular self-learning than their rural counterparts due to better Internet connection, easier mobility, and wider exposure to learning resources. Another platform youth are pursuing is private ICT tutoring, for similar reasons — to gain more advanced ICT knowledge where schools did not provide enough (UNDP, 2020). However, there is a lack of emphasis on safety skills in these private courses. Private ICT tutoring almost always concentrates on increasing the youths' capability in content creation rather than safety skills. This reality presents a constraint, which is a cycle of low ICT skills in safety because youth continue to teach safety skills to themselves and therefore obtain shallow knowledge on such skills.

National Policy and Governance

Cambodia has started to pay attention to online child abuse and thus begun to develop policies and laws to combat such crime, yet those policies currently contain gaps that must be filled. Cambodia's Law on Suppression of Human Trafficking and Sexual Exploitation, Article 41, for instance, criminalizes acts in distributing, selling, leasing, displaying, projecting or presenting child sexual abuse materials in a public place (UNICEF, 2008). This law, however, does not address the distribution, sale, lease, displaying, projection or presentation of CSAM in private places, nor the intentional consumption, access and viewing of such materials through the use of information and communication technologies. Moreover, the law does not address online grooming, which creates a major legal gap in the growing space of online child sexual exploitation in Cambodia.

Another gap is the vague definition of child pornography. While Article 40 of the Law on Suppression of Human Trafficking and Sexual Exploitation defines child pornography as "a visible material such as a photograph or videotape, including a material in electronic form, depicting a minor's naked figure which excites or stimulates sexual desire", the new draft Cybercrime Law (Council of Ministers, n.d) lists child pornography as pornographic material that visually depicts "a minor engaged in sexually explicit conduct, a person appearing to be a minor engaged in sexually explicit conduct, and realistic images representing a minor engaged in sexually explicit conduct". These definitions fall short of fully protecting children because they do not include reference to images of the sexual parts of a child's body for primarily sexual purposes, nor do they cover child sexual abuse material in the form of written materials. In addition, Cambodia has no policies requiring online child abuse cases found by Internet Service Providers (ISP) to be reported or for those providers to hand related materials to law enforcement (UNICEF, 2016, p.27).

Just as there is a gap in the policy framework, loopholes exist in governance as well. Interviews with law enforcement conducted by the Cambodia National Council for Children in 2019, show a knowledge gap on digital violence among law enforcement officials working on online child abuse — including national police, Cybercrime Unit, Anti-Human Trafficking and Juvenile Protection Department who are all unfamiliar with new ICT devices and technology. Some officials have a limited knowledge of sexual abuse and violence on the internet while some know only of traditional cases of online abuses, in which offenders use Facebook to arrange a meeting with victims for offline abuses. Among law enforcement, the CyberCrime Unit was initially formed as the Cybercrime Investigation Section of the Cambodia National Police. Its purpose is to cooperate with other government agencies in conducting forensic investigations of electronic devices (Cambodian National Police, 2016). The unit does not work independently; it can only operate when receiving requests from the anti-human trafficking department to search seized electronic equipment for documents, images, or other files to prosecute a case (Cambodia National Council on Children, 2019). The Cambodian Cybercrime report in 2016 showed a limited number of online pornography cases reported to the unit, precisely 3 cases per year (Cambodian National Police, 2016). Some cases of online child abuse were reported through victim complaints and reports from the community (Blomberg, 2019).

Concerning the investigation of online child abuse cases, key informant interviews with law enforcement indicate that they simply refer cases such as these to Facebook's public content reporting mechanism (Cambodia National Council on Children, 2019). If the child-protection case involves a particular webpage, the CyberCrime unit would then refer the IP address of the website to the private ISP to provide information on the end-user in question. However, unlike in the United States where all ISPs are required to save these logs for a minimum of 6 months so

that law enforcement can investigate online child abuse cases, in Cambodia, there is no standard for saving IP Assignment Logs. Some ISPs may save logs for a matter of weeks, others for a matter of days, and others for only a matter of hours, making the incident virtually impossible to trace (Cambodia National Council on Children, 2019).

Policy Recommendation

Upon scrutinizing the scale of online gender-based violence on young women and girls in Cambodia, below are policy recommendations to combat the problem.

Enhance the capacity of related authorities in combating online violence and abuse using child-sensitive approaches to deal with child victims and witnesses. One way to achieve this is to provide guidelines and training to law enforcement units to increase their knowledge and skills to better respond to online child abuse. Annual capacity building and guidelines on new updates of technology will also be needed. Another way is to recruit new, younger, more tech-savvy, and female Cambodians who already have knowledge and skills related to technology to join the force.

Foster international cooperation between local and international technology experts on identifying and removing potentially abusive content as more and more cases are seen of foreign perpetrated online sexual abuses and violence. Cooperation in sharing resources for the investigation of cases and prosecution of perpetrators is needed.

Involve private sectors in combating online child abuses to promote robust collaboration between private industry and law enforcement as key to ensuring early detection of cyber cases and the effective blocking and removal of child sexual exploitation material online. Platforms should be created to help children to deal with online threats they may encounter and understand what to do if they become aware of any abuse of their friends and family members. These platforms should be promoted by the relevant companies in a collaboration with the government. Private internet service companies can also support child and youth participation through creative and positive engagement on important topics for protection, including the promotion of digital literacy to children and their parents.

Disseminate programs targeting parents and caregivers who play a critical role in preventing online violence and exploitation involving children. Caregivers should be provided targeted age-appropriate and child-friendly resources, information, and skills to discuss sensitive technology-related sexual violence and exploitation issues with their children. Those programs could include creative and child-friendly contents such as body safety rules, how to spot signs of potential

abuse/abusers, links to a national hotline, and child-friendly games to help parents discuss sensitive issues with their children.

Collect data on online gender-based violence systematically. It is apparent there is a lack of data on eGBV in Cambodia. The one exception may be online harassment for which we have some figures but unfortunately it is binary and insufficient. To make this data meaningful the intersectionality of online gender-based violence with gender identity, sexual orientation, age, class, race, people with disabilities, and other marginalized identities should be taken into account. Data collection can be a part of a national survey, such as the Demographic and Household Survey, which already includes a section on violence against women offline. This will provide the Cambodian government with a picture of the current state of online gender-based violence to inform future designated policies.

Update laws and policies to fit the current situation. The Law on Suppression of Human Trafficking and Sexual Exploitation should be amended to criminalize solicitation for sexual purposes (online grooming), possession of online child abuse materials, and accessing those materials through the use of information and communication technologies, extending it to private space. Also, written online child abuse materials and images of the sexual parts of a child's body should be included in the definition of child pornography.

Create a sound participatory policy-making process regarding online child abuses. Children and young people should be systematically involved in the monitoring and implementation of policies and programs related to child rights, including those related to their recovery and reintegration.

Integrate digital safety skills into the school curriculum and materials for both students and teachers at all levels. Students and teachers are already familiar with online resources on other subjects, yet we lack resource materials on safety skills. First, applications on learning safety skills should be created similar to MOEYS App Scan as a complement to other applications for various subjects. Young students should be encouraged to download and play along. Second, teachers should be learning and distributing online safety practices for both themselves and students through accessing materials on internet safety that could be put on the Krou Website.

Adopt a school approach to tackle gender-based violence. Since children and youth are vulnerable to online violence and exploitation, schools can incorporate toolkits to combat those crimes. For instance, in Uganda, an NGO, Raising Voices, developed the Good School Toolkit which includes over 60 activities for teachers and school staff, focusing on creating a positive school environment, based around an understanding of respect and power dynamics, pedagogy, accountability, and learning non-violent methods of discipline (Kangas et al., 2020). A study found

statistically significant positive effects of the program on reducing physical violence perpetrated by teachers towards students, which occurs in Cambodia as well (Devries et al., 2017).

Adopting both the English and Khmer languages in learning materials related to digital safety skills in both in-class and online platforms. Since a lack of English language skills has been noted as a barrier by Cambodian youth for learning ICT and safety skills (Chan et al., 2021), an immediate solution is to translate materials into the Khmer language. Yet, the English language should be still encouraged.

Develop curricula-based programs for violence prevention in schools. Since online gender-based violence is part of offline gender-based violence, notions of gender equality and power dynamics should be taught to students. These programs should focus on gender norms, gender equality, children's wellbeing, skills, and coping mechanisms for unsafe situations. These programs will enable children to critically reflect on the gender norms that influence roles and behavior in their school and community settings. They may involve an analysis of different types of gendered discrimination, intersectionality, and the gendered impact of social and structural disadvantage (UNFPA, 2015). Moreover, the contents of these programs should be tailored to the age range targeted.

Integrate popular informal learning platforms on digital safety into public schools. Messaging on digital safety should be targeted towards the learning platforms currently favored by young people. Youtube tutorials, Massive Open Online Course (MOOC)-like models, and other digital learning tools could be employed as students are increasingly using them already for other skills. Either public-private partnerships can be established, or state-sponsored application developers can create platforms for the purpose of integrating informal education in public schools. This should be done as early as students start to use technological devices and the internet.

Diversify ICT skills among private tutoring. Youth seek self-learning platforms to improve their knowledge on topics related to ICT (UNDP, 2020). Among other options, youth pursue private tutoring. With the increasing popularity of private tutoring among youths, safety skills—not only content creation—should be encouraged. MOEYS should incentivize private tutoring by providing free online safety skills trainings to private educators and create more job opportunities related to online safety skills to raise demands for these skills.

Conclusion

Gender-based violence has long persisted in Cambodia and now has moved to the online space as digital technology is embraced by more and more Cambodians—especially among young people. The issue of online violence against young women and girls has become prevalent and alarming during the Covid-19 pandemic. Online space as an extension of the real world, can be a dangerous place where young women and girls experience harassment, violence, bullying, and abuse in part because of how digital infrastructures are gendered, material, and embodied in ways that enable online gender-based violence to reflect and reinforce inequalities and hierarchies that subordinate them.

Insufficient provision of safety skills in formal education mean that young users lack the ability to safeguard themselves against scams, phishing, or security breaches while informal learning and training platforms are still underdeveloped in Cambodia. Looking at the national level, despite a fair number of laws and policies regarding online violence and abuse, loopholes are still present. Moreover, much is needed when it comes to enforcement of the laws and policies which is still dependent, weak, and outdated. Law enforcement needs to enhance their capacity while newcomers should be encouraged to join the force. Alongside fostering international cooperation to combat cross-border online crimes, additional stakeholders should be brought into enforcement processes including private internet service companies, parents, and young people themselves. Standard procedures for data collection related to online violence should be put in place in addition to updating laws and policies to fit the current situation. Finally, there should be adjustments in the school curriculum and bilingual materials prepared for digital safety skills, eGBV prevention programs, and MOOC-like courses. Only when all stakeholders are involved, will we see a safe future for Cambodian women and girls online.

References

Action Pour Les Enfants (APLE). (2020). Impact: Report 2020. Retrieved from
     https://aplecambodia.org/wp-content/uploads/2021/04/APLE-Impact-Report-2020.pdf

APKPure. (n.d). MoEYS App Scan. Retrieved from https://m.apkpure.com/moeys-app-
     scan/asia.wikischool.appscan

Amnesty International. (2018). Toxic Twitter: Violence and Abuse Against Women Online,
     London, Amnesty International.

Baury, C. (2018). A report on the scale, scope and context of the sexual exploitation of children.
     ECPAT International, Bangkok. Retrieved from https://www.ecpat.org/wp-
     content/uploads/2018/04/ECPAT-Country-Overview-Cambodia.pdf

Blomberg, M. (2019). Cambodia feared lagging behind predators in cybersex trafficking
     crackdown. Retrieved from https://news.trust.org/item/20190910233641-he2cn

Cambodia National Council on Children. (2019). Initial situational analysis on online child sexual
     exploitation in Cambodia. Retrieved from https://aplecambodia.org/wp-
     content/uploads/2020/04/Research-on-Online-Child-Sexual-Exploitation-in-
     Cambodia_ENG.pdf

Cambodian National Police. (2016). The Cybercrime Report. Retrieved from
     https://www.doj.gov.ph/files/OOC/OOC%20-
     %20TOT/Cambodia%20(Country%20Report).pdf

Chan, P, Chhem, S. & Nay, D. (2021). Developing Cambodia's Digital Economy: Youth's
     Perspective. 7th Annual NBC Macroeconomic Conference. Retrieved from
     https://www.nbc.org.kh/download_files/macro_conference/english/S6_Development_
     Cambodia_Digital_Economy_Youth_Perspective.pdf

Chang, E. (2018). Brotopia: Breaking Up the Boys Club of Silicon Valley, New York, NY, Portfolio.

Child Fund, Plan International, Save the Children International, SOS Children's Village, Terre des
     Hommes Netherlands and World Vision International. (2020). 'Joint Public Statement:
     Donor and the government must put children's rights at the heart of the COVID-19
     response', Cambodia.

Citron, D.K. (2009). Law's expressive value in combating cyber gender harassment, Michigan Law Review, 108, 373–415.

Council of Ministers. (n.d). Cybercrime Law Draft V.1. Retrieved from https://www.article19.org/data/files/medialibrary/37516/Draft-Law-On-CyberCrime_Englishv1.pdf

Cyber Peace Foundation. (2020). End (-to-end Encrypted) Child Sexual Abuse Material. Retrieved from https://www.cyberpeace.org/CyberPeace/Repository/End-to-end-Encrypted-CSAM-2.pdf

Devries, K., L. Knight, E. Allen, J. Parkes, N. Kyegombe and D. Naker. (2017). Does the Good Schools Toolkit Reduce Physical, Sexual and Emotional Violence, and Injuries, in Girls and Boys Equally? A Cluster Randomised Controlled Trial, *Prevention Science*, 18(7), 839–853.

Easter, B. (2018). Feminist_brevity _in_light_of_masculine_long-windedness: code, space, and online misogyny, *Feminist Media Studies*, 18(4), 675–685. DOI: 10.1080/14680777.2018.1447335

Fialova, K. and Fascendini, F. (2012). Voices from digital spaces: Technology-related violence against women. APC. Retrieved from https://www.apc.org/en/pubs/voices-digital-spaces-technology-related-violence

Heng, P. (2018). Embracing the Digital Economy: Policy Consideration for Cambodia, Phnom Penh: Enrich Institute. Retrieved from http://www.enrichinstitute.org/uploads/1/3/6/3/13638009/embracing_the_digital_economy-_policy_consideration_for_cambodia.pdf

Kangas, A., Lee, H., Holden, J. & Fraser, E. (2020). What Works to Prevent Online and Offline Child Sexual Exploitation and Abuse?: Review of national education strategies in East Asia and the Pacific. UNICEF. Retrieved from https://www.unicef.org/eap/media/4706/file/What%20works.pdf

LIRNEasia (2018). After Access: ICT access and use in Cambodia and the Global South, Phnom Penh, Cambodia.

Li, S. P. (2021). Encrypted messaging apps like Telegram provide cover for child sexual abuse in Cambodia. Retrieved from https://kr-asia.com/encrypted-messaging-apps-like-telegram-provide-cover-for-child-sexual-abuse-in-cambodia

MOEYS. (n.d). Open Educational Resources. Retrieved from http://krou.moeys.gov.kh/en/

Reed, T.V. (2018). Digitized Lives: Culture, Power, and Social Change in the Internet Era, 2nd ed., London, Routledge.

Richter, F. (2021). WomenÑ Representation in Big Tech. Retrieved from: https://www.statista.com/chart/4467/female-employees-at-tech-companies/

Taing, R. (2020). Tech-savvy predators: danger from online pedophiles in Cambodia. Retrieved from: https://www.khmertimeskh.com/50798605/tech-savvy-predators-danger-from-online-paedophiles-in-cambodia/

Twitter, Inc. (2019). *Our 2018 Inclusion and Diversity Report*. Retrieved from: https://blog.twitter.com/en_us/topics/company/2019/ianddreport.html

UNICEF. (2008). Law on Suppression of Human Trafficking and Sexual Exploitation. Retrieved from: https://ihl-databases.icrc.org/applic/ihl/ihl-nat.nsf/implementingLaws.xsp?documentId=C2A216E490C24060C1257D890049EC51&action=openDocument&xp_countrySelected=KH&xp_topicSelected=GVAL-992BUA&from=state&SessionID=DYPVEWLT7V

UNICEF. (2016). *Child protection in the digital age: National Responses to Online Child Sexual Abuse and Exploitation in ASEAN*. UNICEF EAPRO. Bangkok.

United Nations Population Fund. (2015). *Interconnections between Social and Emotional Learning and Comprehensive Sexuality Education: A Review of the Literature*, UNFPA, New York.

UNDP. (2020). *Digital Literacy for Employability and Entrepreneurship among Cambodian Youth: Assessment Report*. Retrieved from https://www.kh.undp.org/content/cambodia/en/home/library/assessment-of-digitalliteracy-for-employability-and-entrepreneu.html

Wajcman, J. (2004). *Technofeminism*. Cambridge, Oxford University Press.

Chapter 5 | Digital Citizenship and Education

Sokunthea HANG and Pagna UKTHAUN

Future Scenario

Sitting in his hotel room during his vacation in Hawaii, Bora joins his boss in Cambodia for a virtual meeting with their clients in South Korea. Bora explains the new product features to his clients in English and their feedback translates automatically in his notepad and sends instantly to his boss Mr. Panha in Khmer. The client is impressed with the communication and new services. They also appreciate that Bora was able to schedule the meeting during the Khmer New Year holidays.

After the meeting, Mr. Panha is quite optimistic that they will get this new client to sign the contract. He's always impressed with Bora who, despite graduating from a local university in Cambodia, always efficiently handles all kinds of matters, be it face-to-face communication with clients and other colleagues, or helping Mr. Panha to manage his digital communication and foreign languages in business. This is the great advantage of the younger generation who completed their standard education after the government introduced a new policy to improve digital life skills for citizens nation-wide based on a new curriculum - a luxury Mr. Panha's generation could not have imagined when they were in school.

Bora's achievements are a result of the success of building infrastructure for digital education over 20 years. The ICT baseline curriculum was embedded into the nation-wide education system from primary school to university levels. Bora was a member of the first cohort to enter this curriculum in first grade. This experience transformed his digital skills giving him the opportunity to significantly increase his income level. Because of this, he was able to build a life for himself and provide a better standard of living for his family in his hometown.

The main objective of the new education policy was to improve the quality of digital literacy education for all people in Cambodia in both public and private schools, creating an equal opportunity to compete in the labor market. As a personal assistant to the director of a shipping company, at the age of 25, Bora is considered quite successful compared to his peers. Coming from a rural town in Prey Veng, he knew what it meant to be responsible for his life and utilized all the opportunities in his education to make real change for his family and community as a whole. Motivation pushed him to work hard and smart.

The new policy didn't come without costs. It was difficult for Bora and his peers to manage the changes that differentiate them from previous generations. At the start, he recalled that many of his classmates struggled with the language barrier when courses were delivered in English and needed to hire special tutors to explain the material to them outside school. The new focus on

Project Based Learning was also very challenging and as a result, many failed the pilot programs prior to his time. For someone of his socio-economic background it was impossible to hire tutors, but he was able to solve many of the problems with support from free online resources in subjects ranging from English to communication content creation, as well as short courses on data privacy which helped serve as secondary resources on top of classroom learning.

Bora knows if this program could work for him, it can work for his future children too. There's no need to consider the option to choose an overseas education for them even if he can afford such an opportunity.

Introduction

Innovation, ICT, Science, Technology, Engineering and Mathematics (STEM) and skills development of the youth are widely regarded as areas that need to be improved to promote economic growth and development in Cambodia (Ministry of Education, Youth and Sport (MoEYS), 2018; Asian Development Bank (ADB), 2021). Factors that will support these changes are a growing middle class who are young, tech-savvy and passionate about creating social change, a high smartphone penetration rate and cheap data and one of the most open markets, in terms of Foreign Direct Investment, in the ASEAN region (DataReportal, 2021).

This chapter examines whether Cambodian youth are fully utilizing the digital tools available to them to improve their digital literacy skills to prepare them for 21st-century economic competition in the country as well as the region. This paper will propose a policy to introduce 'Digital Life Skills' into the national educational curriculum on Digital Citizenship in order to address the current limitations in preparing youth for digital readiness by 2040. The Digital Life Skills should include the know-how of digital basics including but not limited to information and data literacy, communication and collaboration, and safety.

Context Analysis

In this paper we examine digital citizenship in the context of digital literacy education by reviewing the Cambodian government's "Rectangular Strategy phase IV" and the ICT in Education policy which set the framework for transforming Cambodia into an upper-middle income country by 2050 through economic digitalization. Digital Citizenship refers to the ability to participate in society online which encourages a certain degree of social inclusion (Warschauer, 2003). Digital citizens then, are defined as those who use the Internet regularly and effectively (Mossberger et al., 2008).

Rectangular Strategy and ICT in Education

Both international institutions and the Cambodian government are largely aware of the significance in promoting technological innovation and entrepreneurship (UNDP, 2020a; MoEYS, 2018). Hence, numerous resources have been invested from both public and private sources to help advance growth in these sectors in the past five years, in line with the digital literacy framework.

In 2018, the Cambodian government issued the Rectangular Strategy phase IV which sets out a roadmap to make Cambodia an upper-middle income country by 2050. The Strategy builds on four strategic areas including human resource development, economic diversification, promotion of private sector development and employment, and inclusive and sustainable development (Royal Government of Cambodia, 2018).

The Royal Government of Cambodia (RGC) hopes to achieve the objectives of the Rectangular Strategy by taking full advantage of regional opportunities, creating value added in existing economic pillars and their related sub-sectors, encouraging investment in agriculture, ensuring readiness to grab new technologies in the era of digital economy and overcome foreseeable challenges in the context of industrial revolution 4.0 ("Promoting Agriculture", 2019; ADB, 2021).

Current digital literacy issues and limitations

In order to understand the current digital literacy landscape and its limitations, UNDP published the Cambodia Digital Literacy Assessment Report in September 2020 which surveyed 1,285 individuals consisting mainly of high school students, followed by undergraduate students, and youth in employment across the country (UNDP, 2020b). The study was based on the UNESCO framework for digital literacy which looks at competence areas such as information and data literacy, communication and collaboration, digital content creation, safety and problem solving.

According to the study, Cambodian youth achieved low digital literacy scores of between 47 to 51 points in all four competence areas (UNDP, 2020b, p.44). The report suggested that youth should receive an average overall score of 75 or higher with no areas lower than 65 to be considered digitally competent in a globalized and connected economy. This means that Cambodian youth did not reach a level of digital competence. The data also shows those who have received higher education perform consistently better compared to those at lower levels of education.

It is important to note that the area of Safety received the lowest scores among the four test areas (UNDP, 2020b, p.44). This indicates the lack of ability for youth to safeguard themselves. Safety includes questions of cyber security, such as protection toward scams, phishing, or security breaches. The youth however performed better in the content creation and information literacy areas. This is in line with another question which asked how youth use digital devices in their daily life where most young people answered media consumption and social networking (UNDP, 2020b, p.38). Using smartphones for reading news and for photography are the third and fourth most used functions within all three surveyed youth groups.

The results from the study shed light on the gap between current digital literacy skills among youth and the RGC's goal of achieving a digital economy and industry 4.0 by 2050. One of the key components related to human resource development in the Rectangular Strategy is a focus on

improving the quality of education, science and technology (Royal Government of Cambodia, 2018). The strategy aims to change the current digital literacy landscape among Cambodian youth, but so far little has been done. High schoolers in grade 11 and 12 are currently the only students receiving an ICT curriculum in their school program and it covers only computer hardware and basic lessons for Microsoft applications (UNDP, 2020b). The existing curriculum is not able to educate youth to keep up with the fast pace of technological advancement, especially when the world is preparing to take full advantage of the Industrial Revolution 4.0 (UNDP, 2020a).

In the same year as the Rectangular Strategy was launched, the Ministry of Education, Youth and Sports (MOEYS) also launched the Policy and Strategy on Information and Communication Technology (ICT) in Cambodia which aims to: equip students with ICT knowledge and skills, increase ICT tools and e-resources for teachers and training centers, improve infrastructure and connectivity, as well as promote media literacy and privacy (MoEYS, 2018). This policy was integrated into the 5 year Education Strategic Plan in 2019 on Promotion of Digital Education (MoEYS, 2019). Much of the content from the strategic plan offers open-ended goals, which have not provided a methodology for the clear execution of its aims. This makes it difficult to track progress on whether or not the policy statements will be achieved.

In addition, the Ministry of Post and Telecommunications (MPTC) is currently working together with the Ministry of Education, Youth and Sport to build a digital infrastructure and training program for high school and junior high school students to prepare them for future employment and the economic development of the country (Dara, 2020). However, with limited digital infrastructure, equipment and connectivity in place in existing public schools, the cost of investment and short timeframe will be a huge challenge for the government to tackle. On top of that, almost all existing software, programs and applications are all in English and other foreign languages while Cambodia ranked 84th in the world English Proficiency Index (EF Education First, 2020). This means that the policies the Cambodian government has in place as well as the Education Ministry's strategy to improve digital literacy and innovation skills are unlikely to be met by the existing resources in place in Cambodia to implement those plans.

Policy Recommendations

The current weakness in digital literacy among youth is one of the results of the late transformation in Cambodia's educational system to increase talent digital competitiveness compared to countries in the region (Kusumastuti and Nuryani, 2020). Although many initiatives and programs outside of the school curriculum are being introduced to increase digital skills and knowledge to youth in higher education, much still needs to be done at the primary and secondary levels to give students a solid foundation as they progress in society and the workforce.

To ensure the future workforce is equipped with digital life skills to navigate the technological era, it is important that the educational system is not just offering foundational learning, but also exploration and project-based learning. To achieve a combined approach, the government should embed the design process and technique into policy development and recommendations to drive transformational changes that respond to the needs of the young workforce.

Design techniques have successfully helped governments to improve public service delivery to meet citizens' needs and respond to the fast changing environment, such as the influence of technology on people's lives. In 2019, McKinsey released a report on how Singapore is transforming government services with an innovation and design team to help civil servants and policy makers make changes in public service delivery (Vidhya et al., 2019). There are three core elements that Singapore deployed in this process: 1) consolidating services around the important moments of a citizen's life, 2) using immersive research to co-create solutions with a user, and 3) prototyping solutions in real life scenarios to ensure successful user adoption.

Looking at how Singapore harnesses design, it is clear that MPTC and MOEYS should integrate design elements to help unlock key development areas to equip Cambodian youth with digital skills. Accelerating ICT skills and knowledge for students where a digital foundation was not provided in early school programs will require a transformational approach to leapfrog the traditional process. This means that redesigning school curricula and infrastructure will need to go hand in hand and work to complement one another through a well-designed process. For example, using prototype techniques will help schools to experiment with the actual level of student needs in terms of ICT equipment and connectivity levels required for each subject that the program offers.

Consolidating educational experiences around important moments of students' development

While the ICT curriculum is being introduced slowly, the new program needs to make a significant change. Starting from primary education until high school, ICT should be offered as a core subject along with math, science, Khmer literature and languages. The ICT standard for public schools should offer a baseline for every school to adopt and ensure that students will achieve a minimum standard of digital skills and literacy for society and industry. The ICT baseline allows school programs to set expected targets for each educational milestone, such as primary, lower secondary and upper secondary education. A number of minimum ICT subjects from primary to upper secondary level should be embedded into core curriculum along with external factors such as technological changing environment and industry's digital skills need. Table 1 below is an example of how a school program can include digital life skills for upper secondary education from grade 9th to 12th to prepare students for a better navigation in the digital world and safely apply into their daily lives. Digital safety skills, which are now low, should be a foundation upon which more digital learning occurs.

The new ICT curriculum should be designed around the growing need for students to be familiar with the technological world and safely navigate within it with minimal risk. For example, Common Sense Education, an independent nonprofit organization, offers a digital citizen program to help teachers and partners prepare their children to safely enjoy digital tools and live safely in the digital world. The curriculum offers a variety of topics such as Media Balance and Well-Being, Privacy and Security, Digital Footprint and Identity, Relationships and Communication, Cyberbullying, Digital Drama and Hate Speech, and News and Media Literacy. Students are not just learning to use the digital application tools and software at school but are also able to obtain digital life skills on topics they encounter in their day to day life and are therefore able to navigate challenges when they arise.

Table 1: Sample Curriculum of Digital Citizenship Program

Level	Topic	Description
Grade 9th	The Big Data Dilemma	What are the benefits and drawbacks of online tracking? Helping students to understand how they are being tracked online and how much information are companies actually collecting and what are they doing with it. Digging into the details can help us make smart decisions about our online privacy and how to protect it.
Grade 10th	Risk Check for New Tech	What privacy risks do new technologies present, and how do we decide if they're worth it? New tech, like location services and smart devices, helps make our lives easier and opens opportunities that didn't exist before. But these innovations also come with a cost, especially to our privacy. Help students consider the benefits and drawbacks of these new technologies and decide whether they're ultimately worth it.
Grade 11th	How young is too young for social media?	At what age should people be allowed to use social media? Understanding at what age people should be

		allowed to use social media. Social media platforms allow people to connect with peers and have fun, but they are also susceptible to a number of risks from privacy to bullying to challenges to user social-emotional well-being.
Grade 12th	Debating the Privacy Line	Should the government have access to all your social media and cell phone data? More data and information often help to make better decisions. The power of data can benefit both individuals, institutions and governments, but who can be trusted and responsible for having all of the data? Can the government collect and use it fairly without violating people's privacy? This lesson helps students think through this question and become thoughtful influencers of data policy and practice.

Adapted from: Common Sense Education, 2020.

Furthermore, since digital skills and literacy require real life examples to be fully understood, the school program should include project-based learning (PBL). PBL helps students to learn by exploration through collaborative problem solving in a group setting. PBL allows students to resolve problems by engaging with real issues, develop critical thinking and encourages collaboration with an attitude of learning by doing and achieving together. The PBL approach was introduced in the early 1980s to promote a student centric learning environment where students are working toward a specific design project or theme and teachers act as mentors to give instruction and feedback throughout the process (Du and Han, 2016).

Liger Leadership Academy in Cambodia is one of a new generation of schools that cultivates project-based learning to build a generation of future leaders with technological skills and equipped with necessary soft skills such as working together toward common goals and protecting one another. Liger's PBL model aims to create a group of entrepreneurial thinkers who are able to think critically on complex issues, solve real world problems and make effective decisions (Liger Leadership Academy, 2019).

Adopting project-based learning and startup acceleration approaches to allow students to co-create meaningful solutions together

Korkmaz and Kaptan have identified six steps for implementing PBL (Korkmaz and Kaptan, 2000 in Du and Han, 2016). First, students form a group and select a subject, an issue or a theme that they want to address and resolve. Second, the group members are assigned roles and make a project plan where they set key objectives such as what they want to learn and what outputs they need to deliver. Third, the group works to collect data and information through various applications and resources that are available to them. This fact checking is an important milestone to help them verify their problem statement and to offer a valid solution in the presentation of findings at step four (planning of the presentation) and five (making the presentation) respectively. Finally, students will receive and share feedback from team members and other groups along with the teacher's evaluation.

A project-based approach can also apply to the startup technology acceleration model. For example, 500 Startups, a venture capital firm that invests in companies and entrepreneurs who are selected to join their acceleration program, offers six areas of main support, two of which are community and advice. The program creates a community of like-minded people who can work together and share the same challenges.

Similarly, UNDP Cambodia launched a technology incubation program in 2020, called Bluetribe, which recruited individuals and teams with promising ideas and skill sets to work together to form a technology venture that resolved societal and industry challenges or met gaps. Cohorts receive the same amount of financial support along with a business and technology acceleration curriculum, and mentorship hours. Cohorts are expected to form a team, build a venture and create a minimum viable product that fits with user needs and wants in 36 weeks.

Prototyping school infrastructure

With the COVID-19 pandemic, school closure is one of the major issues that the government needs to address. In Cambodia alone, more than three million students were affected; just 30 percent of whom have access to ICT devices such as smartphones or computers (Som, 2020). There is little digital infrastructure and connectivity in place to help students and teachers to continue their learning. Furthermore, a huge inequality gap is growing with more than 390,000 people in Cambodia left unemployed due to the economic fallout of COVID-19 (ADB, 2020). Among these people are parents who cannot even afford to phone data where their children could watch educational videos broadcast through social media channels (Chansereypich and Darby, 2020).

Looking deeper at the current school infrastructure, public schools are still not equipped with digital equipment, computer labs and internet connectivity. It is going to be an expensive investment for the government to bring schools up to standard nationwide. On top of that, many schools' physical buildings, furniture and security will need to be renovated and improved should

the above recommendations be implemented. These investments are a few amongst many that the government will need to make within a reasonable time frame if they want to achieve digital transformation in public education. However, the emergence of Industry 4.0 and other forms of technological advancement, leave a very limited time window for Cambodia to catch up. Changes need to happen rapidly to ensure that Cambodia's youth will continue to stay relevant and competitive as human resources compared to their peers in the region and beyond. To ensure these investments in the education system are made efficiently, the new ICT school infrastructure should be divided into three stages: immediate, medium and long term.

The immediate need for schools today is to get connectivity for students. In June 2020 the MOEYS and MOPTC launched the new digital learning centre at Preah Sisowath Highschool but there is no similar centre available in other schools across the country. It is important that the government ensures school connectivity to offer students an uninterrupted learning environment as a basic requirement. Schools should set some budget aside for either installing internet in their classrooms or giving phone credit to teachers that need to deliver lessons through online and digital mediums.

In the medium term, digital life skills should be taught with real life exploration and experiential learning through local innovation and creativity. Klembox, a local startup that offers low cost experiential learning tool kits to public schools, is an example of how local innovation could help to provide low cost experiential lab learning through innovative toolkits. In 2020, through a collaboration with the United Nations Development Programme (UNDP) in Cambodia, Klembox learning toolkits were introduced to four public schools to experiment with the low cost school lab. Lower secondary students in grade 7 and 8 were given the opportunity to gain real life experience through multiple science kits (Ukthaun, 2020). Another local academy, DataU, recently partnered with GIZ to develop a digital talent program in Siem Reap to reduce economic vulnerability and prepare youth for digital employment (DataU, 2020). The program also offers job matching through its career fair initiative and partnership with businesses to gain early access to newly trained digital talents.

In the long-term, it is crucial that there is on-going investment in capacity development for teachers in ICT to ensure the high investment cost in setting up digital infrastructure and connectivity for schools matches the capacity of teachers who guide and teach students. There are already existing examples and case studies on how the government could implement such a long-term investment plan to support teachers' capacity development. InSTEDD, is an innovation lab in Southeast Asia using technology for social innovation and development. InSTEDD has

piloted a Computational Thinking Program with the New Generation Schools[1] in Phnom Penh, Kandal and Kompong Cham provinces in Cambodia to improve teachers' knowledge in ICT in order to take full advantage of computer labs that have been set up (InSTEDD, 2019). Computational Thinking offers a new way of teaching in the digital era by focusing on solving complex problems by fully participating in a computational world where students can collect data, create algorithms and computational models, and understand the systems to learn topics in many disciplines (Digital Promise, 2021).

Table 2 below shows an extract of the Computational Thinking Program delivered by UNDP in partnership with InSTEDD. This capacity development program for teachers aimed to support the Royal Government of Cambodia in accelerating digital learning at public schools. The program was piloted in 2020 with selected teachers from ten public schools across Cambodia and delivered via online engagement due to the COVID-19 pandemic. In 2021, UNDP is organizing another cycle of training to ensure more and more teachers are equipped with digital knowledge and skills for enabling a digital learning environment for Cambodian children and youth.

Table 2: Sample curriculum of Computational Thinking Program based on CODE.ORG

Grade	Chapter	Teaching Class Hour	Teacher Training Hour
Grade 7	Unit 1: Computer science fundamental – Express Courses *Students will learn to create computer programs, develop problem-solving skills, and work through fun challenges!* Unit 2: Introduction and Create Account - Introduction to Learning Management System (Teacher's Dashboard) - Introduction - Direct teachers to go to each lesson Lesson 1: Graph Paper Programming Lesson 2: Coding with Angry Birds Lesson 3: Debugging with Scrat Lesson 4: Creating Art with Code	32	32

---

[1] Part of the public education reform policy published in 2016, the New Generation Schools initiative will see the creation of autonomous public schools which receive high investment linked to new standards of accountability and governance as well as professional standards for 21st century learning.

	Lesson 5: Getting Loppy Lesson 6: Loops with Rey and BB-8 Lesson 7: While Loops with the Farmer Lesson 8: Until Loops in Maze Lesson 9: If/Else with Bee Lesson 10: Function with the Harvester Lesson 11: Changing Variables with Bee Lesson 12: For Loops with Bee Lesson 13: Binary Images with Artists		
Grade 8	**Unit 1 - Problem Solving** *Students will learn how computers input, output, store, and process information to help humans solve problems within the context of apps. The unit concludes with students designing an app that helps solve a problem of their choosing.* Lesson 1: Intro to Problem Solving Lesson 2: The Problem Solving Process Lesson 3: Exploring Problem Solving Lesson 4: What is a Computer? Lesson 5: Input and Output Lesson 6: Processing Lesson 7: Apps and Storage Lesson 8: Project - Propose an App **Unit 2 - Web Development** *Students are empowered to create and share the content on their own web pages. They begin by thinking about the role of the web, and how it can be used as a medium for creative expression.* Lesson 1: Exploring Websites Lesson 2: Websites for Expression Lesson 3: Intro to HTML Lesson 4: Headings Lesson 5: Digital Footprint	18 16	23 14

Adapted from: InSTEDD, 2019.

Furthermore, a joint investment with private sectors to ensure Cambodia's human capital development is produced at the highest quality to serve both public and private sector needs should be implemented in the government policy agenda. There are growing local solutions where the private sector can play an important role to support the government in closing the gap and needs in this digital education era. Tesdopi, a local startup that provides competency-based learning through its mobile apps, offers an innovative learning method to allow students to take preparation tests, learning and monitoring their learning results based on the national school curriculum. This is an example of how the government should partner with innovators and entrepreneurs to offer innovative approaches to learning to complement the overall strategy and effort to digitize public education in Cambodia.

Conclusion

Low digital literacy among Cambodian youth shows an urgent need for educational reform toward a more digital and practical oriented curriculum to ensure that young people are not left behind in the current technological era. The current public education system in Cambodia offers a limited ICT curriculum that is only available for upper secondary programs. The ICT curriculum is a key solution to accelerate and prepare youth with digital life skills. However, a well-designed curriculum comprising essential skills and opportunities for exploration is also necessary and should be offered in parallel to ICT skills to ensure youth have a solid foundation in both digital applications and practice in real life scenarios.

Under the leadership of MOEYS, a clear ICT baseline curriculum should be established to offer a minimum standard requirement for schools from primary to lower secondary and upper secondary levels. This baseline will provide a foundation for content updates and adjustment according to technological advancement and emerging needs for young people to prepare themselves to lead a safe and successful life now and in the future. Once the ICT curriculum is designed and offered to students, the government should look at the short, medium and long term investments to design ICT infrastructure suitable for the education system. This strategy will reduce the barrier of high investment costs needed to boost infrastructure and connectivity and help to generate local innovative solutions.

References

Asian Development Bank. (2021), *Reaping the Benefits of Industry 4.0 Through Skills Development in Cambodia*. Retrieved from: https://www.adb.org/sites/default/files/publication/671726/benefits-industry-skills-development-cambodia.pdf

Asian Development Bank. (2020). *Employment and Poverty Impact Assessment: Cambodia.* Retrieved from: https://www.adb.org/sites/default/files/linked-documents/54195-001-sd-03.pdf

Common Sense Education. (2021). *Digital Citizenship Curriculum*. Retrieved from: https://www.commonsense.org/education/digital-citizenship/curriculum?topic=privacy--security&grades=9,10,11,12

Chansereypich, S. and Darby, L. (2020). Stories from COVID-19 generations in Cambodia. United Nations International Children's Emergency Fund. Retrieved from: https://www.unicef.org/cambodia/stories/stories-covid-19-generation-cambodia

DataReportal (2021). Digital 2021 Cambodia. Retrieved from: https://datareportal.com/reports/digital-2021-cambodia

DataU. (2020, March 18). GIZ Partners with DataU & Mekong Big Data to Develop Cambodian Digital Talent. Retrieved from: https://mydatau.org/2021/03/22/giz-partners-with-datau-mekong-big-data-to-develop-cambodian-digital-talent/

Dara, V., (2020, March 13). Minister: Digital literacy an essential skill for everyone. The Phnom Penh Post. Retrieved from: https://www.phnompenhpost.com/national/minister-digital-literacy-essential-skill-everyone

Digital Promise (2021). What Is Computational Thinking?. Retrieved from: https://digitalpromise.org/initiative/computational-thinking/computational-thinking-for-next-generation-science/what-is-computational-thinking/

Du, X. and Han, J. (2016). A Literature Review on the Definition and Process of Project-Based Learning and Other Relative Studies. *Creative Education*. Retrieved from: https://www.researchgate.net/publication/303709671_A_Literature_Review_on_the_Definition_and_Process_of_Project-Based_Learning_and_Other_Relative_Studies

EF Education First. (2020). EF English Proficiency Index. Retrieved from: https://www.ef.com/assetscdn/WIBIwq6RdJvcD9bc8RMd/legacy/__/~/media/centralefcom/epi/downloads/full-reports/v10/ef-epi-2020-english.pdf

InSTEDD. (2019). Empowering public school through computer programming. Retrieved from: http://ilabsoutheastasia.org/wp-content/uploads/2019/08/Case-Study-computer-programming.pdf

Kusumastuti, A., & Nuryani, A. (2020). Digital Literacy Levels in ASEAN (Comparative Study on ASEAN Countries). Retrieved from: https://www.researchgate.net/publication/339897308_Digital_Literacy_Levels_in_ASEAN_Comparative_Study_on_ASEAN_Countries

Liger Leadership Academy. (2019). Explorations/ Project Based Learning. Retrieved from: http://www.ligeracademy.org/programs/project-based-learning

Ministry of Education Youth and Sport Cambodia. (2018), Policy and Strategy on Information and Communication Technology in Education https://drive.google.com/file/d/1w4-VlfKjbk6am3YmaI_AnKmiRm_B2ueA/view

Ministry of Education Youth and Sport Cambodia. (2019), Education Strategic Plan 2019-2023 Retrieved from: http://www.moeys.gov.kh/index.php/en/policies-and-strategies/3206.html#.YJD_eWYzaRs

Mossberger, K., Tolbert, C.J., and McNeal, R.S. (Eds.). (2008). *Digital Citizenship: The Internet, Society, and Participation*. Massachesetts Institute of Technology.

Promoting Agriculture's digitalization in Industry 4.0 in Cambodia. (2019, June 22). Khmer Times. Retrieved from: https://www.khmertimeskh.com/617872/promoting-agricultures-digitalization-in-industry-4-0-in-cambodia/

Royal Government of Cambodia. (2018). Cambodia Rectangular Strategy IV. Retrieved from:
    http://cnv.org.kh/wp-content/uploads/2012/10/Rectangular-Strategy-Phase-IV-of-the-Royal-
    Government-of-Cambodia-of-the-Sixth-Legislature-of-the-National-Assembly 2018-2023.pdf

Som, K. (2020, June 23). New centre to boost digital learning in the Kingdom. Khmer Times.
    Retrieved from: https://www.khmertimeskh.com/736895/new-centre-to-boost-digital-
    learning-in-the-kingdom/

Ukthaun, P. (2020, November 13). Bridging the gap: Reshaping tomorrow for the young
    Cambodian workforce. Southeast Asia Globe. Retrieved from:
    https://southeastasiaglobe.com/industry-4-0-cambodian-workforce/

United Nations Development Programme. (2020a). Adaptation and Adoption of Industry
    4.0 in Cambodia. Retrieved from:
    https://www.kh.undp.org/content/cambodia/en/home/library/adaptation-and-
    adoption-of-industry-4-0-in-cambodia.html

United Nations Development Programme. (2020b). Digital Literacy for Employability and
    Entrepreneurship Among Cambodian Youth. Retrieved from:
    https://www.kh.undp.org/content/cambodia/en/home/library/assessment-of-digital-
    literacy-for-employability-and-entrepreneu.html

Vidhya, G. Yishan, L. and Diaan-Yi, L. (2019, October 9) How Singapore is harnessing design to
    transform government services. McKinsey & Company. Retrieved from:
    https://www.mckinsey.com/industries/public-and-social-sector/our-insights/how-
    singapore-is-harnessing-design-to-transform-government-services#

Warschauer, M. 2003. *Technology and Social Inclusion: Rethinking the Digital Divide*.
    Cambridge, MA: MIT Press.

Chapter 6 | To a Cyberbullying Free Future

Socheata VINH

Future Scenario

It's Friday evening and after saying goodbye to her colleagues, Kunthea can't stop smiling ear to ear; she is excited for her father's surprise birthday party tonight. She takes a detour on her way home to stop at a bakery she found on Facebook to pick up the cake that she has custom-ordered. She scans her Facebook profile at the front desk so that the staff can identify her order and after confirming with a simple tap that they have the right cake she confirms the payment via Facebook on her smartphone.

To prepare for the surprise party, Kunthea's mom leaves work early to decorate the dining room and cook her father's favorite dishes for dinner. Kunthea and her younger brother Vitou, who is turning ten this year, help their mom set the table. Suddenly, they hear their father opening the front door and they run to turn off the light. Once her father opens the door, he sees a holograph of a group of cute kids singing Happy Birthday for him. He smiles and says: "I actually knew what you guys were up to because I saw Kunthea share a post from a bakery page on Facebook. But thanks for the party! I love you all."

Later that night, Kunthea is looking at the photos of their family. She has the perfect caption for the photos. Just as she finishes typing in the caption on Facebook, she hesitates about whether to post the photos. Her reluctance can be traced back to what happened ten years ago. It was 2025, the then thirteen-year-old Kunthea was being bullied by a dozen of her Facebook friends on social media; some of them were from her high school and others were acquaintances. They would leave mean comments criticizing Kunthea's appearance below her photos. Her other friends tried to defend her and pointed out that the bullies were probably jealous of Kunthea who was well known for being an outstanding student. However, the harassers continued to leave hurtful comments and send mean texts to Kunthea. The situation went on for two years without her parents and teachers knowing. As her usual bright smiles and cheerful words disappeared, her academic performance dropped as well. That was when her parents started to pay attention to her mental health. After receiving psychological therapy for six months, she started to get better, but she quit using social media.

It was not until two years ago, when she graduated from university, that she registered for a Facebook account. There was a viral campaign online six years ago, in 2029, to fight cyberbullying

after the suicide of a nine-year-old boy. He was bullied online so much and so often that he decided to end his young life. After his mother published some of the devastating private messages he received alongside his diary, more and more social media users stood up for him. Hundreds of thousands of social media users pled for a safer cyber space using the hashtag #fightbullying. The news was all over the media. Every parent started to worry about their children's experience online. Other kids opened up about similar experiences they had endured. Social media campaigns were launched explaining the definition of cyberbullying, its effects, and how it should be dealt with.

Kunthea had mixed feelings about this incident. She would have liked to join the movement and make some changes while she was still receiving treatment. Two years ago, she decided that she was ready to rejoin social media. Because of her bitter experience and maturity, she is cautious about her social media usage. Just as she is contemplating the photos of her family, she receives a message from her brother. As she opens the message, a holograph of her brother appears above her phone. Smiling with his cute dimples, he says: "Don't forget to tag me in the photos when you post it. My friends wouldn't believe that I have a sister. So this time I can show them your photo. Please…," showing off his tiny muscle, he continues: "If anyone dares to say anything bad to you, I will be the one to protect you." Kunthea chuckles softly and presses '*post*'.

Introduction

Bullying has long been a problem occurring in schools. With the proliferation of internet accessibility, cyberbullying has developed as a new form of bullying. Extending from the construct of bullying which is acts with a hostile intention, violence, repetition and power imbalance (Patchin and Hinduja, 2006), cyberbullying is defined as "an aggressive, intentional act carried out by a group or individual, using electronic forms of contact, repeatedly and over time against a victim who cannot easily defend him or herself" (Smith et al., 2008, p. 376). There are different forms of cyberbullying such as: spreading rumors, sending hostile and offensive messages, posting embarrassing information, photos or videos, tricking people in order to obtain personal information and share it publicly, interacting online by using a fake identity and so on.

The experience of being the victim of a cyberbully is found to be associated with negative emotions such as anger, sadness, loneliness, helplessness and isolation (Ortega et al., 2009). Moreover, it is associated with more serious mental distress such as loss of self-esteem, social anxiety, depression, poor academic performance and problems with anger management (Musharraf and Anis-ul-Haque, 2018; Patchin & Hinduja, 2010).

Even though cyberbullying has been extensively researched and discussed in some countries, it is still overlooked in Cambodia. However, due to the increasing internet penetration rate and the

popularity of social media in the country, it is worthy of examination. Moreover, due to the COVID-19 global pandemic, the internet has become a part of the new normal life for almost everyone.

Combating cyberbullying needs to start from empowering the young generation in general education. To maximize the effectiveness of any intervention will need effort and involvement from everyone working in the education sector. Secondly, to further protect social media users, the current draft Cybercrime Law should dedicate an article to rule the act of cyberbullying as a crime if done at a certain level. Last but not least, the social media companies have to share responsibility for the problems caused by their platforms by spreading awareness of this issue and enforcing punishments on those found to be bullying other users.

Context Analysis

The Growing Risk of Cyberbullying in Cambodia

Many countries have acknowledged the serious negative outcomes caused by school bullying and implemented interventions and set anti-bullying regulations at schools (Ananiadou and Smith, 2002). In a study on school accountability in Cambodia by No and Heng (2015), students expressed their concern about the frequent violence and bullying incidents happening at their schools and they requested the school to take action and provide a safer learning environment. Since the study was done in primary and secondary schools, it showed how bullying remains a common problem. Unfortunately, there are no local studies dedicated specifically to cyberbullying in Cambodia yet.

Nevertheless, anecdotal evidence suggests cyberbullying is a problem. Cyberbullying is enabled by the availability of the internet and digital devices. The internet penetration rate in Cambodia has grown from 45% in 2017 to more than half of the population being internet users (52.6%) in 2021, while the percentage of social media users has increased from 31% in 2017 to 71.3% in 2021 (Kemp, 2017; Kemp, 2021). The number of social media users may not represent a unique individual as one person may have multiple account, which is why it exceeds the percentage of internet users, but it illustrates the significant increase in social media usage nationwide. This phenomenon is also boosted by the availability of low-price smartphones and the accessibility of cheap mobile data plans, which have enabled more people to gain access to the internet.

The internet has become an important tool and even more so since the beginning of the COVID-19 pandemic which has introduced a "new normal" in most people's lifestyle. For instance, online teaching and learning have been implemented from primary to tertiary level; office workers have to take turns working in the office and working from home at other times; e-commerce and

delivery services have become a safe and popular shopping option. These changes have introduced the use of internet and social media such as Telegram, Facebook Messenger, Zoom and Microsoft Teams to children as young as six years old all the way up to adults who need to use them at work. This illustrates that the internet and social media usage has almost become a necessity to adapt to daily life in Cambodia during the pandemic. The wide adoption of the internet and social media in daily life has brought several advantages such as convenient and low-cost communication without the restrictions of time and space, but the internet can also be a double-edged sword when it is used with ill intention.

Although no local study is available to provide an overall view of the prevalence of cyberbullying in Cambodia yet, according to a 2019 UNICEF poll and youth talks conducted in more than 160 countries, 85.7% of Cambodian youths who are between 15 and 25 years old face cyberbullying (UNICEF, 2019, p.1). Responding to these findings, the spokesperson of the Ministry of Information said he found the findings unbelievable and had doubts about the polling methods, while the spokespeople of the Telecommunication Regulator of Cambodia, and Ministry of Education, Youth and Sport expressed the need to investigate deeper into this issue so that a suitable policy could be drafted (Long, 2019). On the other hand, a year after the study was released and after the national implementation of online learning, the Ministry of Interior's Information Technology Department expressed their concerns about cyberbullying. The Ministry called for parents and guardians to educate their children about the effects of cyberbullying and for school managers and teachers to create rules and regulations to fight its occurrence (Nov, 2020).

The increasing internet penetration rate and the implementation of online learning during the COVID-19 pandemic have escalated the potential exposure to cyberbullying. However, a UNDP digital literacy report on three groups of youth: high school students, university students and working youth, indicated that digital literacy across all groups can be classified as low to below average (Vamoeurn, 2020). The same study discovered that the respondents with higher educational levels scored higher in the digital literacy exam than those at lower educational levels. The report also found that Information and Communications Technology (ICT) curriculum of grade 11 and grade 12 covers basic knowledge of computer skills and digital communication which are insufficient to equip students with the skills to use the internet correctly and safely (Vamoeurn, 2020). Unlike university students, the majority of whom need to complete their school work using computers and the Internet, high school students have less experience with ICT which places high school students in a vulnerable position with respect to cyberbullying.

Bullying and Cyberbullying Interventions

Although cyberbullying is a relatively new issue in Cambodia, recommendations and policies have already been put forth in other contexts to deal with this problem. In a study reviewing anti-bullying/anti-cyberbullying policies in universities, the authors found the three most common types of such policies are: codes of conduct and discipline of students, policies related to electronic communication and policies about harassment or discrimination at school (Faucher et al., 2015). The same report pointed out that the first type of policy overlooked the fact that the perpetrators can be teaching or non-teaching staff and faculty members as well as other students. The effectiveness of electronic communication policies was found to be questionable as they punish students by denying them access to the use of electronic communication technology on campus, a futile gesture given the high number of students owning smartphones and other electronic devices. Finally, the third type of policies categorize harassment and discrimination such as sexual harassment, racism, hate speech and so on as a type of cyberbullying (Faucher et al., 2015). The authors noted that this type of policies are aligned with previous studies that suggested cyberbullying as a gendered issue and might be influenced by sexuality. The common characteristic of these policies is that they provide varied conflict resolution models to deal with reports of harassment and discrimination. The intervention of conflict resolution models is a suitable solution to such cases as it could prevent reoccurrence in the future.

In addition to school-based policies, many individuals and organizations advocate for victims to adopt coping strategies to deal with cyberbullying such as cutting off any contact with the bully including blocking the perpetrator, changing one's own online identity or phone number, and avoiding reading anonymous messages (Slonje et al., 2012; Smith, et al., 2008). These strategies align with recommendations from UNICEF who also suggest the victim report the cases to their parents, teachers, close family members or trusted adults (UNICEF, n.d.). Since the perpetrators could be anyone online, cyberbullying could be criminal. Therefore, other suggested actions to take against cyberbullying are: noting the time and date of receiving the bullying message, reporting to the local internet service provider, reporting to the police if the messages involve threatening and avoiding replying to the abusive messages (Youth Era, n.d.). On the other hand, this type of coping mechanisms has put the victims in the spotlight, even though it happened because of the misconduct of the cyberbullies. It is unfair for the victims to bear the emotional harms and have to take the responsibility to protect themselves. Moreover, it does not contribute to tackling cyberbullying directly. When a cyberbully is blocked by a victim, he or she can easily find another victim and though a victim might successfully escape from a cyberbully, he or she might face more cyberbullies in the future.

There are a few articles in the Criminal Code of Cambodia which condemn offenses that can be carried out through digital means, including threatening, indecent exposure, defamation, defamation through the media, public insult and insult through the media (Criminal Code of Cambodia, 2009). However, cyberbullying can be day-to-day communication or indirect acts which are not counted as crimes such as verbally abusive one-on-one communication, singling out someone, spreading rumors, sending hostile and offensive messages, posting embarrassing information, photos or videos, tricking people in order to obtain personal information and share it publicly, interacting online by using a fake identity and more.

Besides the Criminal Code, the drafting of the Cybercrime Law announced in 2010 presents an opportunity to tackle the cyberbullying situation on a legal level. The first chapter of the draft law states that its purpose is to "determine education, prevention measures and combat all kinds of offense commit by computer system" (Cybercrime Law Formulation Working Group, n.d., p. 4).[1] In Chapter 3: Offenses, there are five types of offenses related to the content published online in Article 28: Contents and Websites. The offenses are categorized as "publications that deemed damaging to the moral and cultural values of the society". Those offenses are "a. Information that incites or instigates prejudice on race or clans, color, gender, language, religion, beliefs or political views, origin of race or nationality, and not limited to levels or class in society; b. Writings or pixilation that deemed to display inappropriate activities of persons, copulations between humans or animals, or devalue the moral of family values and pixilation that deemed to display domestic violence; c. Manipulation, defamation, and slanders; d. Drawings, pictorials, or pixilation that deemed to slander or defame human beings or commoners of the state performing activities unbecoming, with animals of any species," (Cybercrime Law Formulation Working Group, n.d., p. 13). In the same article, it is stated that "Publicizing with the intent to threatened and commit a crime not limited to one form of felonies or other felonies with the intent to interrupt a person or persons wellbeings is punishable of incarceration from one to three years and fined 2,000,000.00 Riels (Two Million Riels) and up to 6,000,000.00 Riels (Six Million Riels). In the case of with the intent to threaten shall be treated as such law that is currently being enforced." It is noticeable that the above mentioned offenses target the publication in writing or pixilation, which do not include one-on-one online communication that is one of the main channels through which cyberbullying takes place. Moreover, the offenses focus more on consequences at a societal level rather than on an individual level; the damages mentioned were more on reputation and social values rather than on psychological, emotional and mental aspects. The damages done at an individual level were not sufficiently considered and included to make the draft law comprehensively address cyberbullying.

---

[1] Note: Errors in original

An example of an effective legal solution to cyberbullying would be the Harmful Digital Communication Act which was introduced by the New Zealand government in 2015. The purpose of the Act is "to (a) deter, prevent, and mitigate harm caused to individuals by digital communications; and (b) provide victims of harmful digital communications with a quick and efficient means of redress" (Ministry of Justice, 2015, p. 3-4). In the Act, "harm" is defined as "serious emotional distress"; digital communication is defined as "a). means any form of electronic communication; and b) includes any text message, writing, photograph, picture, recording, or other matter that is communicated electronically" (Ministry of Justice, 2015, p. 4). The Act has set ten principles that a digital communication must not breach (Ministry of Justice, 2015, p. 4). The tenth Communication Principle of the Act states that "a digital communication should not denigrate an individual by reason of his or her colour, race, ethnic or national origins, religion, gender, sexual orientation, or disability". Moreover, the ten principles tackle cyberbullying in various forms, such as revealing embarrassing information about an individual, threatening, sending offensive messages, making false allegations, encouraging others to harm an individual by sending message and more. The ten principles describe the actual actions which are counted as harmful digital communication in simple and clear wording; therefore, it is comprehensible for the general public to understand and obey.

On social networking sites, which are the main spaces where cyberbullying takes place, there are certain community standards. These sets of rules list the types of expression that the platform limits. Users who encounter content that they believe does not adhere to these standards can report the case to the platform and block or unfollow the users that posted or sent such content. On Facebook, the Community Standards are lengthy and explanative (see Facebook, n.d.). In the bullying section, the page provides resources for parents, educators, and teens to take action against bullying. However, it is not straightforward for users to discover these rules, unless the users are searching for them. It requires them to have knowledge about bullying for the victim to identify the message or post directed at them as bullying and realize that he or she can seek help on the social media platform. The majority of young social media users in Cambodia do not yet have this level of awareness.

Bullying has long been a problem happening at schools but the proliferation of the internet and social media enable it to occur online. When a student is being bullied at school, the solution is to report the incident to their parents or homeroom teacher for the teacher to intervene and impose punishment on the bully. However, the bully might take revenge in another form that is out of the authority of the school. In other words, the bullies might not understand why their behaviors are wrong, so they will not stop bullying, but will look for ways to avoid the punishment. In addition, the victims might choose to seek revenge by themselves, which continues the bullying cycle. While bullying is already a difficult issue to deal with, cyberbullying

is an even harder problem to solve, as it has no time and space barrier as long as the victims are connected via phones or the internet.

In Cambodia, bullying and cyberbullying are not explicitly included in public high school's internal rules, according to Prakas No. 2786 on Internal Rules of Public High School released in 2009 by the Ministry of Education, Youth and Sport. Behaviors such as annoying classmates or other students, bringing weapons to school, or causing dangerous incidents at school are forbidden. The rules also advise students to report any negative incident and accident to teachers or directors of the school. In 2020, two violent incidents happened in a private high school and a public high school, which resulted in one female student severely injured and one male student deceased. These incidents were widely reported and the Ministry of Education, Youth and Sport released a press release on January 20, 2020 to call for the strict implementation and improvement on the students' code of conduct (Long, 2020). These two notorious bullying cases gained the public's and the government's attention only because one of them was fatal and the other was filmed and uploaded on social media. It is unclear how many bullying cases, not to mention cyberbullying cases, are never reported and thus, never addressed.

In the era of online learning, students are safe from physical bullying at school; however, digital communications can be the next tools the bullies can utilize. Acknowledging that cyberbullying is an urgent issue, in March 2021, the Ministry of Post and Telecommunications launched a digital campaign "Kit Kou Kon" which means "thinking for children", to raise awareness among parents, guardians, teachers and the general public of the risks children face in the digital sphere in order to protect them (Chea, 2021). In June 2021, representatives from several ministries including the Ministry of Women's Affairs, Ministry of Post and Telecommunications and the Ministry of Interior held a meeting with non-governmental organizations such as Plan International and UNICEF, who also called for parents to pay attention to their children's digital usage and report to the local authority if their children are being threatened or abused (Sen, 2021).

Policy Recommendations

Awareness and Regulations about Cyberbullying at School

To prevent and address cyberbullying, the changes need to start early. The process of socialization starts as soon as a child is old enough to interact with people around them. School is a place where children engage with people who are not their family members and siblings. In an analysis of cyberbullying cases among teens by Hoff and Mitchell (2009), one major contributing factor leading to cyberbullying is the incapacity to deal with social tensions in relationships. Therefore, creating a safe environment in schools for young children to learn about positive interaction with their peers is very important.

Faculty members, teaching and non-teaching staff should understand the issue of bullying, be sensitive enough to identify signs of bullying in class and handle the situation by educating the bullies about their wrongdoings, as cyberbullying can be an extension of traditional bullying. Moreover, school staff should create an open environment for the students to discuss bullying and cyberbullying. This should even apply to primary students who have not started using social networking sites yet. For faculty members, teaching and non-teaching staff working in high schools, their knowledge and attention should address cyberbullying and digital literacy directly. Not only do they need to understand clearly what cyberbullying is but also, they have to be able to educate the students about what it is, as well as strategies to protect themselves. At the same time, the homeroom teacher and any teaching/non-teaching personnel who interact closely with the bully should understand the causes of the behavior of the bully. Cyberbullying is found to be associated with the justification of violence; for instance, bullies think that their victims deserve such treatment, and the use of proactive aggression is a tactic bullies use to reach their goals (Calvete et al., 2010). Cyberbullying might stem from feelings of envy, intolerance or being ganged up on in a group (Hoff and Mitchell, 2009). Hence, it is essential to explore beyond the act of cyberbullying and resolve the root causes.

To be able to achieve these initiatives in schools, firstly, knowledge about cyberbullying and caring for students' mental well-being have to be included in the pedagogy training content to equip the teaching staff with necessary knowledge, since depression and low self-esteem were found to be predictors for cyberbullying involvement (Modeki et al., 2012). Education personnel or a counseling psychologist at the school must be aware of the strategies to address bullying and have sufficient time to discover the mental or psychological state of the bullies so that they can consult directly with the bullies. Moreover, the school management has to continuously pay attention to the issue of bullying and cyberbullying by holding regular meetings or workshops on this issue for teachers so they remain well informed and ready to intervene. Raising the salary of education personnel is necessary to ensure teachers have the time to dedicate to these issues. Teachers working in public schools receive a low salary compared to how important their role is in educating the future human resources of the nation. To compensate for their low income, teachers often take on private tutoring for additional income (No and Heng, 2015). Hence, raising the income of teachers is crucial for them to achieve their best performance as full-time education personnel.

With the cooperation of teachers and other staff at school, the students will receive better care and guidance regarding fighting against cyberbullying. Digital literacy skills such as basic knowledge about how the internet works, digital privacy, and cyber security should be integrated into the general education curriculum so that the students have enough knowledge to use the internet safely, while interacting responsibly with other people in the digital realm.

There is a need to set a unified rule to combat cyberbullying in all educational institutions. Along with digital literacy skills as a part of the curriculum, regulations which dictate that any act of cyberbullying will be punished serves as a real-life application of what they learned. The rule needs to state clearly what cyberbullying is and why it is forbidden.

Social Media Companies

Social media companies, as the ones who earn revenue from having a large number of users, must take the users' mental wellbeing into account. It is true that they are doing whatever they can to hold the users' attention as long as possible. However, they are also obligated to protect their consumers. While social networking sites may have a set of community standards or rules that guide the users in what is considered appropriate use, the sites do not make it explicit enough for the users to discover. Therefore, each social media site should regularly remind their users about the community standards by separating the information into smaller chunks and in an attractive format such as an infographic or short videos and run it as campaigns on its own platform.

As for receiving reported cases, the sites should impose strict punishments for perpetrators beyond simply deleting the posts, such as warning the users and sending them the community standards in their first offense, restricting their use of a certain function, for example, posting status or photos, and banning the users after the third offense. If the banned user wishes to log in using their old account, they need to pass a test on community standards of the social networking site. While registering a new account is easy, social networking sites can consider passing the community standards test as a requirement to register a new account. Therefore, even if the same person creates a new account when their old one is banned, they still need to learn the community standards before rejoining and they still face the possibility of being banned if they repeatedly violate the rules.

Cyber Crime Law

Besides combating cyberbullying at school, a law to protect internet users is also important. Currently, the Cybercrime Law is being drafted in Cambodia. Although there are concerns that the draft law will put more limits on the freedom of expression (Sun, 2020), it is a good opportunity for lawmakers to insert cyberbullying-related articles into the law.

Currently, the draft law focuses on offenses regarding the illegal access or manipulation of computer system data and publication of inappropriate writing or pixilation. The law does not address cyberbullying directly by providing a definition or listing down the acts deemed as cyber aggression. To provide a safe and free digital space for Cambodians, there must be a clear line between intentional bullying directed at an individual and personal opinion supported by

freedom of expression and digital rights. To ensure these rights for citizens, lawmakers must consult with human rights experts and digital rights experts during the drafting of the law. After the law has been put forth, the law enforcement process needs to be as transparent as possible, especially if the case involves politicians.

Conclusion

In this digital era, online interaction is almost unavoidable. Social networking sites can be a double-edge sword. If used mindfully, the users enjoy the benefits of keeping in touch with friends, collaborating with colleagues, and studying in online classes in the comfort of their own home. However, they can escalate the prevalence of aggression across time and space. As the age of the social media users become younger and younger, it is important to educate them about the risk of cyberbullying when using social media to prevent possible negative impacts on their well-being. Firstly, education personnel have a responsibility to help protect children while they are at school, so faculty members, teachers and non-teaching staff should be knowledgeable about cyberbullying and create an open and safe environment as well as have the skills to properly intervene and prevent bullying and cyberbullying. Secondly, social media companies should be obligated to protect their consumers from harm that occurs on their platforms. Lastly, the Cyber Crime Law must effectively address cyberbullying in order to set legal solutions for addressing this crime. Despite the work that should be done by the stakeholders, every social media user is responsible to communicate with kindness and mindfulness to create a safe and friendly digital communication environment for everyone.

References

Ananiadou, K., & Smith, P. K. (2002). Legal Requirements and Nationally Circulated Materials against School Bullying in European Countries. *Criminal Justice, 2*(4), 471-491.

Calvete, E., Orue, I., Estévez, A., Villardón, L., & Padilla, P. (2010). Cyberbullying in Adolescents: Modalities and Aggressors' Profile. *Computers in Human Behavior, 26*, 1128-1135.

Chea, V. (2021, March 11). 'Kit Kou Kon' Digital Campaign to Highlight 'Dark' Social Media. *Khmer Times*. Retrieved from: https://www.khmertimeskh.com/50823331/kit-kou-kon-digital-campaign-to-highlight-dark-social-media/

Criminal Code of Cambodia. (2009). Retrieved from https://www.ngocedaw.org/wp-content/uploads/2015/05/Criminal_Code_EN-KH_Jan_2014.pdf

Cybercrime Law Formulation Working Group of Council of Ministers. (n.d.). Cybercrime Law Draft V.1 Unofficial Translation to English. Retrieved from https://www.article19.org/data/files/medialibrary/37516/Draft-Law-On-CyberCrime_Englishv1.pdf

Facebook. (n.d.). Community Standards. Retrieved from https://www.facebook.com/communitystandards

Faucher, C., Jackson, M., & Cassidy, W. (2015). When Online Exchanges Byte: An Examination of the Policy Environment Governing Cyberbullying at the University Level. *Canadian Journal of Higher Education, 45*(1), 102-121.

Hoff, D. L., & Mitchell, S. N. (2009). Cyberbullying: Causes, Effects, and Remedies. *Journal of Educational Administration, 47*(5), 652-665.

Kemp, S. (2017). *Digital 2018: Cambodia.* Data Reportal. Retrieved from: https://datareportal.com/reports/digital-2017-cambodia

Kemp, S. (2021). *Digital 2021: Cambodia.* Data Reportal. Retrieved from: https://datareportal.com/reports/digital-2021-cambodia

Long, K. (2019, February 6). Youth at Risk of Cyberbullying. *The Phnom Penh Post*. Retrieved from: https://www.phnompenhpost.com/national/youths-risk-cyberbullying

Long, K. (2020, January 19). Education Ministry Toughens Its Stance on School Violence. *The Phnom Penh Post*. Retrieved from:

https://www.phnompenhpost.com/national/education-ministry-toughens-its-stance-school-violence

Ministry of Justice. (2015, July 2). *Harmful Digital Communications Act 2015.* Retrieved from: https://www.legislation.govt.nz/act/public/2015/0063/latest/whole.html

Modecki, K. L., Barber, B. L., & Vernon, L. (2012). Mapping Developmental Precursors of Cyber-Aggression: Trajectories of Risk Predict Perpetration and Victimization. *Journal of Youth and Adolescence, 42*(5), 651-661.

Musharraf, S., & Anis-ul-Haque, M. (2018). Cyberbullying in Different Participant Roles: Exploring Differences in Psychopathology and Well-being in University Students. *Pakistan Journal of Medical Research, 57*(1), 33-39.

No, F., & Heng, K. (2015). *School Accountability: Community Participation in Performance of Primary and Lower Secondary Schools in Cambodia.* Phnom Penh: NGO Education Partnership.

Nov, S. (2020, November 10). Ministry: High Time to Combat e-Bullying. *The Phnom Penh Post.* Retrieved from: https://www.phnompenhpost.com/national/ministry-high-time-combat-e-bullying

Ortega, R., Elipe, P., Mora-Merchán, J. A., Calmaestra, J., & Vega, E. (2009). The Emotional Impact on Victims of Traditional Bullying and Cyberbullying: A study of Spanish adolescents. *Journal of Psychology, 217*(4), 197-204.

Patchin, J. W., & Hinduja, S. (2006, April). Bullies Move Beyond the School Yard: A Preliminary Look at Cyberbullying. *Youth Violence and Juvenile Justice, 4*(2), 148-169.

Patchin, J. W., & Hinduja, S. (2010, December). Cyberbullying and Self-Esteem. *Journal of School Health, 80*(12), 614-621.

Sen, D. (2021, June 17). Digital Tech Poses Threat and Harm to Children. *Khmer Times*. Retrieved from: https://www.khmertimeskh.com/50875832/digital-tech-poses-threat-and-harm-to-children/

Slonje, R., Smith, P. K., & Frisen, A. (2012). The Nature of Cyberbullying, and Strategies for Prevention. *Computers in Human Behavior*. doi:http://dx.doi.org/10.1016/j.chb.2012.05.024

Smith, P. K., Mahdavi, J., Carvalho, M., Fisher, S., Russel, S., & Tippett, N. (2008). Cyberbullying: Its Nature and Impact in Secondary School Pupils. *Journal of Child Psychology and Psychiatry, 49*(4), 376-385.

Sun, N. (2020, October 11). *Activists: Cambodia's Draft Cybercrime Law Imperils Free Expression, Privacy*. VOA. Retrieved from: https://www.voanews.com/east-asia-pacific/activists-cambodias-draft-cybercrime-law-imperils-free-expression-privacy

UNICEF. (2019, February 5). *Safer Internet Day: UNICEF calls for concerted action to prevent bullying and harassment for the 85.7 per cent of young people online in Cambodia.* https://www.unicef.org/cambodia/press-releases/safer-internet-day-unicef-calls-concerted-action-prevent-bullying-and-harassment-857

UNICEF. (n.d.). *Cyberbullying: What Is It and How to Stop It.* https://www.unicef.org/end-violence/how-to-stop-cyberbullying

Vamoeurn, N. (2020, September 25). *Digital Literacy for Employability and Entrepreneurship among Cambodian Youth*. https://www.kh.undp.org/content/cambodia/en/home/library/assessment-of-digital-literacy-for-employability-and-entrepreneu.html

Youth Era. (n.d.). Cyberbullying. *Youth Empowerment*. https://youthempowerment.com/cyberbullying/

Chapter 7 | The Role of the Government in Promoting the Cyber Security Infrastructure

Dechkunn CHHAY

Future Scenario

On a fine Monday morning, July 24, 2039, Soriya was walking towards her office. Suddenly, her phone rang. A notification pops up on her screen. She checks and sees an email from the Ministry of Health. According to the email, the Ministry was writing to inform her that her personal account for her health insurance is outdated and she needs to click on the link provided in the email to review her account. "Something is fishy," she thought. Having been regularly informed by the Cambodian National Cybersecurity Agency (CNCA) on social media of potential hackers and cyber-attacks, Soriya is well-equipped to handle this kind of situation. She immediately contacts the CNCA to inquire about the email. The official responds in a timely manner and successfully identifies that the email was not sent from the Ministry. "Whew!" she exclaimed. For Soriya, it was not a problem if she were to mistakenly click on that link. If the hacker were to try to use her login information, it would prompt a message to the e-Ministry of Health application on her phone to alert her to any suspicious attempts to use her information on another device. Thus, it will allow her to successfully update her login information and secure all of her data.

Cambodia in the late 2030s is applauded as one of the states in Southeast Asia with the most robust cyber security apparatus. However, this was not always the case. The Royal Government of Cambodia (RGC) prioritized its efforts to strengthen the security of Cambodia's cyberspace as the country digitized its economy. Following the COVID-19 pandemic in the 2020s, government institutions turned to the internet, social media, and other technological platforms in order to deliver their services to the public. In the post pandemic period, many governmental institutions of the RGC realized that they should continue to harness the benefits of technology and the internet. As a result, those institutions continue to further develop the existing platforms established during the COVID-19 pandemic, making their services more efficient and attractive for the Cambodian public. However, in its haste to move the services online, the RGC neglected to ensure the security layer of those platforms was sufficient and many users, as well as their own platforms, were victims of hacking, phishing, and other types of cyberattacks.

During this period, the Cambodian National Cyberspace Agency (CNCA) was established with the main objective of protecting the cyberspace of Cambodia. The CNCA also has a variety of

operations and missions ranging from conducting capacity-training programs for Cambodian cyber security and network security professionals, holding campaigns for raising cyber awareness among Cambodian citizens, as well as publishing real-time incidents and weekly reports on cyber-attacks for research purposes. Once the RGC recognized that its digital infrastructure had become one of its most vulnerable critical infrastructures, it realized this was an issue which needed a lot of attention and protection. This specialized unit is composed of many professionals hailing from backgrounds such as law and network security. The institution has collaborated with many local and international cyber security communities, university, private-sector organizations and enterprises, and foreign cyber security specialized agencies and units in order to develop a strong national cyber security protection program as well as a resilient response and recovery plan. Cambodia has been regionally and internationally recognized as one of the most active players in promoting government participation in developing a strong cyber security layer for the country's and the region's cyberspace.

Introduction

The need to develop a strong cyber security system to protect the country's digital infrastructure comes with the adoption of Industry 4.0 technologies. The Royal Government of Cambodia (RGC) is eager to adopt the new and innovative technologies of Industry 4.0 to quickly realize a digitized economy in order to "complete the transition into a digital economy by 2023" (Chan et al., 2021, p.1). However, to achieve such an ambitious plan, Cambodia needs to tackle the main issues that will hinder the Kingdom from achieving its goal. A report from the United Nations Development Programme (UNDP), *The Adaptation and Adoption of Industry 4.0 in Cambodia,* points to the underdevelopment of cyber security regulations as one of the barriers to widespread adoption of new Industry 4.0 technologies in developing countries, including Cambodia (Navarrete et al., 2020, p. 28-50). It is very important to ensure that digital infrastructure is protected with an effective security layer. This chapter will explain the key factors underlying the issues of the cyber security layer of Cambodia's digital infrastructure and recommend five areas in which Cambodia can focus in order to develop strong and robust security for the Kingdom's cyberspace.

Context Analysis

Malware Attacks and Cyber Security Awareness

The security layer of Cambodia's digital infrastructure is fragile and prone to cyberattacks. In November 2014, a group of Cambodian university students were able to hack into a total of 30 government websites (Sany and Wilwohl, 2014). In addition, in November 2019, seven official Facebook pages of Cambodian national and sub-national institutions were the targets of

cyberattacks from actors outside of Cambodia (Voun, 2019). According to Kaspersky Lab's report in 2019, Cambodia experienced 4,590,076 online cyberattacks which affected around 30 percent of the Kingdom's internet users. The report saw an increase of 2,835,938 cyberattacks compared to the previous year (Flynn, 2019). This indicates that Cambodia has become an increasingly popular target of cyberattacks and other cyber-related crimes.

In addition, Cambodia still faces another challenge related to cyberattacks which involves the behavioral aspect of the internet and network users. In 2020, the Ponemon Institute and IBM Security conducted a Cost of Data Breach Study of over four hundred organizations in seventeen countries. They found that the third highest cause of data breaches was due to human errors. This includes employees within organizations who failed to protect their organization's digital infrastructure due to negligence or errors. This accounted for 23 percent of the total data breaches of organizations that were surveyed (Ponemon Institute and IBM Security, 2020, p.30). The vulnerability of the Cambodian population of internet users to cyberattacks is related to a general lack of awareness of cyber security. Ayu Kusumastuti and Astrida Fitri Nuryani conducted a study on the digital literacy levels of ASEAN member states. The study used five main indicators in assessing digital literacy: information literacy, computer literacy, media literacy, communications literacy, and technology literacy. According to the study, digital literacy in Cambodia is the lowest in the ASEAN region with a mean rank of 15.60, significantly below ASEAN's average rank of 20.5 (Kusumastuti and Nuryani, 2020, p.30-31).

Institutions and Mechanisms to Combat Cyber Crimes and Incidents

In terms of providing a mechanism to combat cyberattacks, the Royal Government of Cambodia established a specialized unit called Cambodia Computer Emergency Response Team (CamCERT) in 2007. CamCERT provides a point of contact for any incidents involving Cambodia's cyberspace. Cyberspace includes elements of information systems infrastructures such as the Internet, telecommunications networks, computer systems, and embedded processors and controllers (National Institute of Standards of Technology, n.d.). CamCERT has jurisdiction over monitoring the National Information Infrastructure and government servers (CamCERT, 2017a). Furthermore, CamCERT has a responsibility to inform Internet users about any cyberattacks or incidents that occur on the Internet as well (CamCERT, 2017b). CamCERT is under the authority of the Information and Communications Technology (ICT) Security Department which is a department within the Ministry of Post and Telecommunications (MPTC). In addition to CamCERT, a specialized unit in combating cyberattacks and cyber-related incidents was also established under the Anti-Cybercrime Department of the National Police of Cambodia in 2016. This is the institution where complaints can be lodged and investigations can be launched to catch cybercriminals (Cambodia Development Resource Institute, 2020)

CamCERT is still young and needs to cooperate with many stakeholders in order to effectively deliver its mission and operations. The establishment of CamCERT is crucial to the development of a response and recovery plan based on international standards. However, there are challenges remaining to ensure these standards are met. For example, CamCERT is not a member of the Forum of Incident Response and Security Teams (FIRST), the international platform which brings together a total of 574 cyber security teams from 97 different countries to forge a safer cyberspace (Forum of Incident Response and Security Teams, 2021). Thus, CamCERT lacks the level of cyberthreat expertise needed to mitigate cyberattack risks effectively. CamCERT is also not a member of the Asian Pacific Computer Emergency Response Team (APCERT) unlike the CERTs of Laos, Myanmar and Vietnam (Asia Pacific Computer Emergency Response, n.d.). This may obstruct CamCERT from accessing better opportunities to connect and collaborate systematically with the other response teams regionally and internationally.

Cyber Security Legal Framework

Cambodia lacks a cohesive legal framework to govern its cyberspace. As the Cyber Security Law is being drafted, existing legal measures to combat cyber-related issues and crimes can be found in various laws such as the Criminal Code of the Kingdom of Cambodia (2009), Law on Telecommunications 2015, and the Internet National Gateway Law (2021). These legal instruments are still insufficient to fully protect the country's cyberspace because of the lack of a common and clear concept of what is considered a cybercrime. The terms which are mentioned in the existing legal instruments are too vague and broad with no concise explanation. Thus, the lack of a specific definition of the term may present difficulties to the authorities who wish to impose appropriate measures on cyber criminals (Nguon and Srun, 2019).

References to cybercrimes are made in several articles of the Criminal Code of the Kingdom of Cambodia (2009). Articles 317 to 320 refer to cyber security crimes as the "Infringement on the secrecy of correspondence and telecommunications'' (Ministry of Justice, 2009). Cybercrimes are also referred in Articles 427 to 432 as the "offences in the information technology sector" with no further explanation on what actions can be considered as the offences in the IT sector. According to Article 427, these crimes refer to the act of "having access to a system of automated data processing or maintaining access to it" and the act "which has resulted in either deletion or modification of the data contained in the system" (Ministry of Justice, 2009). The Law of Telecommunications (2015) is another legal mechanism which explicitly mentions security in the field of ICT. Article 80 states that the "establishment, installation and utilization of equipment in the telecommunications sector, if these acts lead to national insecurity, shall be punished by sentences from seven to fifteen years imprisonment" (Ministry of Posts and Telecommunication,

2015). However, this applies only to security within the telecommunications sector of Cambodia, and not to other forms of cybercrimes and cyber-related incidents.

The National Internet Gateway (NIG) is the latest addition to the legal instruments that shape Cambodia's position with respect to the security of the Kingdom's cyberspace. Article 12 states that "NIG operators shall cooperate with relevant authorities in collecting national revenue, assuring safety, public order, dignity, culture, tradition, and custom of the society, as well as preventing and cracking down on crimes'' (Royal Government of Cambodia, 2019). However, this clause has received criticism from national civil society organizations and international organizations over its vagueness in the definition of "safety" and "security". In addition, the Draft Law on Cyber Crimes has also come under similar criticism as the draft has been under several revisions since 2014 (Human Rights Watch, 2020).

Critical Information Infrastructure (CII)

Critical Information Infrastructure (CII) refers to the interconnected information systems and networks used by the government to determine what are the assets that are essential for the functioning of the economy and social welfare of the country (U.S. Department of Homeland and Security, 2011, p.10). Different governments may have different definitions of what is considered critical infrastructure. In the United States, the Cybersecurity and Infrastructure Security Agency (CISA) defines sixteen critical infrastructures to be so vital to the United States that any disruptions would produce dire consequences on the security, national economic security, national public health or safety of the United States' population (Cybersecurity and Infrastructure Security Agency, n.d.). In Myanmar, the government defines CII assets in their Draft Cyber Security Law. There are eight infrastructures which are identified to be the CII of Myanmar including e-government services and electronic information and infrastructure of various industries ranging from finance to natural resources (Myanmar Centre for Responsible Business, 2021). Overall, governments tend to identify similar elements to be CII. In a study conducted by the OECD, OECD Member States commonly identified critical assets to be assets in the field of energy, finance, healthcare, food and agriculture and government facilities, among others (Gordon and Dion, 2008, p.5). Cambodia is also facing similar threats in these sectors. For instance, the Kingdom has faced several attacks in the banking and finance sector. In 2012, the National Bank of Cambodia was reported to be hacked and vital information regarding individuals' identification was leaked (Li, 2013). In 2016, Ou Phanarith, director of ICT Security at the Ministry of Posts and Telecommunications warned that Cambodian financial institutions were particularly vulnerable to cyber fraud as new forms of cybercrimes have developed in recent years (Kotoski, 2016).

Regional Cooperation on Cyber Security in the ASEAN region

Cambodia is considered to be one of the countries least committed to cyber security in the Southeast Asia region. According to the Global Cybersecurity Index 2020 Cambodia ranked last in Southeast Asia with a score of only 19.12 comparing to its neighboring countries such as Lao P.D.R. (20.34), Thailand (86.5), and Vietnam (94.55). In the Asia-Pacific region, Cambodia ranked 26th out of 38 countries in the region with a global rank of 132nd out of 193 countries total (International Telecommunication Union, 2020, p. 27-30) (See Table 1). However, the regional ASEAN member states in general lag behind other parts of the world in strengthening cyber-security. Data has shown that ASEAN member states spent an estimated US$1.9 billion in 2017, equating to only 0.06 percent of the region's gross domestic product (GDP) on cyber security (Strengthening ASEAN's cyber security, 2018) which is lower than a global average of 0.13 percent (A.T. Kearney, 2018).

Table 1: GCI Ranking 2020, ASEAN Member States

Country	Score	Regional Rank	Global Rank
Singapore	98.52	1	4
Malaysia	98.06	2	5
Indonesia	94.88	6	24
Vietnam	94.55	7	25
Thailand	86.5	9	44
Philippines	77	13	61
Brunei Darussalam	56.07	16	85
Myanmar	36.41	18	99
Lao P.D.R.	20.34	25	131
Cambodia	19.12	26	132

Source: International Telecommunications Union, 2020

Recognizing the importance of protecting the cyberspace of the region, the ASEAN Member States altogether released a joint statement on the ASEAN Declaration to Prevent and Combat Cybercrime in 2017 (ASEAN, 2017). This declaration signifies the official beginning of cooperation between ASEAN Member States in forging unifying anti-cybercrime measures. The declaration

was endorsed after the 11th ASEAN Ministerial Meeting on Transnational Crime in September 2020 and adopted by the Head of States of the ASEAN Member States (ASEAN, 2017). This declaration set a milestone for ASEAN's dedication in protecting its regional cyberspace.

Policy Recommendations

This analysis of Cambodia's contemporary cyber security context shows that the Kingdom still needs to take appropriate steps in order to effectively and urgently secure its cyberspace. Cambodia needs to prioritize five main areas: i) Establishing a specialized unit to govern its cyberspace, ii) Developing a comprehensive legal framework which aligns with internationally recognized standards, iii) Promoting a strong and vibrant cyber security ecosystem, iv) Nourishing an empowered digital citizen, v) Creating a protection program and recovery plan for the CII.

Establishing a Single Specialized Cyberspace Governing Unit

Establishing a dedicated unit responsible for national cyber security policy development is a necessary step to enforce the laws and regulations that have been put into place to govern cyberspace. This unit should be given a wide scope of action, including the mandate to develop a cohesive national cyber security strategy with concrete initiatives. These initiatives would include providing protection over critical infrastructure, mobilizing the necessary resources to respond to cyberattacks, defining cyber security standards to be used across governmental institutions, and executing educational programs to raise cyber-awareness among the public as well as training for IT Security professionals. For instance, in Singapore, the Cyber Security Agency (CSA) of Singapore was established in 2015 to protect the city-state's Critical Information Infrastructure; monitor the cyberspace for cyberthreats and allocate necessary resources to mitigate the risks; certify and validate the system's security assurance; and conduct outreach programs to enrich the cyber security ecosystem and good cyber hygiene practices among the public (Cyber Security Agency, n.d.).

Currently, there is no such centralized unit to govern the Kingdom's cyberspace, as CamCERT's responsibilities are limited. Instead of having multiple agencies to govern Cambodia's cyberspace, establishing a single dedicated institution which expands on the mandates of CamCERT is more efficient because it will prevent unintentional bias towards any institutions during budget and resource allocation as well as prevent potential inter-governmental competition for resources (International Telecommunication Union, 2018, p.18). In Singapore, following the establishment of the CSA, the responsibility of overseeing 11 critical sectors fell under a single authority so that the protection of the city-state's cyberspace would become more efficient (Cyber Security Agency, 2021). The staff from the institutions which were previously

responsible for cyber security protection such as the Ministry of Home Affairs' Singapore Infocomm Technology Security Authority and Infocomm Development Authority's Singapore Computer Emergency Response Team (SingCERT) were also transferred to the new agency (Tham, 2016). Establishing this complex specialized unit requires in-house technical skills and expertise. In order to tackle this issue, the specialized agency must involve other stakeholders including other governmental institutions, private sector actors, and civil society organizations in order to adequately fill the capacity gap. In addition, the specialized unit should prioritize international collaboration. CamCERT should consider becoming a member of regional and international computer emergency response teams such as FIRST and APCERT. Such collaborations would enable Cambodia to effectively tackle cyber incidents across boundaries as well as exchange expertise and standards for securing cyberspace.

Development of Cyber Security Legal Framework and International Standards

The RGC has been developing a draft cyber security law under the supervision of the Ministry of Post and Telecommunications. While developing the law, the RGC should consult with stakeholders in the private sector and civil society in order to develop a comprehensive framework that can provide protection for businesses, individuals, and public institutions alike. The legal framework can be developed in accordance with the Budapest Convention, an international treaty that has been signed by more than sixty states. The Budapest Convention, also known as the Convention on Cybercrime, is the only existing multilateral treaty which addresses cybercrimes. It was proposed by the Council of Europe in 2001 and currently, the majority of the signatories are countries in North America and Western Europe. The Budapest Convention has not received endorsement from the governments of Russia, Brazil, India, and China due to Article 32 which permits extraterritorial searches. Russia and China have been active supporters of cyber sovereignty, meaning the government has authority over cyberspace within its territory's border (Chen, 2017). At the regional level, strong collaboration between ASEAN Member States can support the development of a legal framework for regional cyberspace. The majority of the ASEAN Member States are not signatories of the Budapest Convention. Currently, only the Philippines has signed. ASEAN has many dialogue platforms such as the ASEAN Summit and the Asia-Europe Meeting (ASEM) which are platforms to engage the major powers in dialogues. As such, Cambodia, through ASEAN, can advocate for the establishment of a new convention which would invite all major powers such as China, the US, and Russia to the negotiation table in order to develop common international standards and a framework that would take all states' interests into consideration.

Fostering a Healthy Cyber Security Ecosystem

In order to build a strong security layer for the country's digital infrastructure, the government must promote a healthy cyber security ecosystem which involves assistance from many stakeholders such as public citizens, professionals, and private-sector organizations by enabling cyber security firms to thrive, developing the technical capacities of cyber security professionals, and raising the awareness of citizens in cyber security. Since Cambodia's main obstacle is the lack of cyber security experts and professionals in the national labor market, the government needs to focus on strengthening the in-house capacity through cooperation between the local cyber security startups and companies, foreign cyber security professionals, and university professors and students. Firstly, the government needs to attract cyber security enterprises to invest in the cyber security infrastructure of the Kingdom. To ensure that the market environment is attractive to foreign cyber security enterprises, the government must ensure that the legal framework related to protecting cyber security is in line with international standards as mentioned in the previous section. Secondly, the RGC should instill a culture of sharing and cooperation between foreign and local cyber security companies. The RGC, through the National Cybersecurity Agency, can establish and implement awareness and skill-building programs and workshops in order to build a strong sense of cooperation between the stakeholders. In addition to the capacity building programs, the RGC should also provide economic and administrative incentives for accredited cyber security firms and service providers to conduct capacity training on cyber security for Cambodian professionals and their targeted customers.

To ensure that there is a sufficient supply of cyber security professionals in the long run, the CNCA should establish a hub that links private sector actors with universities and other higher education institutions. The RGC should support the establishment of cyber security related programs in higher education systems at both undergraduate and graduate levels, with the assistance of the private cyber security sector. That workforce can become qualified professors and researchers on cyber security issues and further expand the number of cyber security experts in higher education institutions. The National Cybersecurity Agency can play a role of facilitating connections between professionals and experts from cyber security related industries and universities and other higher education institutions.

Nourishing an Empowered Digital Citizen

The RGC should also consider implementing programs to raise cyber security awareness among the Cambodian public, especially among youths. Currently, CamCERT has made an effort to inform the general public about issues of cyber security and the public can receive effective guidance and real-time reports of incidents from trusted government sources. However, with the

rapidly increasing use of ICT in daily lives, especially in professional environments, it is important for the government, through the CNCA, to establish a comprehensive strategy which focuses on educating the general public to become "smart users". Smart users means that the public has acquired knowledge of digital safety skills as well as their human rights on the internet (Nguyen and Thong, 2021, p.14). To increase smart users among the public, the CNCA must develop a strategy based on a collective, human-centered, and rights-based approach. Firstly, the CNCA must acknowledge that educating the general public to become smart users is a long-term project. Thus, the institution needs to collaborate with relevant local and foreign stakeholders who possess sufficient skills and resources to implement the required capacity-building programs. Secondly, the programs should be developed with the objective of ensuring the general public has the basic capacity to protect their data and information from cyberattacks and to take responsive measures to solve the issues if incidents were to arise. These digital safety skills include the ability to identify cyber risks, evaluate the risks, and take appropriate measures to mitigate the risks. Thirdly, the programs should also focus on introducing and instilling the knowledge of important rights to the general public such as their rights to data protection and privacy so that they can utilize the legal framework to protect their data and information on the internet.

Creating a protection program and recovery plan for the CII

The RGC should also identify the most critical infrastructure which should be given priority for protection. Critical Information Infrastructure has typically been a frequent target for cyberattacks. Thus, it is appropriate to prioritize protecting critical assets for the country based on their value in ensuring the welfare of the economy, society, and national security. Firstly, the CNCA should conduct a thorough study in order to assess and prioritize the sectors that urgently need to be protected from cyberattacks. Doing so can ensure that the budget and resources will be effectively allocated to invest in those identified critical assets and infrastructure. The identification of critical infrastructure should also be included in the Draft Cybercrime Law to guarantee that the infrastructure will receive appropriate protection from any cyber-related crimes and incidents. Secondly, the RGC must develop a national incident response and recovery plan in order to mitigate the risks and effects of cyberattacks and cyber-related crimes on the CII. There should be clearly defined reporting procedures for the victims of cyberattacks or cyber-related crimes. Currently, there is no single point of contact for reporting incidents and the victims are left to deal with various agencies such as CamCERT and the Anti Cybercrime department. For CamCERT, there is a lack of a clear reporting procedure on its official website, especially in the Khmer language. Thirdly, there should be a robust mobilization plan in order to respond effectively to cyberattacks. This plan should include what level of governmental agencies deal with what types or levels of cyber incidents. By having a concrete cyber security response

and recovery plan, all public and private stakeholders would have clear and specific roles in mitigating the risks. The CamCERT and Anti Cybercrime department, as well as other future institutions, will have distinct mandates and responsibilities so they can effectively operate together for an integrated response against cyberattacks of any type and scale.

Conclusion

Ultimately, Cambodia needs to step up and prioritize strengthening its cyber security system. Incapacity to build a strong and robust cyber security system could lead to two main complications. Firstly, it could prevent Cambodia from benefiting fully from the digital economy. Malware attacks and other incidents will cause economic losses for the Kingdom. Cambodia will remain the country with the poorest cyber security in the region. As ASEAN collectively aims to digitize the regional economy, Cambodia may be put into a disadvantageous position. Thus, it is important for Cambodia to focus on securing the cyber security layer to align with the increasing dependence of the country's economic and social activities on new digital technologies. Secondly, looking towards the future cyber security is one of the main concerns among Cambodians. As people are becoming more dependent on the internet and technology in both of their personal and professional life, cyber security will inevitably become a major concern for everyone with respect to the safety and security of their own data and information. For Cambodian citizens like Soriya, having good cyber security infrastructure will make them feel safe and confident on digital platforms, the same way they feel confident in the physical world where law enforcement of the society is well-developed and strengthened. Cambodians will not only benefit from strong institutions and legal frameworks, but also from the programs which the CNCA will implement to strengthen basic digital safety skills among the Cambodians themselves. Many Cambodians will be more equipped to protect their data and information online and to take appropriate measures when cyber-related incidents occur.

References

ASEAN, (2017, November 14). *ASEAN Human Rights Declaration*. Retrieved from: http://asean.org/wp-content/uploads/2017/11/ASEAN-Declaration-to-Combat-Cybercrime.pdf

Asia Pacific Computer Emergency Response Team (n.d.). Member Teams. Retrieved from: https://www.apcert.org/about/structure/members.html.

A.T. Kearney. (2018). *Cybersecurity in ASEAN: An Urgent Call to Action.* Retrieved from: https://www.kearney.com/documents/20152/989824/Cybersecurity+in+ASEAN.pdf/2e0fb55c-8a50-b1e3-4954-2c5c573dd121

Cambodia Development Resource Institute. (2020). *Cybergovernance in Cambodia: A Risk-Based Approach to Cybersecurity*. Retrieved from: https://cdri.org.kh/wp-content/uploads/SP18_cybersecurity.pdf.

CamCERT. (2017a, May 9). *What We Do*. [website] Retrieved from: https://www.camcert.gov.kh/en/what-we-do/.

CamCERT. (2017b, May 9) *Who We Are.* [website] Retrieved from https://www.camcert.gov.kh/en/who-we-are/.

Chan, P., Chhem, S., and Nay, D. (2021). Developing Cambodia's Digital Economy: Youth's Perspective. 7th Annual NBC Macroeconomic Conference, 1. Retrieved from: https://www.nbc.org.kh/download_files/macro_conference/english/S6_Development_Cambodia_Digital_Economy_Youth_Perspective.pdf.

Chen, Q. (2017, August 03). Time for Asean to get serious about cyber crime. *The Diplomat*. Retrieved from: https://thediplomat.com/2017/08/time-for-asean-to-get-serious-about-cyber-crime/

Cyber Security Agency. (2021, July 19). *FAQ*. [website] Retrieved from: https://www.ifaq.gov.sg/csa/apps/fcd_faqmain.aspx

Cyber Security Agency (n.d.). CSA: Our Organisation. [website] Retrieved from: https://www.csa.gov.sg/Who-We-Are/Our-Organisation.

Cybersecurity and Infrastructure Security Agency. (n.d.). Identifying Critical Infrastructure During COVID-19. Cybersecurity and Infrastructure Security Agency. Retrieved from: https://www.cisa.gov/identifying-critical-infrastructure-during-covid-19.

Flynn, G. (2019, August 26). Cambodia to Host International cyber security Conference. *Khmer Times*. Retrieved from: https://www.khmertimeskh.com/636876/cambodia-to-host-international-cyber security-conference/.

Forum of Incident Response and Security Teams. (2021) FIRST Members around the world. Retrieved from: https://www.first.org/members/map.

Gordon, K., and Dion, M. (2008). *Protection of 'Critical Infrastructure' and the Role of Investment Policies Relating to National Security*. Paris, France: Organisation for Economic Co-operation and Development. Retrieved from: https://www.oecd.org/daf/inv/investment-policy/40700392.pdf

Human Rights Watch. (2020, November 13). *Cambodia: Scrap Draft Cybercrime Law*. Retrieved from: https://www.hrw.org/news/2020/11/13/cambodia-scrap-draft-cybercrime-law.

International Telecommunication Union (ITU). (2018). Guide to Developing a National Cybersecurity Strategy. Retrieved from: https://www.itu.int/dms_pub/itu-d/opb/str/D-STR-CYB_GUIDE.01-2018-PDF-E.pdf

International Telecommunication Union (ITU). (2020). Global cyber security Index 2020. Retrieved from: https://www.itu.int/dms_pub/itu-d/opb/str/D-STR-GCI.01-2021-PDF-E.pdf

Kotoski, K. (2016, May 05). Banks warned on growing threat of cyber fraud. *The Phnom Penh Post*. Retrieved from: https://www.phnompenhpost.com/business/banks-warned-growing-threat-cyber-fraud

Kusumastuti, A., and Nuryani, A. (2020). Digital Literacy Levels in ASEAN (Comparative Study on ASEAN Countries). Proceedings of the Proceedings of the 13th International Interdisciplinary Studies Seminar, 30-31 October 2019, Malang, Indonesia. Retrieved from: https://doi.org/10.4108/eai.23-10-2019.2293047

Li, M. (2013, June 07). Web hacks a risk for banks. *The Phnom Penh Post*. Retrieved from: https://www.phnompenhpost.com/business/web-hacks-risk-banks

Ministry of Justice. (2009). General Provisions for the Implementation of Criminal Law. Retrieved from: https://www.trc.gov.kh/wp-content/uploads/2016/03/Law-on-Telecommunicaiton-in-Eglish-Unofficial-Translation.pdf

Ministry of Posts and Telecommunications. (2015). Law on Telecommunications. Retrieved from: https://www.trc.gov.kh/wp-content/uploads/2016/03/Law-on-Telecommunicaiton-in-Eglish-Unofficial-Translation.pdf

Myanmar Centre for Responsible Business (2021, February 12). Analysis of the Provisions of the Draft Cyber Security Law. Retrieved from http://www.myanmar-responsiblebusiness.org/pdf/2021-cyber-security-bill-legal-analysis.pdf

National Institute of Standards of Technology. (n.d.). Cyberspace – Glossary. Computer Security Resource Center. Retrieved from https://csrc.nist.gov/glossary/term/cyberspace.

Navarrete, J. C., Ayala, D. L., Gómez , C. L., and Palladino, M. (2020). *Adaptation and Adoption of Industry 4.0 in Cambodia*. Phnom Penh, Cambodia: United Nations Development Programme. Retrieved from: https://www.undp.org/content/dam/cambodia/docs/ResearchAndPublication/2020/Industry%204.0%20Report%20Final.pdf

Nguon, S., and Srun, S. (2019). Cambodia v. Hackers: Balancing Security and Liberty in Cybercrime Law. *Digital Insights*, 76–95. Retrieved from: https://www.kas.de/documents/264850/7993338/Chapter+5.pdf/14d17599-c508-93a7-73d4-0f0cba039de1?version=1.0&t=1579754366354.

Nguyen, D. Q., and Thong, L. K. (2021). *Shifting from Cybersecurity to Digital Safety. Innovating Policies to Address the Digital Age's Safety Challenges in Vietnam- A Discussion Paper*. Unpublished manuscript.

Ponemon Institute, and IBM Security. (2020). IBM: Cost of a Data Breach Report 2020. Retrieved from: https://www.capita.com/sites/g/files/nginej291/files/2020-08/Ponemon-Global-Cost-of-Data-Breach-Study-2020.pdf.

Royal Government of Cambodia. (2019). SUB-DECREE on Establishment of National Internet Gateway. Retrieved from: https://www.trc.gov.kh/wp-content/uploads/doc/Internet-Gateway-23.pdf

Sany, S., and Wilwohl, J. (2014, April 23). Hackers Arrested in Joint Operation with FBI. *The Cambodia Daily*. Retrieved from: https://english.cambodiadaily.com/news/hackers-arrested-in-joint-operation-with-fbi-57065/.

Strengthening ASEAN's cyber security (2018, December 03). Strengthening ASEAN's cyber security. *The ASEAN Post.* Retrieved from: https://theaseanpost.com/article/strengthening-aseans-cybersecurity

Tham, I. (2016, January 19). New Cyber Security Agency to be set up in April, Yaacob Ibrahim to be minister in charge of cyber security. *The Straits Times*. Retrieved from: https://www.straitstimes.com/singapore/new-cyber-security-agency-to-be-set-up-in-april-yaacob-ibrahim-to-be-minister-in-charge-of.

U.S. Department of Homeland and Security. (2011). *Blueprint for a Secure Cyber Future: The Cybersecurity Strategy for the Homeland Security Enterprise*. Retrieved from: https://www.dhs.gov/xlibrary/assets/nppd/blueprint-for-a-secure-cyber-future.pdf

Voun, D. (2019, November 20). Interior Ministry Regains Control of Seven Hacked Gov't Facebook Pages. *The Phnom Penh Post.* Retrieved from: https://www.phnompenhpost.com/national/interior-ministry-regains-control-seven-hacked-govt-facebook-pages.

Chapter 8 | Fostering Innovation in Cambodian TVET

Proloeng TOP

Future Scenario

In the last semester of 2028 Pisey, a student in her last year of lower secondary at Bak Tuk High School in Phnom Penh, the capital city of Cambodia, is scheduled to receive a follow-up online counseling session with her respected teacher. It is time for Pisey to decide where she will end up for higher secondary school, either general education or Technical Vocational Education and Training (TVET). Without a doubt, Pisey knows where she plans to go in her career path, as she is passionate about robotics, and she has decided to go for TVET school, under the mandate of the Ministry of Labour and Vocational and Training (MLVT).

A year later, Pisey has been selected for a two-year apprenticeship program and has been trained in a huge new Japanese Robot Manufacturing Company located in the Special Economic Zone of Phnom Penh. This success has been largely thanks to the initiative of the Royal Government of Cambodia and their support to engage the private sector in the TVET ecosystem through a public-private partnership. The program is a collaboration between the National Polytechnic Institute of Cambodia (NPIA) and the Japanese company. The program requires Pisey to follow two different curricula, one from the school for online classes and one from the company for onsite training. Online training is delivered through the latest TVET e-learning platform, managed by the MLVT, which comprises various interactive learning materials and content. Pisey finds it enjoyable learning online and spends roughly two hours every other day losing herself in the platform. Pisey is also required to attend workshops at NPIA to take in-depth and practical technical training which is facilitated by her professors. The schedule is very flexible for Pisey to attend the workshops. The program helps Pisey to acquire new skills by utilizing knowledge she learned from the e-learning classes. Moreover, Pisey becomes more passionate about the field of robotics as she can apply what she learned in the real world, and she plans to develop her expertise in this area.

Living with Industry 4.0 brought an opportunity for Cambodia to achieve its Industry Development Policy 2015-2025. Private companies in Cambodia became more and more digitized by introducing advanced machines and integrating the internet of things to operate their businesses, especially in processing and manufacturing companies. Pisey is undertaking a feasibility project for Cambodia in robots and automation to assess the possibility of supplying these robots to manufacturing companies in Cambodia as well as to the region. Besides the government investment in TVET institutions, private companies increasingly contribute up-to-date equipment and machines to training providers through a Corporate Social Responsibility program. This has given Pisey access to modern equipment in the Department of Research and Innovation Lab to nurture innovation in robots and automation with the pool of Cambodian talents like her. Pisey's journey does not end here, she receives a chance to visit a robot

manufacturing company and polytechnic institute in Japan incorporated by a partnership between the two institutes, the National Polytechnic Institute of Cambodia, and Tokyo Polytechnic University, with support from their respective governments. With no surprise, Pisey now works at the Japanese Robot Manufacturing Company as a specialist technician in robotics, and one of her favorite tasks is to train new technicians or apprentices in the apprenticeship program between the company and NPIC.

Introduction

The Cambodian government has acknowledged that most of Cambodia's industrial sectors have not experienced the 3rd Industrial Revolution (referring to the deployment of basic automation technologies), which the government sees as an opportunity to leapfrog into the 4th Industrial Revolution (4IR) by leveraging technology transfer and strengthening the country's physical and digital infrastructure (Ministry of Commerce, 2019). In this regard, the Royal Government of Cambodia (RGC) has set a framework to modernize its industrial structure from a labor-intensive model to skills-driven industries to connect with regional and global value chains and foster the competitiveness of the industrial sector through the *Industrial Development Policy 2015-2025* (RGC, 2015). A critical factor to the success of the above policy is an explicit skills development programs in the Kingdom. Technical Vocational Education and Training (TVET) can play a significant role in achieving the above-mentioned ambition. TVET has a comparative advantage over general education because TVET assists learners in gaining knowledge, technical skills, and competency to become skilled workers and technicians (RGC, 2017). However, whether the policy can be achieved is doubtful given that the current TVET sector in Cambodia is still in its infancy in terms of governance, institutions, ICT, and digitalization (ADB, 2018a). Unlike general and tertiary education, several factors hinder digitalization in the TVET sector, such as the nature of technical skills training which requires learners to apply the knowledge and skills they have learnt from classes in the real workplace. Digitalization brings both challenges and innovations in the TVET sector, especially in the time of the Covid-19 pandemic. This chapter will draw a roadmap to highlight key factors and policy responses for Cambodia to obtain the greatest advantage from the digitalization of TVET and to prepare the country's skills development program in response to the future labor market and global trends.

Context Analysis

Cambodian workforce and regional integration

Cambodia has made significant economic improvements from an agrarian society into an industry and service-based economy with an average of 7.7 percent Gross Domestic Product (GDP) growth in the past two decades (World Bank, 2020). Between 2010 and 2019, the industrial sector experienced the highest average annual growth at a rate of 11.3%, followed by the service sector at 6.8% and the agriculture sector at 1.7% (Lim et al., 2021). At the same time, employment in the industry and service sectors has gradually increased between 2009 and 2019/20 from 15.9% and 26.5% respectively in 2009 to 26.1% and 38.4% in 2020, while the agriculture sector

has decreased significantly, from 57.6% in 2009 to 35.5% in the same period (NIS, 2020, p. 86). This shift indicates the growing importance of industry in the Kingdom, especially in response to the 4th Industrial Revolution. The national skills development project, Skills for Competitiveness (S4C), has selected some sectors, namely construction, electronics, electricals, and manufacturing for the nation to prioritize to produce a skilled workforce for the Kingdom (ADB, 2019).

Meanwhile, the integration of the Association of Southeast Asian Nations (ASEAN) brings both advantages and drawbacks to Cambodia, especially through the ASEAN Economic Community (AEC). These close economic ties puts the Kingdom in a challenging position when it comes to labor competitiveness in the region. Given the low productivity of Cambodian workers compared to other ASEAN members (OECD Development Centre, 2017), Cambodia needs to nurture its youth and help them become skilled workers (Khidhir, 2018). In 2017, Cambodia had the highest labor force participation rate in ASEAN at 84.2%, while Lao PDR, its neighbor, has the lowest at 40.8% (ASEAN Secretariat, 2020). It is critical to question the level of competency of Cambodian graduates, to anticipate and prepare for the needs of a skilled workforce in the rapid transformation of regional and global trends.

TVET in Cambodia

In the Cambodian Qualifications Framework (CQF), TVET is equivalent to general and tertiary education according to the number of credits students earn from each category of schools (RGC, 2012). The *National Technical Vocational Education and Training Policy 2017-2025* was endorsed in 2017 to align with the goals set in the *Industrial Development Policy 2015-2025* as a guide to advance the country's manufacturing industry, a key economic sector for sustainable and inclusive economic growth. The TVET Policy aims to: "improve the livelihood and dignity of people and to enhance Cambodian workforces or human resources with knowledge, competence, skills, working attitudes, professional ethics, high productivity and competitiveness for lifelong employability" (RGC, 2017, p. 4).

Given the TVET ecosystem is in its infancy, skills development remains a challenge in terms of labor force, skills gap, and skills shortage, with several factors hindering the sector (NEA, 2018). First, Cambodia's TVET system remains weak in both hard and soft infrastructure. The number of TVET training providers is limited, with only 38 public and 22 private and NGO training providers registered under the Ministry of Labour and Vocational Training (MLVT, 2020). When it comes to the number of learners, it is even more strained. In 2019, the total enrollment in TVET was 85,390 students in all training levels while the enrollment in upper secondary of general education alone was 339,847 students (MoEYS, 2019a). Compared to general education, this figure is low. Furthermore, there is a lot to be improved in terms of capacity of the system's human resources, particularly trainers. The competency of trainers is limited due to the lack of direct industry experience and poor training infrastructure (ADB, 2018a).

Second, the perceived value of TVET is low among Cambodian youth and their parents (Khieng, et al., 2015). TVET has been perceived as the second option nationwide, suitable for non-skilled and disadvantaged groups, compared to general education. Less than 50 percent of students enrolled in TVET are in long term training courses[1] and the majority are disadvantaged youth, especially from the indigenous communities and remote provinces, who take short-term courses at the provincial training centers (MLVT, 2020). Enrollment is hindered by the lack of TVET promotion and outreach, particularly at the community level, which is the responsibility of Directorate General of Technical Vocational Education and Training (DGTVET), National Employment Agency through its channel of Job Centers, Provincial Training Board (PTB), and TVET training providers.

Besides the above factors, there is a limited engagement from TVET actors throughout the TVET ecosystem. Though TVET has become an engine in skills development, the whole landscape remains compact, and only a few actors are actively involved in the system development and improvement. The Directorate General of TVET is the institution mandated under the Ministry of Labour and Vocational Training to oversee the whole system. With respect to development partners, a few leading institutions have actively been contributing to the system through development projects. The Asian Development Bank (ADB) has shown tremendous support in strengthening the system and modernizing TVET sector by providing loans to the Cambodian government, co-financed with Agence Francaise de Developpement (AFD), to implement plenty of national projects namely Strengthening Technical and Vocational Education and Training (STVET), Technical and Vocational Education and Training Sector Development (TVETSDP) and the current project of Skills for Competitiveness (S4C). The Japan International Cooperation Agency (JICA) made a commitment to strengthening the quality of training for the higher diploma in electricity in the TVET institution under MLVT (nation-wide) (JICA, n.d.) and the Swiss-funded Skills Development Programme (SDP) also improves the income and employment opportunities for disadvantaged young people in rural Cambodia in target provinces (Swisscontact, n.d.). When it comes to private sector actors and business associations, they are yet to fully participate in the development of the TVET system where Social Corporate Responsibility (SCR) is a typical means of engagement.

Industry 4.0 and automation in the Cambodian Skills Sector

The 4th Industry Revolution (4IR) or Industry 4.0 and particularly the Internet of Things and Artificial Intelligence will have significant implications for the world of work and skills development. Most developed countries have responded with good preparation by integrating advanced technology into industry and making ready a skilled workforce through education and training. For Cambodia, the Kingdom interprets Industry 4.0 as an opportunity to leapfrog into

---

[1] According to Cambodian National Qualification Framework (CQF) there are eight levels of qualifications in TVET namely basic vocational certificate as the entry level (short term TVET training course), vocational certificate 1, vocational certificate 2, vocational certificate 3, higher diploma of technical/business, Bachelor of Technology/engineering/business, Master of Technology/business and doctoral degree.

an advanced economy (Ministry of Commerce, 2019), however, to what extent the government can take up this challenge remains to be seen. According to the Global Industry 4.0 Readiness Index 2016, Cambodia was ranked 115th out of 120 countries on their readiness for 4IR, behind neighboring ASEAN countries such as Vietnam, the Philippines, and Indonesia ranking at 91st, 44th and 41st respectively (ADB, 2021, p. 49). Looking at the current TVET system, Cambodia is not yet ready to respond to the trends of Industry 4.0 in terms of availability of technological equipment in industry, competency of institutions to prepare workers entering the labor market, and digital literacy in the nation. Furthermore, Cambodia must acknowledge the current weaknesses in terms of ICT and the lack of up-to-date amenities available in TVET and develop an effective policy to address them. Properly preparing for human resource development can be one of these strategies, and TVET training will play an essential role to prepare a skilled workforce for the industry demands and to respond to job obsolescence resulting from automation in the industrial sector (ADB, 2021).

The emergence of Industry 4.0 will influence the Cambodian workforce, specifically through the implications of increased automation. Automation will put the Kingdom in a critical situation given the majority of Cambodians are low-skilled and semi-skilled. For instance, due to low labor costs the industrial sector is dominated by textiles and leather where 800,000 employees generated approximately 75% of all export earnings in 2017 (Schmücking, 2020). This reality indicates a skills shortage and skills mismatch in the industrial sector. According to an ADB survey, the national TVET system cannot satisfy the demand of the private sector and companies are forced to train their staff on their own (ADB, 2021). There is also a gap in terms of skills expectation, where training institutions believe 59% of graduates are well-prepared for the entry-level of the labor market while employers only see it between 10%-20% (ADB, 2021, p. 54). Moreover, employers reported that 57% to 77% of new training related to 4IR will need to be delivered as on-the-job training (ADB, 2021).

Policy Recommendations

Cambodia's future labor force will be dominated by ICT-related sectors and digitalization will be present in all forms of businesses, from technical to service-related sectors. The Covid-19 outbreak has the potential to foster innovation in the Cambodian TVET system due to its far-reaching implications on education, work, and health. This section will discuss how Cambodian TVET will look in the next decade and the policies needed to get there.

E-career guidance and counselling

Career guidance and counselling serves as a bridging pathway linking youth to labor market information and employment. In the *Education Strategic Plan 2019-2023* of the Ministry of Education, Youth and Sport (MoEYS, 2019b), career guidance and counselling will be integrated into the Cambodia education curriculum as one of the main subjects in lower secondary school of general education. This is not limited to general education however, TVET training providers will also benefit from the curriculum, as both ministries, the Ministry of Labour and Vocational

Training and the Ministry of Education, Youth and Sport, will have a joint-initiative to develop an e-platform for career guidance and counselling with the National Employment Agency. The platform allows the three entities to work collaboratively to deliver the service in a way that is more inclusive and accessible to learners throughout the country, especially disadvantaged youth from remote and indigenous communities. Students will either receive counseling directly from their teacher at school, including TVET training providers, or receive online counseling from the Job Center of the National Employment Agency (NEA) with support from their teachers or trainers.

National TVET E-learning

Moving toward Industry 4.0, the national E-learning platform was launched to allow all public TVET institutions to deliver online courses. TVET institutions will register on the national platform to develop training courses and offer flexibility to learners. Some theory-based classes will be delivered online, while other parts are taken by students in their own time and at their own location. Different tools will be used to make the training more interactive and attractive namely Metimeter, Padlet, Animated GIFs, Graphic Organizers, photos, icons, and video. On the other hand, the practical classes will be delivered at the workshop according to their respective schedule. Each of the training sessions will be in module format and at the end of each module, students will be assessed. Trainers will perform as facilitators rather than following a traditional teacher-centered training delivery format. To ensure the effectiveness of E-learning delivery, trainers are trained with digital literacy, E-learning pedagogy and methodology, and content and material development from the Directorate General of TVET, at the national level.

Blended Work Based Learning

All forms of work-based learning (WBL) are widely promoted to fulfill the needs of employers, address skills gaps, and to ensure the quality of training. Students have the opportunity, not only to access training at TVET institutes, but to practice their knowledge and skills at a real workplace. A common form of Work Based Learning is apprenticeship, based on the principles of learning-by-earning and learning-by doing. According to the Cambodia Labour Law Article 57, "Any enterprise employing more than sixty workers must have the number of apprentices equal to one-tenth of the number of the workers in service of that enterprise" (RGC, 1997). However, apprenticeship has been traditionally implemented in Cambodia in the art and craft occupations such as goldsmith and silver work (CDRI, 2018). This takes the form of family business or informal apprenticeship where TVET institutions and the authoritative institution, namely the Ministry of Labour and Vocational Training, are not engaged. In the future, the informal apprenticeship will be integrated into the formal apprenticeship system, where the apprentice training regulation is controlled by the government, and the practice-based training is delivered by a company (master artisans) and a TVET institution (Song and Heng, 2018). The commitment to achieve this will be made upon the endorsement of the Standard Operating Procedures on Apprenticeship in Cambodia. Apprenticeship in companies in Cambodia is well coordinated with TVET institutions to ensure the quality of training and working conditions (UN Cambodia, 2020). In addition, to

leverage the benefits of the technological era, a blended apprenticeship program will be implemented. Given the nature of apprenticeship is to have dual training, theory-based in TVET institutions and practically in the companies, apprentices will take theoretical classes through the national TVET E-learning platform and take the practical class at the companies.

Training curriculum and material digitalization

In response to Industry 4.0, training curriculum in TVET training courses will respond to the needs of the private sector and the labor market. This new curriculum will be developed by the Standard and Curriculum Department and Quality Assurance Department, under the Directorate General of TVET, to align with Cambodia National Qualification Framework. In addition, all training curricula and materials, both for trainers and learners, will be digitalized and stored in a cloud database, administered by the Directorate General of Technical Vocational Education and Training in collaboration with the Ministry of Post and Telecommunications. This will address the problem of accessibility as students will only need internet access, which is widely accessible, to access learning materials from the cloud once they register for the training courses in any public TVET institution. In addition to this, the Ministry of Post and Telecommunications must work closely with cell and internet companies namely Cellcard/Mobitel, Metfone and Smart to ensure internet access for disadvantaged students in the provinces, who do not have access to reliable internet.

Innovation in TVET

In comparison with general education and tertiary education, research and development (R&D) in the TVET sector is less advantaged and under-resourced in terms of national expenditure within the sector. To foster innovation in the TVET sector, R&D will need to be increased. TVET technical training institutes in the capital city and polytechnic institutes in the cluster regions, namely Regional Polytechnic Institute Techo Sen Battambang (RPITSB), Regional Polytechnic institute Techo Sen Takeo (RPITST), Regional Polytechnic Institute Techo Sen Kampot (RPTISK), Regional Polytechnic Institute Techo Sen Svay Rieng (RPITSSR), and Regional Polytechnic Techo Sen Siem Reap (RPITSSR) will become the engine to nurture TVET innovation in their respective sectors and cascade the knowledge and skills to TVET institutions in their respective regions. More financing from the national level will be allocated into these institutions, not limited to equipping high technological facilities in the lab, but to inject capacity development of human resources in the sector with the support of experts from development partners and knowledge and skills transfer from international exchanges.

To achieve the above ideal scenario, several policies need to be employed. Also, relevant stakeholders need to carefully consider their roles and mission for how to contribute toward the development of the Cambodian TVET ecosystem. Below are proposed policies for the Cambodian government and relevant actors to incorporate in their respective strategies and missions.

Innovation and digitalization in TVET

Research and development must be prioritized to nurture innovation in the TVET sector. Without research and development, Cambodia will not be able to leapfrog and benefit from Industry 4.0. In addition, all forms of digitalization, such as e-learning, e-counseling, blended work-based learning, and apprenticeship to name a few, need to be incorporated simultaneously to ensure that Cambodia is not left behind from global trends in technology. Besides research and development and digitalization, TVET training needs to be customized, from a traditional way of teaching to a blended methodology, where it provides flexibility to both trainers and learners. The Ministry of Labour and Vocational Training needs to ensure that national budget allocation is sufficient to effectively implement these updates. The contribution and engagement of the private sector is critical to achieving these changes.

Private engagement in skills development

The Directorate General of TVET must consider the introduction of public private partnerships. Encouraging businesses to contribute and participate in the system is not sufficient, but an explicit joint initiative between the private sector and training providers, with coordination and support from the DGTVET is genuinely essential. Corporate social responsibility remains important, though other forms of private sector involvement should be integrated, especially in the form of private ownership where the company is the driving actor in the training system, such as in an apprenticeship program for example. Private ownership will indicate the commitment from both parties, companies and training institutions. To achieve this requires changes in mindset and ways that private sector and training institutions currently cooperate in training programs, through a tri-party collaboration between training provider, company, and development partner. In the current model, the company is typically passive in the cooperation to receive graduates from training providers, except the acceptance of students placed in an internship at the company during the last 3 or 6 months of their training program. The existing practice is implemented with strong involvement of technical and financial support from development partners, which calls into doubt the sustainability of the cooperation in the long term once the development partners are gone. Going forward, business associations can play a tremendous role in engaging the private sector in the system, namely the Cambodian Federation of Employers and Business Associations. DGTVET needs to work closely with business associations to incentivize the participation from companies to work collaboratively with training institutions, and to deliver up-to-date knowledge and skills, which is the prime support needed from the private sector.

International development partners and funders

International development partners and funders such as the Asian Development Bank, Swiss Agency for Development and Cooperation, International Labour Organization and others have been playing a tremendous role in contributing to TVET development in Cambodia through various means from financial to technical support. Though they remain the backbone in this

sector, they should customize their support to move towards a TVET sector driven by Cambodian ownership. One promising program is the Skills Development Fund, initiated by the Asian Development Bank to support the Cambodian government to pilot a government funding scheme to offer training funds to joint-training programs between training providers and companies (ADB, 2018b). This program does not only instill ownership, but it encourages and offers opportunities to the private sector to contribute more to the TVET system through a joint-training program with TVET institutions. In addition, international experts and technical support should continue, but be integrated within the context of Cambodia, and the participation from local experts maximized in any project design that contributes to policy making.

Regional and international cooperation in TVET

Knowledge cascade is crucial for developing countries like Cambodia to get the most benefit in terms of technical and technological transformation from the developed world in any form of bilateral, regional, or international collaboration. The Ministry of Labour and Vocational Training should develop a policy to develop more cooperation between Cambodian TVET institutions and other countries, particularly countries with more advanced technology and experience in TVET innovation. At the institutional level, individual institutions, both public and non-state institutions, should promote student exchange and scholarship, in addition to the existing practice of skills contests such as ASEAN Skills Competition among the ASEAN member countries. This will offer students transformative experiences by exposing them to new learning environments and advanced technology. Cambodia can also be prepared to receive international students coming to the Kingdom.

Conclusion

Skills development is essential to Cambodia to build a skilled workforce to fulfill the needs of industry and for the Kingdom to compete with fellow nations of ASEAN. TVET has the potential to outpace general education in preparing a skilled Cambodian workforce in response to Industry 4.0, but Cambodia needs to strengthen the current opportunities in the TVET system. To achieve this, it requires technological advancement and innovation to be emerged in the system including E-career guidance and counselling, National TVET E-Learning, Blended Work Based Learning (formal apprenticeship program), training curricula and materials digitalization. In addition, private engagement in skills development needs to be ensured in the form of public private partnerships to open the door for non-state institutions, business associations and companies to make a holistic and relevant contribution to the system. The Ministry of Labour and Vocational Training and TVET training institutions need to promote and establish regional and international cooperation to ensure that advanced technology is transferred through an exchange program of students and technical experts. Finally, the international development partners and funders will remain the key actors in the TVET ecosystem. If these changes can be achieved, the TVET system in Cambodia will be able to equip a skilled workforce to respond to the needs of industry and the

global trend of Industry 4.0 and fulfill the Cambodian government's ambition of transforming the country's workforce from low skilled to skilled and beyond, to nurture innovation in the Kingdom.

References

ADB. (2018a). *Cambodia's New Technical and Vocational Education and Training Policy.* Manila: Asian Development Bank.

ADB. (2018b). *Toward Adopting a Skills Development Fund for Cambodia.* Asian Development Bank.

ADB. (2019). *Skills for Competitiveness Project: Project Administration Manual.* Asian Development Bank.

ADB. (2021). *Reaping The Benefits of Industry 4.0 Through Skills Development in Cambodia.* Manila: Asian Development Bank.

ASEAN Secretariat. (2020). *ASEAN Statistical Yearbook 2020.* Jakarta: The ASEAN Secretariat.

CDRI. (2018). *Partnership for Work-Based Learning: Experiences and Possibilities.* Phnom Penh: Cambodia Development Resource Institute.

JICA. (n.d.). *Project for Improving TVET Quality to Meet the Needs of Industries*. Retrieved from Japan International Cooperation Agency: https://www.jica.go.jp/project/english/cambodia/018/index.html

Khidhir, S. (2018, September 4). Embracing the Fourth Industrial Revolution. *The ASEAN Post.* Retrieved from: https://theaseanpost.com/article/embracing-fourth-industrial-revolution-1

Khieng, S., Srinivasa, M., & Chhem, R. (2015). *Cambodia Education 2015: Employment and Empowerment.* Phnom Penh: CDRI.

Lim, S., Mom, P., Ly, R., & Ung, C. (2021). *Rapid Assessment of Emerging Needs for Workers and Skills in Times of Covid-19 Crisis.*

Ministry of Commerce. (2019). *Cambodia Trade Integration Strategy 2019-2023.* Phnom Penh.

MLVT. (2020). *Technical and Vocational Education and Training Statistics: Academic Year 2018 - 2019.* Phnom Penh: TVETMIS Office, Department of Labour Market Information.

MoEYS. (2019). *Education Congress: The Education, Youth and Sport Performance in the Academic Year 2017-2018 and Goals for the Academic Year 2018-2019.* Ministry of Education, Youth and Sport.

MoEYS. (2019). *Education Strategic Plan 2019-2023.* Phnom Penh: Ministry of Education, Youth and Sport.

NEA. (2018). *Skills Shortages and Skills Gaps in the Cambodian Labour market: Evidence from Employer Survey 2017.* National Employment Agency.

NIS. (2020). *Cambodia Socio-Economic Survey 2019/20.* Phnom Penh: National Institute of Statistics.

OECD Development Centre. (2017). *Youth Well-being Policy Review of Cambodia.* Paris: EU-OECD Youth Inclusion Project.

RGC. (1997). *Kram Dated March 13, 1997 On The Labor Law.* Phnom Penh: The National Assembly of the Kingdom of Cambodia.

RGC. (2012). *Cambodia Qualifications Framework.* Phnom Penh: National Training Board.

RGC. (2015). *Cambodia Industrial Development Policy 2015-2025.* Phnom Penh.

RGC. (2017). *National Technical Vocational Education and Training Policy 2017-2025.* Phnom Penh: The Royal Government of Cambodia.

Schmücking, D. (2020, January 27). *The Risks of Industry 4.0 on Cambodia's Garment Sector.* Konrad-Adenauer-Stiftung. Retrieved from: https://www.kas.de/en/web/kambodscha/single-title/-/content/the-risks-of-industry-4-0-on-cambodia-s-garment-sector

Song, S., & Heng, S. (2018). Contextualising the Dual VET System: A Review of Approaches and Challenges. *Cambodia Development Review*, 8-14.

Swisscontact. (n.d.). *Skills Development Programme*. Retrieved from Swisscontact: https://www.swisscontact.org/en/projects/sdp

UN Cambodia. (2020). *United For Youth Employment in Cambodia: Final Programme Narrative Report.*

World Bank. (2020). *Cambodia Economic Update: Restrained Recovery.* World Bank Group.

Chapter 9 | Promoting Global Education Equity: Bottlenecks and Policy Options

KHOUN Theara[1]

Future Scenario

Today, on a morning of 2031, Khoeun, an ethnic Kuoy, is attending mathematics class at his high school in a remote district of Ratanakiri, a northeastern province of Cambodia. But unlike traditional classrooms where teachers deliver the lesson as a lecture, his teacher asks him and his classmates to turn on their digital learning devices, and then sign into KhmerEdx, the Ministry of Education's flagship digital learning platform, using facial recognition technology to resume their routine classes. Some students watch the learning videos, some do more advanced readings using links to external resources on the platform, and some others practice with exercises and track their learning progress in the dashboard. The teacher walks around to see if any students are having difficulty in grasping key concepts so that she can provide individualized support. Khoeun is not very skilled at this subject so his teacher spends more time with him to make sure he can catch up with his peers. Although his classmate Neary has been unwell and could not attend class in person for the last few days, she has kept up with her classmates, thanks to the distance learning infrastructure. His teacher spends the last 15 minutes of the class wrapping up key concepts from that day's lesson. This is called 'blended learning', a combination of the physical classroom and digital learning modules, which has been applied across public schools in Cambodia and most parts of the world in recent years.

Despite being raised in a low-income family, Khoeun can still access these digital learning resources including a tablet, after he applied for a grant through the Digital Equity Fund—a funding pool created by the Ministry of Education three years ago. This fund was designed to support the vision that no student is left behind in the digital age and access to learning resources is ensured for all students regardless of their socio-economic status. Approximately 10 percent of Cambodian students nationwide, mostly from families with IDpoor cards[2], currently receive this grant. Most of Khoeun's classmates can afford their learning resources and bring in their own devices during classes.

As one-third of the classes are now offered in English, Khoeun is quite competent in English on top of his mother tongue Kuoy and Khmer language, and therefore can access a wide range of free online courses and electronic books from his 5G-enabled tablet during his free time. The

---

[1] The opinions expressed in this article are the author's own and do not reflect the view of his employer, the United Nations Development Programmes.

[2] IDPpoor card is the official poverty targeting mechanism managed by the Ministry of Planning and is given to poor households based on a proxy means testing questionnaire to access free healthcare and other social assistance benefits.

next day, in his social science class, his teacher arranges a village field observation and asks students to observe a problem facing their local community. The students are asked to collaboratively develop a feasible solution to solve that real-world problem. This collaborative project is the main assessment for his social science class. Through informal chats with older people and field observation, Khoeun and his teammates identify the low uptake of basic digital literacy skills among older citizens of ethnic minority groups as the group project. Thereafter, they come up with four main solutions. Upon consultation with their teacher, they decide to pitch and pilot one of them—an intensive digital literacy training program for older community members, using a training manual available on the internet. Following the one-month training, they administer a quick survey, which shows that the training has improved the aging citizens' digital literacy by at least 50 percent. Toward the end of the semester, they present their project and key results to their classmates, submit their reflective essay, and upload relevant materials to the ministry's KhmerEdx platform for final assessment. The materials are also shared widely on several open-sourced websites. The project concept has quickly gone viral on the internet and students as far away as India and Tanzania ask Khoeun's team to present the idea. Inspired by this success, they then run a global campaign asking youth in other parts of the world to join them to promote digital literacy among older people from disadvantaged backgrounds.

Introduction

In recent decades, global school drop-out rates have been declining remarkably (World Bank, 2021a). Yet evidence suggests education systems across the globe have continued to face some limitations regarding the provision of quality education for all (Suresh & Kumaravelu, 2017). The disparities in terms of access to education between the haves and the haves-not, the urban and rural population, the mainstream and marginalized groups seem to be getting wider. Furthermore, access to education does not always guarantee real learning due to the different quality of education provision, and availability of learning resources and support systems, among others. This is detrimental not only to individuals losing their opportunity to move up the ladder in terms of social mobility but also to broader society in terms of state burden, social cohesion, and socio-economic development.

Current policy responses in Cambodia and worldwide which aim to promote an equitable educational environment include incentives for individual access to education with financial and non-financial measures, curriculum and pedagogical recalibration, and institutionalization of special service supports (e.g. special education program for visually-impaired students). Nonetheless, education inequality between and within countries seems to persist, disporportionately impacting low income countries and particularly girls, children with disabilities and minoritiy ethnic groups. While educational funding is generally limited globally and at the country level, this paper introduces four practical ideas that states may consider to promote equitable access to education. They are as follows:

(1) **More equitable access to digital education resources** will enable students from low-income families or disadvantaged backgrounds to obtain a quality education. Targeted measures may involve state cross-subsidy and public-private partnerships to ensure equitable access to digital education infrastructure such as high-speed internet access, learning tablets, and online learning materials.

(2) **Blended learning pedagogy** will enable students to individualize their learning experience and allow teachers to create a more efficient, vibrant support system for individual students.

(3) **Improved English proficiency** will be the gateway to the world of knowledge and lifelong learning regardless of students' socio-economic status.

(4) **Practical project-based learning** will provide students the necessary soft and hard skills to engage productively in the labor market in the rapidly changing world.

It is envisioned that the four practical solutions will have the potential to reduce global learning inequality and promote a quality education system for all.

Context Analysis

While the term 'education equity' can be understood differently, in this context, it refers to the policy that "values each individual for who they are and provide the structures, environment, and resources each student needs to reach their greatest potential" (DueEast, 2021). Two main approaches to addressing education equity are present in the literature – one focusing on promoting the "equality of opportunity" and the other one on "equality of outcome" (Levin, 2003). The former posits that access to education is critical. The responsibility of the state, therefore, is to provide equitable opportunities to participate. The latter approach focuses on provision for specific and marginalized groups such as women, ethnic minorities, people with disabilities, migrants, and people from lower socio-economic backgrounds. Public policies under this school of thought include encouraging individual participation through financial and non-financial incentives and changing institutional delivery systems, i.e. new programs, new education pedagogy, counseling, and special need services. The second approach—equality of outcome—concerns more with the equity in the education results, such as graduation and access to employment. From this perspective, providing the same opportunity is not sufficient due to distinct needs and broader socio-economic structures that affect employment opportunities. Policies associated with this school of thought usually aim at addressing broader social phenomena such as income support and legal measures to combat discrimination (Levin, 2003).

Growing evidence suggests that addressing the inequity in access to education between and within countries is essential. Insofar as learning opportunities are not distributed fairly, many talents will be wasted and underutilized (Levin, 2003). This will not only be a cost to individuals but also to the entire society. At the micro-level, better access and a higher level of educational attainment are associated with almost every positive life outcome – improved employment and

earnings, health, longevity, successful parenting, and civic engagement – which are prerequisites for achieving intergenerational social mobility (Dearden et al., 2000). Similarly, at the macro level, societies with a significant number of people without adequate skills will see higher social costs for security, health, income support, and child benefit, and so on, which could undermine human capital and economic development (Levin, 2003). Greater inequality is also correlated with a lower level of social cohesion and trust (Dayton-Johnson, 2001).

In terms of state capacity and will, a key factor that affects education equity is the availability of funding in the education sector. Investment in education as a percentage of GDP for both developing and developed countries has seen a modest increase over the last decades—from 4.1 percent in 1999 to 4.5 percent in 2020 as a global average (World Bank, 2021b). Underinvestment in education will result in larger class sizes, poor-quality teachers, lack of support materials and school infrastructure which could drastically affect student participation and performance. What constitutes critical inputs and the very root causes of educational inequality is not a linear exercise which usually requires rigorous investigation. Many public policies as discussed above have been introduced to reduce the gap of education inequity among the better-off and poor students, rural and urban students, and general and vulnerable groups of students, but inequality does not seem to have been reduced and has even increased in some instances (ADB, 2019). Therefore, alternative approaches may be worth exploring that can be tailored to fit with resource constraints of national governments.

This paper identifies four main bottlenecks that underpine inequity ineducation . The first is the lack of access to technology which prevents inclusive digital education. Covid-19 has shone a spotlight on the importance of access to digital learning resources to enable distance learning. However, in many parts of the world, this is still an on-going issue. For instance, in Cambodia, although about 90 percent of households owned at least one cell phone, household internet access stood at only 42.6 percent in 2019 (NIS, 2021; ITU, 2020). According to an unpublished study by the Ministry of Education in September 2020, over 80% of students reported having no television at home, no smartphone or tablet, and insufficient internet bandwidth (MoEYS, 2020, p. 34). This was compounded by the fact that nearly three-quarters of students and almost as many teachers had low digital literacy.[3] A majority of students cited the high cost of internet connectivity as a key constraint. According to UNDP (2020), the gap in digital learning infrastructure is a key explanatory factor for the different impact of Covid-19 on access to education around the world. For example, the Global Human Development Index (HDI) was expected to decline significantly in 2020, erasing all the progress in human development of the past six years, primarily due to the loss of access to education as a result of the pandemic (UNDP, 2020).

The second bottleneck is the persistence of a traditional teacher-centered pedagogy coupled with limited adoption of education technology. The Covid-19 pandemic reignited the question of equitable access to education, crystalized by unprecedented disruptions to education systems

---

[3] Digital literacy refers to an individual's ability to find, evaluate, and clearly communicate information through typing and other media on various digital platforms. (Source: https://literacy.ala.org/digital-literacy/)

around the world (Beresford & Khoun, 2021). In many countries, schools closed throughout much of 2020 as part of the COVID response. Millions of children in the least developed countries were left with little or no educational alternative (UNDP, 2020). During the school closures, we have seen that most schools especially in developing countries were largely unprepared, as classroom-based education was still a mainstream teaching pedagogy (Demetriadi, 2020).

The third bottleneck is the lack of proficiency in globallanguages especially English which prevents individualized, lifelong learning. Extensive quality learning resources are now available online that can enable students from low income families the opportunity to excel and broaden their knowledge horizon. However, most of these resources are only available in English or other globally prominentlanguages. Embracing bilingualism such as has been the case in Singapre can be a solution to this issue. Singapore provides a successful model of dual-language education. English is the medium of instruction for most subjects, with students also learning their mother tongue of Malay, Chinese, or Tamil from an early age (TransferWise, 2017). High proficiency in English provides Singaporean students with a competitive advantage in learning as a result of increased exposure to a range of knowledge. In 2019, students in Singapore attained the highest scores in the Program for International Student Assessment (PISA) across all subjects tested, including reading, math, and science (Factmaps, 2019).

Last but not least, the fourth bottleneck relates to the lack of consistency in terms of the quality of education within and between countries. Over the last decades, significant progress has been made concerning education equity around the world with the near universalization of primary schooling as one of the greatest achievements (UNICEF, 2017). In the 1950s, about 50 percent of primary school age children were out of school while the figure stood only at 9 percent in recent years (UNICEF, 2017, p. 4). Despite progresses made, worldwide there are still 264 million primary and secondary age children who are out of school (UNESCO, 2017). Even for those that attend school, learning outcomes iare often not satisfactory. Many students cannot read a simple sentence or perform a basic mathematical calculation even after some years of schooling (ADB, 2019). Going to school without learning such fundamental skills as literacy, numeracy, critical thinking, problem-solving and digital skills is a tragedy in the age of globalization and automation (UNICEF, 2020). Furthermore, the gap in learning outcomes of students between the most developed and least developed countries and even within countries such as between rural and urban areas, between the haves and the haves-not, and between boys and girls has not decreased, and in some cases has increased (ADB, 2019). To highlight the global learning crisis, the World Bank has introduced the term "learning poverty" to denote the inability to read and understand a simple text by age 10 (World Bank, 2021c). In a recent survey of 605 employers in Cambodia across industries, one-third of interviewees reported having encountered a skills gap, including a lack of foreign-language skills, technical skills, and communication skills, as well as collaboration and problem-solving skills (NEA, 2018). Addressing the challenges would be instrumental in promoting the educational equity.

Policy Recommendations

Covid-19 has turned a spotlight on several weaknesses of in the global education system that pre-date the pandemic as well as opportunities to instigate reforms. As such, a number of underutilized avenues could be capitalized on to systematically resolve some—if not all—of the bottlenecks that hinder efforts to promote global and national education equity. The following four policy options offer possible ways forward.

Digitalize the notion of inclusive education

The current education disruption caused by Covid-19 has amplified educational inequalities across regions and socio-economic classes. For example, within countries, even in urban settings, the digital gap between the rich and poor is observable—not every student can afford a smartphone, a tablet or a computer device, or even an internet connection which are needed to access distance learning (Beresford & Khoun, 2021). The ability to afford these resources has been made worse by the current economic recession (UNDP, 2020). As illustrated in Figure 1, while less developed countries are catching up with the developed world in mobile phone ownership, a gap is still exists for internet and computer access (UNDP, 2020).
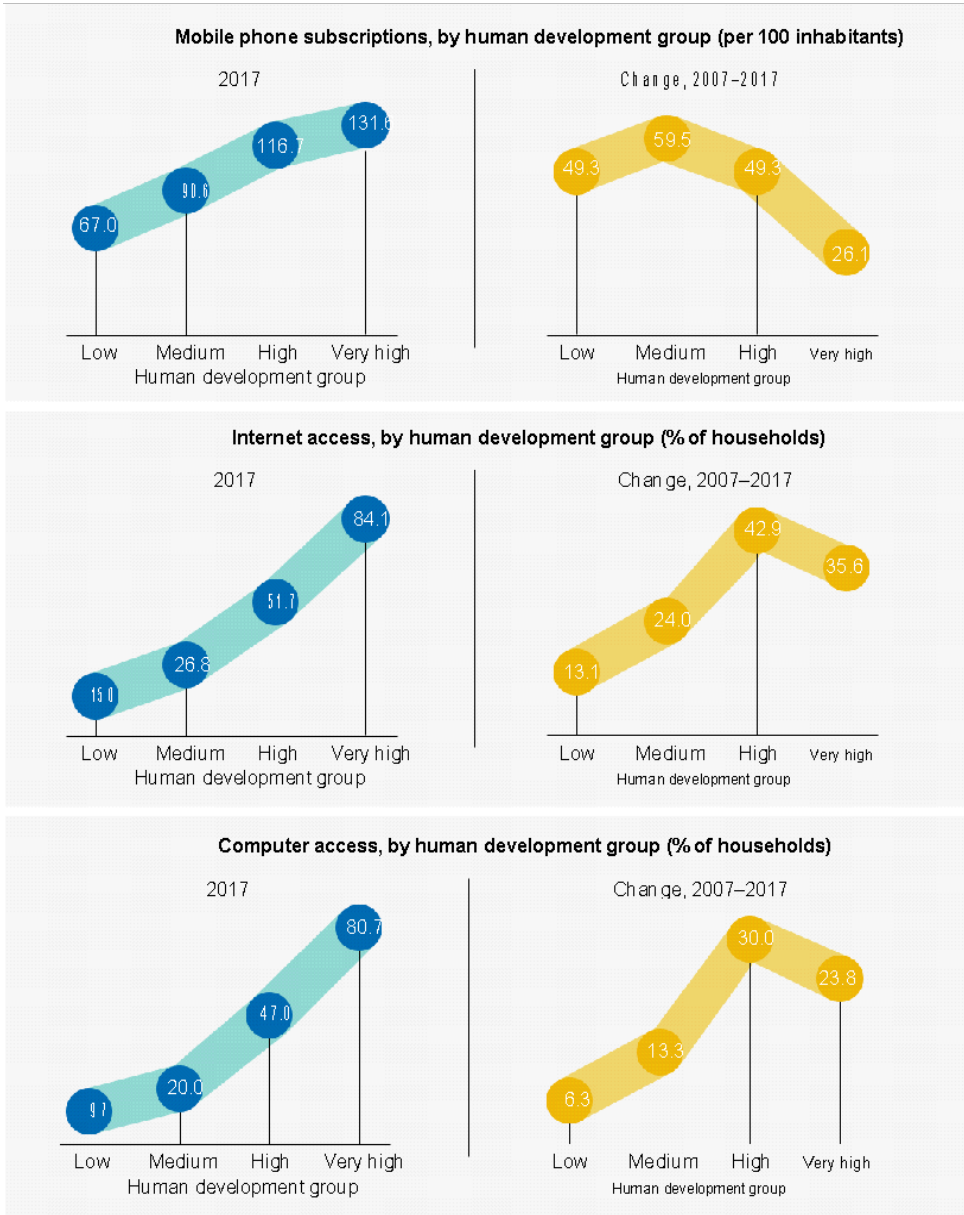
Figure 1: Inequalities in access to technology across human development groups are wide and growing
Source: UNDP, 2020

UNDP (2020) has called the widening global gap in access to education imposed by the pandemic a validation of unresolved tensions between people and technology, and between the haves and the have-nots, which are shaping a "new generation of inequalities"—pertaining to enhanced capabilities in the 21st century (p.3). In light of this challenge, inclusive digital education can

create equitable learning opportunities that include marginalized and vulnerable children, such as those living with disabilities and those from ethnic minority groups. In practical terms, connectivity and accessibility to the internet and digital devices will need to be a defining factor of inclusive education. It was estimated that US$100 billion would be required to close the gap in internet access in low and middle-income countries (UNDP, 2020, p.22).

To close the digital learning gap, it is recommended that states continue the roll-out of high-speed internet connectivity and improve accessibility and equity, especially in areas where internet connections are low or unavailable. States may also introduce pro-poor public financing policies and mechanisms (including clear action plans and roadmaps) to incentivize state and non-state actors to invest in the infrastructure needed for online education, such as quality digital learning platforms and to make digital tools such as tablets, smartphones, and computers more accessible and affordable. One possibility would be for the government to match funds from the private sector for these purposes. In India, for example, the government has collaborated with a private company in the form of public-private partnership (PPP) in designing and equipping low-cost educational devices across 17,000 public schools in the country (ADB, 2015). Extra resources may also need to be channeled into a digital learning subsidy or voucher program through schools to make access to digital learning resources more equitable for poor and vulnerable students. These targeted measures should be made in consultation with relevant stakeholders including teachers, parents, students, and education administrators. Providing equitable access to all students irrespective of socio-economic status and proximity to urban settings will provide an equal playing field for them to thrive, and thus have the potential to move up the intergenerational ladder of social mobility.

Capitalizing on 'blended learning'

Recent school closures forced educators, from kindergarten to the tertiary level, to fast-track distance learning with little to no lead in time. This real-world experiment offers us two lessons. First, the pandemic has exposed the vulnerability of traditional, classroom-based learning that was already losing its relevance in many parts of the world, as its focus on memorization and standardization was incompatible with the modern world (Krishnan, 2020). Second, 'pure' distance learning is not yet an effective remedy, at least in many low and middle income countries.

'Blended learning' is a mode of education that integrates online educational materials with traditional place-based classroom methods. With the right technology and an integrated online learning platform, this new hybrid model has proved to be more effective than using a single approach as it enables students to learn faster and allows personalization of the learning experience (Shand & Glassett, 2018). Why can it be a solution to promote global education equity? That is because teachers can now streamline their instruction to help all students to reach their full potential. In other words, through individualized learning, struggling students can learn at their

own pace, making sure they comprehend the concepts before moving on and teachers can also use the additional class time better to assist students in need.

In the aftermath of Covid-19, blended learning has been taken up by many educational institutions worldwide (including Cambodia). This trend is expected to continue as online learning resources become more accessible, learning devices become more affordable, and digital literacy among students and teachers improves in the medium term to long term. In Cambodia, the Ministry of Education has recently established a digital learning center and learning application to push for stronger integration of digital resources into the curriculum (Som, 2020). In the short term, with feedback mechanisms that allow teachers to review and assess students' coursework at a distance, high-quality video tutorials can supplement the classroom-based pedagogy for students to improve their learning outcomes.

In the medium to long term, governments, especially in developing countries, may consider investing in developing a sophisticated learning platform that is more engaging and interactive. For example, through an online dashboard, students can watch video lessons, submit assignments, do quizzes, access relevant reading materials, and review their performance. This way, students can learn at their own pace, anytime, anywhere, and through any device and track their own progress. Together with measures to tackle the digital divide such as improving internet connectivity in rural areas, a full-fledged 'blended learning' environment can materialize. Imagine an ideal situation where a teacher, after explaining the key concepts of a math lesson, asks her students to turn on their personal learning devices to navigate through the lessons in greater depth in a designated application and then take online quizzes to assess their learning outcomes. The teacher may then coordinate in person or remotely.

Increasing English competency

Although the Khmer language is still a living language, Khmer and other languages with limited geographic reach do not have significant international impact compared with English or Chinese. A lot of online and offline learning resources are available only in these widely spoken languages, especially English. Bilingual education, where students receive instruction both inthe local language and in English, is a solution to address the global educational disparities related to langugage for two main reasons.

First, mastering a high level of English proficiency will give students access to a vast body of knowledge. As stated earlier, there are a huge amount of learning materials, including electronic books, apps, multimedia content, and digital education platforms, available online across disciplinary subjects, but they are largely in English (Dao, 2018). As of 2020, nearly a quarter of the world's population, or 1.13 billion people, were fluent or competent in English, followed by Chinese with 1.12 billion, and the trend is growing (Gosh, 2020). The global trend of shifting towards English-based digital education means competency will become even more vital in the future as there is little incentive to translate all these resources into local languages when countries have a small population. If students are only competent in their local languages, they will be deprived of the opportunity to immerse themselves fully in the world of knowledge. With

the amount of quality material and content produced in local languages limited, without proficiency in English, the ability to do individualized online learning will be diminished. Second, proficiency in English will prepare students for the future of work, with seamless integration into the global production network, where English will likely remain the *lingua franca* for professional communication, thus opening up greater business opportunities.

A wide array of recent initiatives can make English-language education more affordable and accessible, such as integrating langugage learning into the compulsory school curriculum and partnering with the private sector. In Cambodia, for example, a local ed-tech startup Edemy has designed English learning software for primary and high school students in rural areas, using a low-cost mini-computer called Raspberry Pi to store the curriculum, and a wireless router to transmit information to tablets without having to connect to the internet. Once connected, students can watch video lessons, practice through exercises and review instant results. Students can engage and practice with their English teachers to reinforce learning and interact with their classmates. According to Edemy's pilot with 200 students, this innovative approach helped students improve their test scores by at least 10 percent after attending classes for three months. Furthermore, the tuition is more affordable than other English language education options (Vinh, 2017). Other disruptive, low-cost English education methods can also be explored and institutionalized into the public school curriculum to reduce the learning gap among students.

Shifting towards practical, low-cost project-based learning

"I hear and I forget. I see and I remember. I do and I understand." Confucius (551-479 BC)

This classic quote has rarely been more relevant than in the post-Covid-19 setting. Why? That is because the high level of disruption and uncertainty caused by the pandemic is calling for a breakthrough in our approach to education (Helena, 2020). Rather than learning by pure retention of facts and memory-based exams, learning by doing through project-based learning is vital. Some may argue project-based learning is expensive and difficult to implement especially in resource-constrained contexts. This is not necessarily the case. Project-based learning can bebe tailored to local context, needs, and resources, offering a low-cost, practical solution to improve inequalities in the quality of education and addressing gaps in hard and soft skills for learners. Students in a primary school in Svay Rieng, for example, have been undertaking some project-based learning activities in their agriculture class by growing vegetables and raising fish on the school premises instead of just memorizing planting techniques from textbook (Phat & Sao, 2021). With technical assistance from UNDP Cambodia, the pilot is part of the complementary teachers' manual for climate change and environmental education which is designed to improve life skills for primary school students.

In a social science class, a teacher may arrange a visit to a village for fieldwork and ask students to observe a major problem facing the community and then collaboratively develop a feasible solution to solve that real-world problem. Similarly, in a math class, a teacher may ask students to use the exponential function they have just learned with a real dataset to predict housing prices in their province over the next ten years. Through these hands-on experiences, students will be

equipped with fundamental soft and hard skills such as critical thinking, problem-solving and leadership skills which are critically important in the Age of Fourth Industrial Revolution (WEF, 2016).

Creative, project-based learning tools to evaluate student performance can include audio and video recordings, portfolios, podcasts, blogs, experiments, games, role-playing, simulations, and tutorials. Project-based learning will broaden the perspective of the curriculum, allowing students to connect the dots, for example, as to how mathematics is related to the market economy and other disciplines. This will in turn make education more interesting, engaging, and relevant to the real world (Khoun, 2020). These practical tools can equip students with the fundamental skills for the future of work, including language competency, critical thinking, the ability to collaborate, self-awareness, creativity, and other soft and hard skills which are highly sought after by employers.

In addition to institutionalizing project-based learning as part of the public and private curriculums, students and teachers can also collaborate informally across the globe. Presently, numerous global platforms enable students and teachers to connect and co-design distance projects. These platforms include, for example, Empatico, a free online tool enabling students aged 7-11 to connect to classrooms around the world using video conference technology; and Global Nomads Group, a platform equipped with videoconferencing, virtual reality, and other interactive technology tools making possible for people across cultures and regions to examine world issues and collaborate to solving them.

Conclusion

From the discussion above, a wide range of policy measures have been put in place to narrow the gap of global and national educational inequities, including financial and non-financial incentives, support system strengthening, and non-discriminatory labor participation policy, among others. However, disparities in access to quality education seem to persist or even widen, exacerbated by the recent Covid-19-induced school closures. Through systematic analysis of the root causes of this inequity and the available options, this paper has identified four solutions through which access to quality education can be made more equitable for all. This includes, improving access to digital learning resources, promoting blended learning, embracing project-based learning, and improving students' English competency. Most of these recommendations are not purely novel; in fact, they have been introduced and discussed widely in the literature. However, the discussion as to how these concepts are interlinked and, thus, when put together have the potential to systematically addressing the root causes of global education inequity is not yet clear. Meanwhile, some policy recommendations especially the importance of foreign language acquisition fail to obtain sufficient policy attention despite its potential to narrow the gap between the haves and the haves-not in accessing quality education and lifelong learning. Likewise, while project-based learning is assumed to be expensive and thusnot applicable for low-resource settings such as Cambodia, this article argues that it can always be made affordable and context-specific to promote equitable access to quality education. These policy recommendations will have the potential to not only minimize the learning gap among students but also to make the education system more efficient and of high quality in the medium to long term.

References

ADB. (2015). Public-Private Parternships in Information and Communication Technology for Education. ADB Brief.

ADB. (2019). Realizing Education for All in the Digital Age. Chiyoda-ku: Asian Development Bank Institute.

Beresford, N., & Khoun, T. (2021, January 23). Building back better: Cambodia's post-Covid-19 education system. Southeast Asia Globe. Retrieved from: https://southeastasiaglobe.com/cambodias-post-covid-19-education/

Dao, K. (2018, August 14). 4 reasons why learning English is important for our students. Retrieved from http://kwahdao.org/4-reasons-why-learning-english-is-important-for-our-students/

Dayton-Johnson, J. (2001). Social cohesion and economic prosperity. Toronto: James Lorimer & Company Ltd.

Dearden, L., Reed, H., & Reenen, J. V. (2000). Estimates of the impact of improvements in basic skills on aggregate wages, employment, taxes and benefits. DfEE Research Centre on the Wider Benefits of Learning.

Demetriadi, A. (2020, December 15). Cambodian education in the time of Covid: Ripping up the textbook. Southeast Asia Globe. Retrieved from: https://southeastasiaglobe.com/education-in-a-time-of-covid-19/

DueEast. (2021). Educational equity defined. Due East Educational Equity Collaborative. https://dueeast.org/educational-equity-defined/

Factmaps. (2019). PISA Worldwide Ranking – average score of math, science and reading. Fact Maps. http://factsmaps.com/pisa-worldwide-ranking-average-score-of-math-science-reading/

Gosh, I. (2020, February 15). Ranked: The 100 Most Spoken Languages Around the World. Visual Capitalist. https://www.visualcapitalist.com/100-most-spoken-languages/

Helena, R. (2020, August 4). Post-Covid innovation needs to be radical, not marginal. MarketingWeek. Retrieved from: https://www.marketingweek.com/post-covid-innovation-needs-to-be-radical-not-marginal/

ITU. (2020). Handbook for the Collection of Administrative Data on Telecommunications/ICT. International Telecommunication Union.

Khoun, T. (2020). Education: Pedagogy and Infrastructure. In V. Ou, B. Murg, & S. U. Deth (Eds.), Cambodia 2040: Volume II (pp. 56-78). Phnom Penh: KAS.

Krishnan, K. (2020, April 13). Our education system is losing relevance: Here's how to unleash its potential. World Economic Forum. Retrieved from: https://www.weforum.org/agenda/2020/04/our-education-system-is-losing-relevance-heres-how-to-update-it/?utm_source=sfmc&utm_medium=email&utm_campaign=2716680_Agenda_weekly-17April2020&utm_term=&emailType=Newsletter

Levin, B. (2003). Approaches to Equity in Policy for Lifelong Learning. A paper commissioned by the Education and Training Policy Division, OECD, for the Equity in Education Thematic Review.

MoEYS. (2020, July). Procedure and Safety Conditions of School Reopening during Covid-19 Outbreak in Cambodia. Unpublished report and unofficial translation.

NEA. (2018). Skill Shortages and Skill Gaps in the Cambodian Labour Market: Evidence from Employer Survey 2017. Phnom Penh: National Employment Agency.

NIS. (2021). Report of Cambodia Socio-Economic Survey 2019/2020. Phnom Penh: National Institute of Statistics.

Phat, D., & Sao, P. N. (2021, January 11). Students in Svay Rieng Learning Through Farming at School. Cambodianess. Retrieved from: https://cambodianess.com/article/students-in-svay-rieng-learning-through-farming-at-school?fbclid=IwAR3pMsi09ERYvqQjavcjriKraRVLvm1bnsQxyro_1OS0zEBExYdFj0DZVZk

Shand, K., & Glassett, S. (2018). The Art of Blending: Benefits and Challenges of a Blended Course for Preservice Teachers. Journal of Educators Online. Retrieved from The Art of Blending: Benefits and Challenges of a Blended Course for Preservice Teachers: https://www.dreambox.com/blog/five-benefits-of-blended-learning#sthash.GFzwZkKu.dpuf

Som, K. (2020, June 23). New centre to boost digital learning in the Kingdom. Khmer Times. Retrieved from: https://www.khmertimeskh.com/736895/new-centre-to-boost-digital-learning-in-the-kingdom/

Suresh, M. & Kumaravelu, A. (2017). The Quality of Education and its Challenges in Developing Countries. Conference Paper. ASEE International Forum, Columbus, Ohio.

TransferWise. (2017, July 18). The Singapore education system: An overview. TransferWise. Retrieved from: https://transferwise.com/gb/blog/singaporean-education-overview

UNDP. (2020). COVID-19 and Human Development: Assessing the Crisis, Envisioning the Recovery. New York: United Nations Development Programme.

UNESCO. (2017). More Than One-Half of Children and Adolescents Are Not Learning Worldwide: Fact Sheet No. 46.

UNICEF. (2017). Annual Results Report: Education. New York: United Nations Children's Fund.

UNICEF. (2020). Addressing the learning crisis: An urgent need to better finance education for the poorest children. Retrieved from: https://www.unicef.org/reports/addressing-learning-crisis-2020

Vinh, S. (2017, September 15). Edemy Makes Quality English Classes Accessible and Affordable for Rural Students. Development Innovations. Retrieved from: https://www.development-innovations.org/blog/edemy-makes-quality-english-classes-accessible-affordable-rural-students/

WEF. (2016). The Future of Jobs: Employment, Skills and Workforce Strategy for the Fourth Industrial Revolution. World Economic Forum.

World Bank. (2021a). Government expenditure on education, total (% of GDP). World Bank. https://data.worldbank.org/indicator/SE.XPD.TOTL.GD.ZS

World Bank. (2021b, April 28). What is Learning Poverty? World Bank. https://www.worldbank.org/en/topic/education/brief/what-is-learning-poverty

World Bank. (2021c). Children out of school, primary, male. World Bank. https://data.worldbank.org/indicator/SE.PRM.UNER.MA

Chapter 10 | Technology in Cambodia Education's Advancement and Inclusion

Ratana SRENG

Future Scenario

It is a typical morning in the year 2121. Kheang, a teenage boy in Kampong Cham, Cambodia, is getting ready for his anatomy class in his bedroom. He puts on a pair of contact lenses, model Microsoft HoloLens Z, and presses the switch on his controller. A 3D hologram screen pops up in front of him, and with a few touches, he joins his friends and his teacher in a virtual lab. They are watching and experiencing the head transplant of two 3D humans, a medical surgery that has been a common practice for a few decades now. After taking a short break to play virtual basketball with his classmates, he then works on their mechanics of space engines project. Kheang and his friends are examining and designing parts that would go together and make this 3D engine work. Each time he creates a new virtual part and adds to it, the existing model shows whether it works and the reasons why or why not.

Resting in bed and thinking about his individual history project, Kheang imagines how crazy it is that just 100 years ago, teenagers like him were only learning from books and at best, from videos. Curious about what it was like, he puts on his lenses to go back to the time when the revolution of Mixed Reality technology in education began.

He visits the day in 2016 that Microsoft announced its release of the Microsoft HoloLens, a device in a head mounted display that allowed hologram objects and reality to coexist in real time, the primitive form of the technology he's using today. Kheang then remembers from his reading that the idea and the associated technology of blending real and virtual worlds was not new at the time. Its siblings, under the umbrella of immersive technology, were virtual reality (VR), which began in the 1800s with the invention of the Sensorama device, and augmented reality (AR), which was first invented in 1968 by Ivan Sutherland. Both technologies were used in classrooms and other areas of life such as gaming (e.g. Pokemon Go and Snapchat filters). Investments in this field were huge. US$1.2 billion was invested in AR/VR in the first quarter of 2016 alone. By the end of the year, there were virtual reality industrial parks and labs in almost 20 provinces and municipalities in China, opening doors to compete with big names such as Samsung and Silicon Valley.

Kheang then pays a visit to the year 2021 during the Covid 19 pandemic, at which time many countries were already actively installing virtual reality technology in classrooms, with China as the lead. International organizations such as UNICEF were actively advocating for the use of virtual/augmented reality technology not just in education and training, but also health. These countries and organizations saw the potential of immersive technology for increasing the inclusion of marginalized communities. Fast forward two decades and Kheang is now at the critical moment for immersive technology in Cambodia. For years, Cambodia was experimenting

with different school systems, including virtual reality, to find the best one to use as a model. The government finally explored the possibility of a mixed reality classroom. In 2036, the Ministry of Education, Youth, and Sports announced its first model school. With cooperation from China, which had been a leader in immersive technology education for a few decades now, Cambodia was able to supply head-mounted displays to students and teachers. At the opening ceremony, people were hesitant and questioning the new model, but were won over by the argument from the Minister of Education. She said, "If we want a world class education to be made accessible country-wide, uniforms, school buildings and books are not the most efficient tool, this is. Why would we keep the traditional ways when the world is moving forward? Why would we keep the traditional ways when we can stop spending on buildings and other associated costs such as transportation and maintenance, when we can explore a whole world from our bedroom? Instead of building more schools, creating more programs for marginalized students, why don't we bring education to their homes and give everyone the same access?" The pilot was a success and mixed reality was adopted into more and more schools.

Jumping from one decade to the next, Kheang witnesses how technology has been constantly kept up to date by the Cambodian government. In an effort to enhance its own research and development capacity, the government, instead of spending on foreign consultants and engineers or buying the technology from overseas, selects highly talented young Cambodian people and hires the experts from abroad to coach them. They lowered the price of devices by incentivizing leading producers to station their factories in Cambodia through lower export taxes, ease of paperwork, and other trade-oriented policies. At the same time, local producers were also encouraged through digital business loans with low interest rates, training, and technical support. The government shifted the country to a self-reliant model in the technology sphere.

Kheang's journey is interrupted by a call via the lenses from his friend who asks him to go out this evening. Kheang considers the offer but replies, "I'm debating with Socrates today, sorry".

Introduction

Prior to the Covid 19 pandemic, the role of technology in Cambodia's general education system was minimal. Many secondary schools, specifically schools in rural areas, did not have sufficient numbers of qualified teachers or other inputs such as teaching materials and facilities, textbooks, sciences labs, computer and language labs and libraries. The teaching style was characterized by formal lecturing, copying, recitation and memorization (Ministry of Education, Youth and Sport, n.d.). Unexpectedly, this was forced to change as a result of the Covid-19 pandemic which hit Cambodia in late January 2020. Schools were closed and reopened and closed again as case numbers fluctuated. Teaching and learning activities and exams were moved to online platforms.

However, Cambodia was not prepared to make this transition. While some students were able to fulfill the main requirements of online classes, which are a stable internet connection and a device, many were not. According to the World Bank, in 2021, there will be roughly 4.5 million near-poor and vulnerable people in Cambodia along with 0.5 million newly poor people resulting from the pandemic (World Bank, 2021). This indicates that a few million people are not able to

afford or access internet service and device fees for their children to fully participate in online learning or they are able to do so only at the cost of other essentials. To complicate the issue further, teachers, too, were unprepared for online teaching. Their lack of exposure to the devices and the digital learning environment made it very hard for them to prepare the materials and lessons, guide students and maximize the experience, assuming that they were able to afford or access a device at all.

While most students and teachers throughout the country are facing similar issues, the burden is heavily borne by those in rural areas where high numbers of poor and marginalized families are mostly situated. This contributes to worsening inequality. In fact, the problems of unequal access to education and low quality of education are not new. What the pandemic has done is highlight the existing weaknesses and strengths of the current system.

The importance of fully integrating technology into education, alongside a strengthening of teaching methods for digital platforms, has never been more important. While digital education stands as the traditional system crumbles in the face of challenges, according to the International Institute for Education Planning (2020) online learning also has important links with Cambodia's goal for a digital economy and becoming a middle-income country by 2030. Cambodia can and will achieve a strong, quality, and inclusive education that stands the test of time once it prioritizes digital education and invests in the necessary infrastructure.

Context Analysis

Inclusion in education, as defined by UNESCO, refers to the absence of barriers or limits imposed on educational opportunities on the basis of differences such as sex, ethnicity, language, religion, nationality, economic condition, and ability (UNESCO, n.d.). In Cambodia, inequality of access to education in terms of sex, disabilities and economic conditions can clearly be seen (Nget, 2018). Despite the country's attempts to provide equal access to education for boys and girls, gender disparity persists (Gillispie, 2018). According to the Public Education Statistics and Indicators 2017-2018, the number of enrollments is higher for male students across all grades in public schools (Ministry of Education, Youth and Sport, 2018). Children and teachers with disabilities are often excluded simply by how the school buildings are built, considering that, as indicated in Public Education Statistics and Indicators 2017-2018, 51.8% of schools are without water while 31% are without latrines, and facilities for people with disabilities are not included in the indicator itself (Ministry of Education, Youth and Sport, 2018). There are also barriers due to the lack of consideration of the rights and needs of people with disabilities from the local authorities and service providers (Save the Children, n.d.). Economic barriers also prevent many from fully accessing the education system. While some students are able to attend the general education sessions, extra classes, and purchase additional materials, many others cannot afford to fully invest in education or cannot afford education at all (Sem and Hem, 2016). Though public general education is free, the associated costs such as transportation, materials, uniforms and food may

prevent families from sending their children to school (Cambodia | USAID School Dropout Prevention Pilot Program, 2015).

The government has made some initial attempts to reform the education system with the goal of improving educational quality by focusing on five pillars: 1) putting its teacher policy action plan into action, 2) reviewing curricula and textbooks, and enhancing the school atmosphere, 3) improving inspections, 4) improving assessment of learning, and 5) reforming higher education. Despite its progress against these objectives, Cambodia remains one of the poorest countries in the world. In the region, Cambodia has one of the highest pupil-to-teacher ratios, while only 32 % of female third graders (38% of male) are proficient in Khmer literacy (USAID, 2021). Plus, as acknowledged by the Ministry of Education, Youth and Sport (MOEYS), students' relevant knowledge and skills still need improvement particularly in the rural areas (Ministry of Education, Youth and Sport, n.d.).

In order to achieve Sustainable Development Goal 4 which is to ensure inclusive and equitable quality education and promote life-long learning opportunities for all, the Cambodian government has been actively responding to challenges in the education system. Cambodia's 2030 Roadmap for SDG 4 defines five policy priorities: 1) All girls and boys have access to quality early childhood care and education and pre-primary education, and completely free, equitable and quality basic education (primary and lower-secondary) with relevant and effective learning outcomes; 2) All girls and boys complete upper-secondary education with relevant learning outcomes, and a large number of youth have increased access to affordable and quality technical and vocational education; 3) Ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university; 4) All youth and adults achieve literacy and numeracy, and learners in all age groups have increased life-long learning opportunities, and 5) Governance and management of education improve at all levels (Ministry of Education, Youth and Sport, 2019, p.23).The government is undertaking numerous strategies to ensure that this is achieved such as:

- Cooperating with local and international organizations such as UNICEF, Save the Children, USAID, and many more to deliver programs and projects such as the Early Grade Reading program, the UNICEF initiated Multilingual Education Radio-Based Program, just to name a few.
- Implementing policies aimed at strengthening the quality of the Khmer general education.
- Organizing and co-organizing engaging events such as the Cambodian Education Policy Forum, an online forum with 500 participants ranging from representatives of relevant ministries and institutions to education department directors to classroom teachers.
- Conducting capacity building trainings for teachers and relevant school management authorities.
- Emphasizing STEM (Science, Technology, Engineering, and Mathematics) in the national curriculum.

- Assigning target schools for enhanced monitoring quality
- Creating the New Generation Schools which are model schools with a much higher standard compared to normal schools.

The New Generation Schools (NGSs), first implemented as a pilot project in 2011, currently represent the future of education in Cambodia in terms of administration and pedagogy (Ministry of Education, Youth and Sport, 2016). Responding to major concerns in Cambodia's education sector, as stated in the New Generation Schools policy guidelines published by MoEYS in 2016, New Generation schools were developed with seven main objectives: 1) Create autonomous public schools governed by strict rules of performance accountability linked to high investment, 2) Create new governance boards that will hold schools accountable for their performance, 3) Create an accreditation system that will facilitate an Oversight Board for decision-making about a school's adherence to New Generation Schools core principles, 4) Provide new institutional freedoms (i.e., operational autonomy) to drive innovation in the way educational services are formulated and delivered, 5) Enable the education system to be more efficient and socially equitable with respect to the teaching and learning process by instituting a rationalized resource allocation system that enhances educational services, 6) Improve teaching standards through new approaches that include competitive teacher recruitment, performance-based incentives, intensive capacity-building in educational technology, STEM and problem-based learning methodologies, and explicit teacher career paths linked to professional development opportunities, and 7) Expand educational services for Cambodian youth that include career counseling services, differentiated learning channels (e.g., project work, subject clubs), mobile learning, and life skills education (Ministry of Education, Youth and Sport, 2016, p.2). The schools are considered model schools and focus sharply on STEM education. Students study in an innovative environment and follow an unconventional curriculum. They work on individual and group projects. They conduct their own research and often work with electronic devices. Over the last few years, more and more schools in different areas have been designated as target schools which receive special attention from MoEYS.

As a part of the educational reform in Cambodia, NGS represents a remarkable transformation; nevertheless, the model is not without flaws. As addressed a publication from the Yusof Ishak Institute, the following points need to be considered: 1) the model requires huge investment to operate, putting its sustainability and scalability in question considering the limited government budget, 2) NGS's true effectiveness has not been empirically evaluated. As of 2020, 3 years after the official accreditation of NGS, US$6.62 million had been invested by the government in 10 NGS sites and one research center, located in four provinces and Phnom Penh and serving 5,722 students, with a target of expanding to 100 schools across Cambodia by 2022 (Chea and Chen, 2021). Parents are also required to pay on a voluntary basis to support the school operation. The dependency of the model on the government's investment and students' parents' contribution makes NGS' future uncertain. What is more, NGSs are only located in the urban areas, making accessibility another question. On top of this, students enrolling in NGSs have to pass the entrance examination, which places further limits on accessibility.

The analysis above shows that the latest model, the NGS, still lacks sustainability and accessibility. Though NGS is not the only initiative or project being implemented, being labelled as the future of education of the country, it reflects how far Cambodia is from inclusive and equitable quality education.

Policy Recommendations

In order to bring about an education reform that guarantees a sustainable, inclusive, and quality education system, on top of the existing focused points discussed above, the Cambodian government should not only increase the use of technology in classroom activities, but look to the future migration of physical classrooms to digital platforms and the changing roles of teachers. In this proposed vision for Cambodian schools, the role of physical classrooms would be complementary to online learning rather than primary. In a typical school day in this model, students would learn from the comfort of their home with the facilitator and classmates in their virtual classrooms and labs, attend extra physical classes by choice, and explore a wide range of interesting learning content in the provided virtual world.

Furthermore, a centralized hub monitored by the Ministry of Education would take care of the curriculum and standardized contents available. The role of teachers would change to be that of knowledge facilitators. As a facilitator, lecturing would be a rare activity; instead, a facilitator would lead the class to discuss materials and lessons covered as a way of educating. Though MoEYS prioritizes the student-centered approach, classes in public schools are generally conducted with teachers giving lectures and presentations while pupils listen, participate, and take notes. A change in the role of teachers, giving opportunities for students to take the lead in activities, discuss, and apply what they learn to real life examples can better serve the student-centered approach. On top of this, a facilitator's role is the perfect match for a technology dominated classroom as teachers do not need to have complete control of the class. Materials and assignments are given to students to read off-line and discussed in the class. Facilitators shift their power to students by initiating and monitoring the discussions from time to time while students take control of carrying the activity forward. While a lecture can also be conducted in the aforementioned type of classroom, its effect is lessened considering the fact that the teacher cannot guarantee student's attention in the presentations.

Integration of technology goes beyond video calls, slide projectors, ICT classes, online learning platforms, and the like. Mixed reality technology can be used to allow students to experience learning in more interesting ways. Being managed by a centralized system, standardized contents and lessons will be uploaded and made accessible to everyone equally. This will help to address existing inequalities in study materials based on geographical areas and affordability. What is more, students will have access to more informative and up-to-date information and lessons as online content can be uploaded and taken down with just a few clicks at very low cost, compared to course books which can take a long time to publish and distribute, often at high cost. The ease

of updating online curricula will allow educators to add new information while filtering out anything that is out of date. This can help to grab students' attention and maximize learning effectiveness.

The model would contribute to inclusive education as well. Marginalized students are able to enjoy the privilege of accessing education that they deserve as problems related to transportation, hygiene, and infrastructure are obsolete.

Two main policies are the prerequisites to achieve the mixed reality education model discussed above:

- Tech Ed
- Self-Sustainable Digital Industry

Tech Ed

In 'Tech Ed', technology in education is prioritized. Managed by MoEYS, awareness of the importance of technology in education is raised. At the school level, Information Technology subjects are no longer taken lightly, and students have to complete certain projects to pass the subject to complete each grade. Computer devices are one of the materials that each school is required to have. Teachers, too, will have to undergo annual summer tech camps to become IT literate and get training on the effective use of technology in teaching.

At the national level, the government should actively seek support from and cooperation with countries who have already experienced the process of integrating advanced technology in education. Partnerships with NGOs and INGOs are enhanced. It is through such cooperation that Cambodia will learn and access the technology to be used in its own education system. Once technology becomes a regular part of general education, a transition of some subjects such as language to virtual classrooms can be made.

"Tech Ed" is not yet implemented in Cambodia. It will be a gradual process for Cambodia to get there. However, the current trend suggests a high possibility for a policy with similar scope and focus in the near future. The increasing focus on STEM education and incorporation of technology such as distance learning classrooms, online teacher working groups, the active promotion of learning platforms such as E-School Cambodia to public schools across the country, and the decision to conduct the national high school examination and teacher entrance exam on online platforms are small steps toward a digitized education system in the foreseeable future.

Self-Sustainable Digital Industry

A sustainable digital education happens when the country is less dependent on other countries. Though technology will need to be imported at first, a transition to a self-reliant and independent digital industry is a prerequisite for a complete and advanced digital education system. Relying solely on foreign partners and investors is not a sustainable approach. At any point, foreign investors have the option of taking their investment elsewhere if they deem the conditions more

favorable, leaving Cambodia's digitized education system vulnerable. Therefore, the Cambodian government should invest in the goal of self-reliance in terms of digital infrastructure.

Instead of hiring foreign engineers and tech companies to deliver infrastructure building projects in the long-term, the government can cooperatively work with the private sector to employ them strategically to train young Cambodian talents. Additionally, foreign investors are a source of tax revenue for Cambodia as well as bringing with them expertise. Cambodia can attract foreign investors by creating great conditions for their investments such as ease of doing paperwork, tax reductions for a certain period of time and attractive export policies. On top of this, local investors and tech startups are the future of Cambodia's self-sustaining digital infrastructure. Subsidies in the form of state-owned tech business loans with favorable rates and ways of paying back and free training would encourage local talent and business owners to start investing in the field. This would give Cambodia experience and revenues while allowing devices to be cheaper in price.

Conclusion

The awareness and incorporation of technology into everyday education is necessary. Students and teachers and the system as a whole need to gradually mature to be able to transit successfully to a digital education system. The situation during the Covid-19 pandemic serves as a great reminder of what can happen. Had students and teachers been more exposed to and involved with using technology in their day-to-day learning and teaching activities, Covid-19 would not have been able to shake the system to the extent that it did, including leading to the elimination of the 2020 national examination.

The mixed reality model discussed gives a glimpse into what a sustainable, quality and inclusive education system for Cambodia could be like in the future if a focus on technology development in education is prioritized. Digital transformation in education is a gradual process that takes both time and effort of the government, development partners, the private sector, as well as citizens, but it is also something which needs to happen.

References

Cambodia | USAID School Dropout Prevention Pilot Program. (2015). School Dropout
    Prevention Pilot Program. http://schooldropoutprevention.com/country-data-
    activities/cambodia/

Chea, V., & Chen, S. (2021). New Generation Schools: Addressing Cambodia's Chronic Inability
    to Deliver Quality Education. Yusok Ishak Institute. Retrieved from:
    https://www.iseas.edu.sg/wp-content/uploads/2021/03/ISEAS_Perspective_2021_
    60.pdf

Gillispie, A. (2018). Girls' Education in Cambodia Fights Inequality and Rural Isolation. The
    Borgen Project. https://borgenproject.org/girls-education-in-cambodia/

International Institute for Education Planning. (2020, September 24). Cambodia: Digital
    education is here to stay. IIEP-UNESCO. http://www.iiep.unesco.org/en/cambodia-
    digital-education-here-stay-13492

Ministry of Education, Youth and Sport. (n.d.). General Secondary Education. Retrieved from:
    http://www.moeys.gov.kh/index.php/en/general-secondary-
    education.html#.YSfrNEvis2x

Ministry of Education, Youth and Sport. (2016). *Policy Guidelines for New Generations Schools
    for Basic Education in Cambodia*. Retrieved from:
    http://www.moeys.gov.kh/index.php/en/policies-and-strategies/2468.html#.
    YSaHX0vis2w

Ministry of Education, Youth and Sport. (2018). *Public Education Statistics and Indicators 2017–
    2018*. Retrieved from:
    https://drive.google.com/file/d/1vunEk27ZqseWzJr59YGvEc6WUetl1l5P/view

Ministry of Education, Youth and Sport. (2019). *Cambodia's Education 2030 Roadmap (No. 29)*.
    Retrieved from:
    https://planipolis.iiep.unesco.org/sites/default/files/ressources/cambodia_education_2
    030_roadmap_sustainable_development.pdf

Nget, C. S. (2018). *Gender Equality in Access to Formal Secondary Education in Cambodia.*
    Parliamentary Institute of Cambodia. Retrieved from:
    https://www.pic.org.kh/images/2019Research/20190202%20Gender%20Equality%20in

%20Access%20to%20Formal%20Secondary%20Education%20in%20Cambodia_Ngeth%2
0Chuon%20Setha.pdf

Save the Children (n.d.) Inclusive Education for All. Save the Children.
https://cambodia.savethechildren.net/sites/cambodia.savethechildren.net/files/library/
Brochure_A5_IKEA_2017_LR.pdf

Sem, R., & Hem, K. (2016). *Education Reform in Cambodia: Progress and Challenges in Basic
Education*. Parliamentary Institute of Cambodia. Retrieved from:
https://www.pic.org.kh/images/2017Research/20170523%20Education_Reform_Camb
odia_Eng.pdf

UNESCO. (n.d.). Inclusion in education. UNESCO. https://en.unesco.org/themes/inclusion-in-
education

USAID. (2021). Education and Child Protection. USAID.
https://www.usaid.gov/cambodia/education

World Bank. (2021). Overview. The World Bank in Cambodia.
https://www.worldbank.org/en/country/cambodia/overview

Chapter 11 | The Future of GCED in Cambodia

Rath Daravuth SITHY

Future Scenario

Ms. Voleak is a young female student hailing from a relatively underprivileged and marginalized family in Cambodia. She currently lives with her mother and aging grandmother in a very poor neighborhood in Phnom Penh. Her father, moreover, is a migrant worker in South Korea, working to support the family's essential needs through his remittances. Given the high cost of living in the new and highly developed Phnom Penh, Voleak's family regularly struggles to overcome their impoverished conditions even with her father's support from abroad.

Despite these economic hardships, Voleak is a passionate youth advocate for global citizenship in Cambodia. She firmly embraces the belief that grassroots actions for engendering positive changes can improve her local and international community in manifold ways. Supported by a full merit-based scholarship generously funded by the United Nations (UN), Voleak undertakes her formal education at a renowned public high school called Preah Sisowath. There, she enjoys taking subjects such as global history, international relations, sustainable development, and other topics that are essentially the fundamental components of the '*Global Citizenship Education (GCED)*' program which the school has extensively integrated into its academic management strategy to foster global citizenship values among young high school students in Cambodia. This is also, amongst others, a new policy priority for the Ministry of Education, Youth, and Sports (MoEYS) in its new *Education Strategic Plan 2030 - 2034*.

With an impeccable sense of social responsibility, Voleak also believes that the pivotal purpose of education should not be restricted to just exceptional performance on exams and other assessments per se. It is to also transform herself into a capable and productive citizen for the international community. In class, hence, Voleak speaks vocally about global matters and consistently encourages her peers to undertake solution-oriented and community-based actions when the opportunity arises. Thanks to the exhaustive variety of 'school-community partnerships' at Preah Sisowath High School, Voleak also volunteers actively with her teachers to initiate and lead community service projects on promoting global citizenship education to disadvantaged students in rural areas, as well as other projects to respond to the pressing challenges faced by residents and local authorities.

During her leisure hours, Voleak partakes in global conversations convened by international organizations like the United Nations and the Association of Southeast Asian Nations (ASEAN) to share best practices from her community experiences that could be replicated in other national contexts to address their development setbacks. She engages in these activities with support from the 'Preah Sisowath Global Citizenship Club', a newly established student-led group which informs and advises other students on opportunities to participate in international extracurriculars.

Owing to her stellar contributions to global citizenship mainstreaming in Cambodia at such a young age, Voleak was recently awarded the prestigious 'Reach Oxford Scholarship' to read a 3-year Bachelor of Arts in Politics, Philosophy, and Economics, combined with the world-renowned 'Rhodes Scholarship' to undertake a Master of Philosophy of her choosing at the University of Oxford in the United Kingdom. Acknowledging her exemplary achievement, the Royal Government of Cambodia (RGC) has also decided to sponsor her family's livelihood to ensure that they receive adequate financial support during her studies abroad. Concurrently, the Minister of Education has promised her a position in the Education Ministry after graduation, where she will be working in the Department of Education Planning to co-manage and accelerate the development, integration, and mainstreaming of GCED in underdeveloped Cambodian public high schools in line with the Ministry's national educational priorities. Nationwide, Voleak is now recognized as the youngest 'Model Global Citizen' in Cambodia.

Voleak is now preparing for her final high school exam and overseas education, while also knowing that she is ready to amplify her societal impacts upon her return, and that her family will soon escape the vices of poverty thanks to her laborious efforts in championing global citizenship in Cambodia.

Introduction

Voleak's inspirational story provides a lucid illustration of my vision for the future of Cambodia's public education - to become a country widely renowned for its dynamic cohort of 'globally minded and socially engaged young citizens' playing instrumental roles in shaping and enacting national and international policy agendas via their meaningful grassroots activities. This vision resonates well with Cambodia's newfound national identity as a 'small country with a big heart', committed to invigorating global solidarity and collaborative international efforts for continued international progress (Xinhua, 2020; World Health Organization, 2020). The successful realization of this vision, however, hinges on a multitude of contributing factors, one being 'global citizenship education' – an approach to education which aspires to provide "the understanding,

skills, and values students need to cooperate in resolving the interconnected challenges of the 21st century" (Menten, 2015, paragraph 3).

Recognizing its centrality in driving international development, Cambodia has made significant strides in placing Global Citizenship Education (GCED) at the heart of its educational reforms, particularly on priorities pertaining to the improvement of the quality of education at public schools nationwide. Nevertheless, this process is still mired in a host of challenges. As the analysis below will demonstrate, these impediments can range from socially complex dilemmas such as resistance from school authorities to integrating GCED-related activities in their educational environment to technical challenges associated with limited teachers' capacities to deliver its components (Vicheanon, 2016). In fact, the 2020 INSEAD Global Competitiveness Index – a globally recognized benchmarking study which measures countries' talent/human capital and their determination of national competitiveness - ranks Cambodia at 112 out of 132 countries in terms of 'global knowledge skills' (Lanvin and Monteiro, 2020). This indicator clearly suggests that Cambodian educational providers, particularly publicly funded institutions, need to improve GCED mainstreaming to accelerate the process of internationalizing public education.

Notwithstanding these challenges, the future I want for Cambodia's public education system, as reflected in Voleak's story, is to witness more public schools in both urban and rural communities, capably, actively, rigorously and with great innovation, delivering GCED for the benefits of all Cambodians and international citizens. Hence, this chapter will outline the potential opportunities for the realization of this vision combined with the possible policy interventions and activities which would need to be implemented to achieve it. Firstly, the chapter will briefly discuss the contested definitions and characteristics of GCED. Secondly, it will deliberate the envisioned scenarios focusing on the 'improved and expanded functions' of Cambodian public schools in pioneering GCED and some practical means to facilitate the process. Finally, it will outline policy recommendations for the Cambodian government to consider adopting to enhance its progress in this educational reform agenda.

Defining Global Citizenship and Global Citizenship Education

The notion of global citizenship is not a nascent concept for many international policymakers and educational practitioners. For years, there has been continuous debates on the common characteristics with which most global citizens associate themselves (UNESCO, 2017). Perceptions of their inherent attributes and values also differ substantially across various socio-cultural contexts (Pak, 2013; Horey et al., 2018). Despite these complications, there are articulations common to most definitions. According to UNESCO (2017, p.2), global citizens are commonly characterized as individuals embracing a "heightened sense of belonging to the global

community and a common sense of community" underpinned by "solidarity and collective identity among themselves". As such, they encompass a remarkable degree of "global competence, social responsibility, and global civic engagement", constantly reinforced, and recalibrated throughout their lives both academically and professionally (Morais and Ogden, 2010; Trede et al., 2013). Therefore, the personal identities of global citizens extend beyond the well-travelled and multilingual culture gurus or the highly privileged students at lucrative and elitist international schools (Bunnell, 2014; Hughes, 2020). In general, they vigorously embody shared communitarian values and an enduring commitment to bettering the world via their philanthropic actions (Cabrera and Unruh, 2012; Rinne, 2017). In its instructive '*Education for Global Citizenship: A Guide for Schools'* document, Oxfam GB (2015, p. 24) views global citizens as someone who:

- Is aware of the wider world and has a sense of their own role as a world citizen.
- Respects and values diversity.
- Understands how the world works.
- Is passionately committed to social justice.
- Participates in the community at a range of levels, from the local to the global.
- Works with others to make the world a more equitable and sustainable place.
- Takes responsibility for their actions.

There are myriad approaches and policies which are central to nurturing the values of global citizenship in the public consciousness. Amongst them is the robust integration of GCED within existing national educational systems. Since 2012, the concept has been a crucial priority for progressive educational reforms within diverse international institutions, particularly after its inclusion in the 'Education 2030' vision at the World Education Forum in 2015 (Landorf and Feldman, 2015). At present, UNESCO is regarded as the lead implementation agency, promoting the fundamental principles of GCED with many other partner organizations, including the Asia-Pacific Centre for International Understanding (APCEIU) and the Mahatma Gandhi Institute of Education for Peace and Sustainable Development (UNESCO, 2018a).

According to UNESCO (2018b, p.1), GCED (or 'Education for International Understanding/Education for Global Citizenship) is a form of transformative education which "empowers learners of all ages to assume active roles, both locally and globally, in building more peaceful, tolerant, inclusive, and secure societies." Pak (2013) further articulates that GCED aims to "engage intercultural dialogue and promote understanding of diverse cultures of the world in its practice and form thereby enhancing self-reflection and embracing differences" (p.33). Given such strengths in recalibrating the social functions of traditional civic education, GCED is widely regarded as imperative for both local and international development in many respects (Chung and Park, 2016). Policy-wise, it is a salient priority in SDG 4.7, which focuses on nurturing the

necessary knowledge and competencies among citizens to achieve the wider 2030 Agenda for Sustainable Development (Stenbock-Fermor, 2017). To improve consistency in its application across diverse national contexts, UNESCO (2015) also recommends educational institutions structure their pedagogical and educational practices around three 'conceptual dimensions/domains of learning' (see Figure 1) which can serve as a basis for guiding the design, planning, and delivery of GCED through both formal and informal approaches.

Cognitive:
To acquire knowledge, understanding and critical thinking about global, regional, national and local issues and the interconnectedness and interdependency of different countries and populations.

Socio-emotional:
To have a sense of belonging to a common humanity, sharing values and responsibilities, empathy, solidarity and respect for differences and diversity.

Behavioural:
To act effectively and responsibly at local, national and global levels for a more peaceful and sustainable world.

Figure 1: Conceptual Dimensions of GCED
Source: UNESCO, 2015

Within the existing literature on GCED implementation mechanisms, it has been widely accepted that schools (particularly primary and secondary educational institutions) are critical agents for enacting GCED. This is because the core values of GCED are aligned with their fundamental social obligations in creating well-informed and thoughtful citizens with the necessary intellectual and participatory skills to partake in domestic political and socio-economic life (Caruana, 2015; Torres, 2017; Hughes, 2020).

The State of GCED Mainstreaming in Cambodia

In Cambodia, there has been a plethora of policy actions and programs laid out to embed the central features of GCED in school curricula and other pertinent educational strategies. In the *Education Strategic Plan 2019 – 2023*, for example, a strategy to bolster the quality of academic management reform in public schools involves increasing government support for integrating 'good and global citizenship education' into school curricula and textbooks in line with the *National Curriculum Framework* (MoEYS, 2019a, p.91). In pursuit of this priority, MoEYS

partnered with a local NGO called Kampuchea Action to Promote Education (KAPE) to establish New Generation Schools (NGSs) in four provinces and at Preah Sisowath High School (operating under a 'School in a School Model' in Phnom Penh)[1]. As part of the broader national reform to modernize public educational institutions, the NGSs embrace modern educational standards ranging from curriculum and teaching/learning innovations to robust governance and accountability frameworks for nurturing staff professionalism at all levels (Donaher and Wu, 2020). Minister of Education Dr. Hang Chuon Naron also considers the NGS program as central to advancing global citizenship given its partial emphasis on improving knowledge of global issues among students (in addition to its intensive STEM curriculum**)** (Sacker, 2017).

The setup of the NGSs was a crucial starting point for GCED integration in Cambodia. However, there are still shortcomings to address. From a technical standpoint, GCED implementation in Cambodian public schools is still fraught with various conundrums including the unwillingness of particular school staffs/authorities to embrace the globalization of education (due to personal unreadiness/unfamiliarity or particular vested interests), the lack of quality teacher training and issues with professionalism (e.g. teacher absenteeism and classroom corruption), limited access to digital education, and insufficient strategic planning, amongst others (Tibbitts, 2016; Vicheanon, 2016; Browes, 2017). In terms of GCED delivery, moreover, Cambodia's present public education system still places a strong emphasis on traditional exams and assessments. As such, the promotion of extracurricular activities for GCED mainstreaming has not been gaining much traction in public schools. Indeed, this issue is also partially reflected in the current *Education Strategic Plan 2019 – 2023*, where most, if not all, of the core policy agendas on improving the quality of primary education are still centered on teacher training, curriculum enhancement, and other teaching-based rather than student-centered educational approaches (MoEYS, 2019a).

With regards to the equality of educational opportunities, there is also still an evident disparity in access to high-quality GCED curricula between public and private schools, particularly within the capital city. According to Flynn (2020), GCED curriculums are more widely available in the latter like the International School of Phnom Penh and others, most of which are based in Phnom Penh. Private schools can also offer more multifaceted and distinctive activities including global cultural festivals and other international events to foster global learning while GCED implementation within public schools remains limited to traditional moral and civic education

---

[1] According to the Education Ministry's 'New General School Operational Policy Guidelines', this model, which currently operates only at Preah Sisowath High School, 'sets up new structures within the school but are nevertheless separate from the school'. Thus, the management is able to 'engage in competitive recruitment of managers and teachers, selective student identifications (e.g. examinations), setting new curricula, and other measures that are inherent in the NGS model (MoEYS, 2019b, p.4).

from grades 7 to 12 (The Phnom Penh Post, 2021). Compared to state-funded public schools, however, their tuition fees are largely unaffordable for many Cambodians, especially the poor and underprivileged. In fact, a recent study by the International Schools Database found that the tuition fees for private international schools in Phnom Penh range between US$1,855 and US$25,000 per year (Boken, 2021). Although this was the lowest among several major cities in Asia, most families from poor households would still prefer free public schools given their limited finances (Flynn, 2020; Boken, 2021).

Context Analysis

Vision One - **'Whole-School Approaches' to GCED in Cambodian Public Schools**

The above-mentioned issues clearly underscore the need for more coordinated and calibrated efforts from both public and private entities in pushing forward the project of GCED mainstreaming in Cambodia. Therefore, the first vision I have for this aspiration is to witness more public educational institutions like Preah Sisowath High School moving beyond their conventional curriculum-based approaches to adopt more comprehensive and systematic 'whole-school approaches' to foster a learning environment more conducive for young Cambodians to acquire and responsibly practice the essential values of global citizenship. According to Henck (2018), a whole-school approach seeks to embed GCED across "every aspect of school life (e.g. governance policies and procedures, teaching practices, curriculum, physical and social environment, extracurricular activities, teacher training, and community engagement)" (p.75). This approach also mentions that "all members of the school have a key role to play in promoting a global school culture" (Henck, 2018, p.75). Such an approach is a more holistic, integrated, and multi-faceted model of school management, relevant for fostering global learning, owing to its focus on empowering collective efforts towards GCED, its flexible learning approaches, and its community-focused educational strategies (Hunt and King, 2015; Centre for Global Education, 2017). Figure 2 illustrates some of its essential components.

Figure 2: Components of Whole-School Approach to Global Learning
Source: Centre for Global Education, 2017

In the context of Cambodia's education system, public schools can work towards a Whole School Approach by making several institutional changes. The first one is through improved school leadership. Principals of public schools should be instrumental in transforming the identity of their schools into internationally focused institutions which are ready for 21st century developments. This could be achieved through rechartering the mission, purposes and values of the school with greater integration of GCED principles, and the configuration of school charters and development plans that feature more comprehensive policies on promoting anti-discrimination, anti-corruption, eco-friendly classroom and facility management, and other behavioral norms which reinforce essential global citizenship values like respect for diversity, social responsibility, and others (Centre for Global Education, 2017). In a similar vein, school leaders should strive to define themselves as model global leaders within their own institutions, working to inspire global citizenship among their staff and students via regular GCED-related speeches and assemblies, empowerment of lead staff and students who display exemplary global consciousness and social responsibility within the school and local communities, and active participation in international dialogues on improving GCED, to name just a few. Doing so can help them set the right tone and create an enabling environment for the continued practice and mainstreaming of global citizenship within their school (Henck, 2018).

At Preah Sisowath High School, for example, the overarching vision of the NGS is to "prepare and produce Cambodian twenty-first century citizens through the provision of a high-quality learning and teaching workforce" (KAPE, 2020). Lamentably, STEM-related subjects are highly prioritized over GCED components given the greater focus on readying students for the Fourth Industrial Revolution in the present educational reform agenda (Bo, 2021). As such, there is a need for more globally conscious school leaders who can play central roles in positioning GCED as one of the cornerstones of the educational development program in both Preah Sisowath and other high schools across the country.

Vision Two - 'Global Learning Villages' within Cambodian Public Schools

Cambodian public schools can also help to foster global citizenship through the promotion of GCED-related extracurricular activities. In light of this, my second vision is to see more Cambodian public schools becoming 'ideal villages for global learning', where one can witness students engaging with diverse forms of international educational activities such as model global summits, student-led cultural festivals and performances, global arts exhibitions, debate and public speaking competitions on global issues, digital video competitions on GCED, and other events tailored to foster a schoolwide culture of inclusion and respect for global consciousness. Concurrently, public schools should also establish their own 'international student/education clubs' to disseminate information on scholarships, study trips, competitions, exchange programs,

and other opportunities for students to participate in international fora to improve their global understanding. According to Jarkiewicz and Leek (2016), these formal and informal platforms for augmenting youth participation in global learning can provide manifold benefits to students becoming global citizens, such as developing necessary skills and knowledge and consolidating their awareness of and commitment to global citizenship. Public schools should also design innovative incentive mechanisms to encourage global citizenship behaviors within their institutions. A possible example is registering to receive a nomination for the Rights Respecting School Award – a globally renowned initiative by UNICEF UK to award schools which have adopted and promoted the principles of the United Nations Convention on the Rights of the Child within their broader ethos and curriculum (UNICEF UK, 2016). This will be beneficial for not only boosting the reputation of the schools as capable providers of GCED but also establishing legacies which are needed to further inspire GCED implementation efforts nationwide (Hunt and King, 2015).

While teacher training is indeed significant for underpinning continued educational reforms, there are also many existing programmatic activities which could be further expanded to promote GCED in the context of Cambodian public schools. As part of its efforts to formulate common primary school standards for clean and safe learning environments, MoEYS is convening a monthly Cleanest School contest to encourage students and staffs to maintain high standards of hygiene and cleanliness on campus (Kimmarita, 2021). A few schools like Chea Sim Angkor Chey (located in the outskirts of Phnom Penh) have also been in 'Eco-School' competitions where students are partaking in climate-related activities including resilient farming, tree plantation, and others (The Global Climate Change Alliance, 2020). As promoting sustainable development and environmental protection are also core values of global citizenship, it would be desirable to witness more of these events combined with other extracurricular activities in Cambodia's public schools to realize the wider aims of GCED.

Vision Three - School-Community Partnerships for GCED

A third vision I have is to witness more Cambodian public schools institutionalizing and leveraging more school-community partnerships in pursuit of their broader schoolwide GCED integration strategies. According to many GCED experts, these arrangements provide platforms for students to constantly practice and solidify their civic engagement skills in addition to their formal GCED attainment (Goren and Yemini, 2017; Horey et al., 2018; Noh, 2018). Active participation from local communities in the design and implementation of GCED initiatives is also central to the effective mainstreaming of its fundamental values within public spheres (APCEIU, 2019).

Although the current Education Strategic Plan endorses the use of public-private partnerships to enhance educational delivery in Cambodian high schools, the adoption of school-community partnerships for widespread GCED mainstreaming has not gained much interest. While these partnerships have been institutionalized in the development plans of some existing programs like multilingual education, they are often either ad-hoc or temporary arrangements (Noh, 2018). Most private educational providers, in fact, are more instrumental in arranging these social outreach programs for their students. An example is Northbridge International School Cambodia, which regularly organizes unique extracurricular activities like the ASEAN Sports and Activities Conference or the online 'global campus' system which enables students to interact with others from many schools across the world, amongst others (Northbridge International School Cambodia, 2021).

The current framework of school-based management, which MoEYS is championing in many schools to decentralize decision-making processes from central authorities to local stakeholders, can be seen as creating many opportunities for focal community members and parents to participate in school planning and management, particularly within designated School Support Committees (Thida, 2011). An issue to highlight, however, is that community participation is still predominantly focused on operational works such as budget monitoring, infrastructure development, prevention of irregularities, and others, while GCED-related partnerships such as the implementation of community projects co-designed between students and local stakeholders remains unpopular or otherwise unnoticed (Fata and Kreng, 2015).

To improve this situation, the membership and mandate of School Support Committees should also involve student leaders consulting local stakeholders to identify their needs and possible project-based solutions to effectively address them. Both Cambodian public schools and the community can benefit from promoting community partnerships to provide a variety of extracurricular opportunities for students to partake in community development with local authorities while also improving their global consciousness. These partnerships can entail activities such as assisting local service providers with the delivery of essential social services like protecting the community environment or delivering community education, working with relevant stakeholders to advocate for GCED through various awareness-raising initiatives either virtually or offline, and actively contributing to the deliberation and execution of key priorities in existing Commune-Sangkat development plans and other related sub-national plans. For local authorities, partnerships can provide an array of benefits ranging from institutionalizing a culture of burden sharing with sub-national administrations to expanding the platform for citizen participation (especially for passionate and innovative young people) to generate locally driven solutions to pressing community matters (Sokunkolyan et al., 2016). For the students, these types of community activities serve as a venue for them to expand their social participation and express their opinions on active citizenship,

both of which constitute civic engagement processes within the pursuit of global citizenship identity-formation.

As a starting point, the newly revised Safe-Village Commune Policy instituted by the Cambodian Government in early 2021 contains several new priorities for advancing socio-economic development for local communities, such as improving sanitation and environment and the quality of sub-national public service delivery (Dara, 2021). In Phnom Penh, for instance, students and staff from schools like Preah Sisowath and Baktouk High School can begin by cooperating actively with Phnom Penh Capital Hall to organize activities centered on reducing littering or managing solid waste for the national Clean Phnom Penh Campaign, which aims to promote healthy urban living habits in the capital (Bunthoeurn, 2020).

Policy Recommendations

While these visions are imperative for fostering an environment conducive for global citizenship mainstreaming, they will remain aspirational without the right policies and strategies to actualize them. As mentioned earlier, the Cambodian government has already instituted a few policy measures to integrate GCED into the national education system. However, there are additional measures which could further accelerate its progress.

National Action Plan for GCED Mainstreaming

The Education Ministry should continuously strengthen its commitment to mainstreaming GCED at all educational institutions (alongside other priorities like STEM education) as part of its present package of targeted reforms to improve the national education system. In this regard, government efforts need to move beyond the current broad provisions within the Education Strategic Plan to more targeted, strategic, and comprehensive policy frameworks needed to continuously reinforce the development significance of GCED to all educational policymakers and providers within the country.

As a starting point, therefore, the Education Ministry can explore the option of developing a National Action Plan for GCED Mainstreaming to guide and impel all public schools nationwide to adopt and institutionalize some of the above suggestions (e.g., whole-school approach, community partnerships) within their school development plans which are in line with the broader priorities of the Education Strategic Plan. To achieve this objective, the National Action Plan can contain these fundamental policy priorities and actions:

A comprehensive set of guiding strategies underpinned by a robust implementation framework for schools to apply 'whole-school approaches' in transforming themselves into hubs for global learning.

Policymakers can look to novel guiding frameworks like Oxfam's *Education for Global Citizenship: A Guide for Schools* or lessons from other countries for inspiration. An exemplary case is South Korea, where its Ministry of Education is working on formulating national GCED models that are fitting for its educational context in pursuit of its 'Korean Education that Harmonizes with the World' agenda (Ministry of Education, 2021). Cambodian educational policymakers can therefore seek to explore best practices from Korea (or elsewhere) in initiating their own models for localizing GCED within the context of the public education system. A crucial priority, however, is to ensure that the model can effectively transition the traditional exam-based education method to a more student-centered and activity-oriented empowerment method, as mentioned above, with a strengthened focus on promoting greater participation from students in meaningful community actions at both the national and international level.

Wherever relevant, existing partnerships with key educational development partners from Australia, Japan, and other countries should also be effectively explored and utilized to contribute to designing the key components and strategic directions of the National Action Plan. At present, UNESCO Clearinghouse on Global Citizenship Education also provides a litany of tools and resources to help inform the formulation of the plan. Yet, engagement with several stakeholders during the policy design process is useful for building the momentum of collaboration at the early stage, which could be effectively harnessed in the future and potentially transformed into enduring institutional partnerships for long-term benefits in GCED implementation in Cambodia.

Finally, sufficient national consultations, dialogues, and roundtable discussions must also be conducted to ensure that the design process is inclusive, participatory, and representative of diverse inputs and viewpoints from the public and relevant experts, particularly those already working to advocate for and mainstream GCED through both formal and informal channels. In this process, priority should be given to independent youth groups and associations in Cambodia (e.g. AIESEC, YouthStar Cambodia, etc) that have been active in pioneering community service projects across the country. Policy-wise, their extensive experience and expertise will provide valuable contributions to the National Action Plan particularly in ensuring that its proposed policy direction on GCED integration and implementation is responsive to local context and needs.

Establish an inter-ministerial National Council to oversee the implementation of the National Action Plan.

To promote greater political willingness in advancing national GCED mainstreaming, the Cambodian government should also consider setting up an inter-ministerial National Council on GCED Mainstreaming to function as a policymaking and coordinating institution with a mandate to 1) oversee the implementation of the above National Action Plan, 2) define and align the relevant policies and legal frameworks on GCED mainstreaming with existing educational reform priorities, 3) work with technical working groups to execute certain policy-relevant programmatic activities, and 4) forge partnerships and cross-sectoral cooperation with relevant national and international stakeholders from key development partners, NGOs, academia, and the public and private sectors. In terms of providing analytical support to key policymakers, especially on critical actions required to actualize the above National Action Plan and other key policies, the National Council should also coordinate policy-relevant and evidenced-based research, monitoring, and evaluation with various stakeholders to generate crucial insights for current reform efforts and future policy directions particularly on GCED integration and mainstreaming. In principle, the establishment of this national council can signal to other countries and institutions in the international community that Cambodia is firmly committed to internationalizing its education system through GCED. Thus, this can attract more stakeholders and partners to assist Cambodia with the process, thereby reducing the burden of kickstarting the process in its early phase. Nonetheless, it is still imperative for the relevant government officials and educational authorities to remain actively involved in the implementation work of the plan to ensure that they can effectively acquire sufficient understanding and skills to take ownership of external contributions.

Provision for capacity building and proper incentive schemes for teachers and staffs to deliver GCED components, formally and informally.

In 2016, the APCEIU and MoEYS signed a Memorandum of Understanding to pioneer its GCED Curriculum Development and Integration Project 2016 – 2018' (APCEIU, 2016). This project introduced capacity-building workshops for urban and rural educators in Cambodia to strengthen their pedagogical skills in integrating GCED principles in their schools' curriculums via curriculum revision and textbook writing, particularly in history and civic subjects (Browes, 2017). Although this was vital for kick-starting GCED implementation, its emphasis, again, is still limited to curriculum-based approaches. The new Action Plan should, therefore, lay out innovative guidelines to expand teacher and staff training beyond curriculum development to other pertinent skills for leading community service projects and researching innovations in GCED delivery and advocacy. As Chung and Park (2016) contend, these attributes are vital for transforming teachers into passionate GCED agents suited to guiding students in championing GCED values beyond the classroom. To carry out this piece of work further, the government can consider establishing a dedicated national institute for GCED to provide curated trainings on GCED to the relevant government officials, educational

practitioners, school leaders, and other key people. Doing so helps to ensure that GCED capacity building will perpetually underpin the overarching GCED integration and mainstreaming work, which is essential for averting implementation failures.

Strengthening partnerships and collaborations for national GCED mainstreaming

Educational policy implementers must build partnerships with various in-country and international organizations to collaboratively execute the national work on GCED mainstreaming. Given their multifaceted mandates and technical expertise, these organizations (i.e. public, private, and third sector) could not only assist school authorities with improving GCED delivery but also expand GCED-related activities to the non-formal education sector (Browes, 2017). In this process, policymakers can draw on the successful lessons from the Education Ministry's existing partnership with the local KAPE NGO (on NGS reforms) to inform future decisions on initiating collaboration for GCED-related activities.

Public Campaigns for incentivizing and promoting GCED activities

Effective implementation of GCED within school environments also requires ample public support. As a result, it is also imperative for MoEYS to institute multifaceted measures to gauge greater public recognition of the contributions of Cambodian public schools in delivering GCED for educational and societal development. Some possible recommendations include the following:

1) The Education Ministry should work with relevant stakeholders and partners to launch a nationwide public campaign to strategically rebrand Cambodian public schools not only as state-funded providers of education but also as ideal institutions for enriching global consciousness. Here, the goal is to ensure that public schools become the preferred alternative for parents from all socio-economic classes to enroll their children to obtain an education that is relevant for evolving global realities and for them to become active change agents for their societies accordingly. This endeavor will not only amplify the importance and visibility of their social impacts stemming from GCED but also reinforces parental trust in their capacity to deliver relevant education for their children. This can help to minimize the public-private school dualism in Cambodia's education system by empowering public institutions to become competent education providers for all rather than the last resort for poor and vulnerable students (Chea and Chen, 2021).

2) The government should also introduce national incentive programs to reward and encourage not only students but also other citizens to become 'model global citizens' based on their efforts in mainstreaming global citizenship in public settings. For example, Smart Axiata recently launched its Good Citizen Award 2020 to "reward the unsung heroes in the country who went out of their way

to do positive contributions, work, or deeds for the country, neighbors, village, or province" (Soco, 2020). The reward offers 10,000 USD to the winner through a rigorous public nomination and selection process (Smart Axiata, 2020). Such an initiative is a good example for the Education Ministry to replicate as a potential 'Global Citizen Award' to incentivize GCED activities from citizens of all backgrounds. To allow for diverse participants to be recognized, this award should also be classified based on three categories: students, teachers, and public citizens. Recently, the Education Ministry and the Korean International Cooperation Agency (KOICA) recognized three teachers from different high schools in Cambodia as Best Teacher in STEM as part of the Teachers' Capacity Building for STEM and ICT Innovative Education in Cambodia project (David, 2021).

Conclusion

In summary, the heightened promotion of GCED in Cambodia should not be prioritized only within the purview of policy agendas and strategic action plans at the central level. Without continuous robust commitment and joint efforts from the relevant educational institutions at the local level, the above endeavor will not succeed in generating the necessary systemic change that is needed to revolutionize the education system in Cambodia with an expanded and increased focus on promoting international understanding amongst students from all walks of life. In light of this observation, this chapter articulates my vision for an enhanced, expanded, and amplified GCED ecosystem in Cambodia's public education system based on three desirable scenarios. Firstly, GCED implementation in Cambodia's context can gain greater momentum should its public schools adopt more innovative, systemic, and holistic 'whole-school approaches' to guide the direction and institutionalization of GCED in their school environments. This is achievable once the right model of leadership is in place, supported by a willingness to reform from key staffs at the operational level. Secondly, GCED integration can only flourish when public schools transform themselves into quintessential villages for global learning brimming with students engaging in copious extracurricular activities to strengthen their global consciousness and responsibility. This is a much-needed change to complement the existing conventional educational activities. Finally, GCED implementation can produce more profound societal and educational impacts when unique and distinctive 'school-community partnerships' are harnessed to complement their broader educational and developmental objectives. These combined scenarios can ultimately transform Cambodia into a nation with a large cohort of passionate and capable global citizens, particularly young ones, working to advance global development through their joint local actions. The story of Voleak above is the perfect reflection of this future reality.

References

Asia Pacific Centre for International Education (APCEIU). (2016, June 17). MOU inked between MoEYS of Cambodia and APCEIU. *APCEIU News*. http://www.unescoapceiu.org/post/2698

Asia Pacific Centre for International Understanding (APCEIU). (2019, September 11). Workshops to foster GCED in the Southeast Asian region. *APCEIU News*. http://www.unescoapceiu.org/post/2802?&page=5

Bo, C. (2021). New Generation Schools in Cambodia: Innovative school governance for sustainable quality of 21st century learning and instruction. *Advances in Social Science, Education and Humanities Research*, *526*, pp.510–513. https://doi.org/10.2991/assehr.k.210212.105

Boken, J. (2021, January 5). Phnom Penh's private schools found the least costly in region. *Khmer Times*. https://www.khmertimeskh.com/50800942/phnom-penhs-private-schools-found-the-least-costly-in-region/

Browes, N. (2017). *Global citizenship concepts in the curricula of four countries*. UNESCO International Bureau of Education and Asia Pacific Centre for International Understanding. Retrieved from: https://www.gcedclearinghouse.org/sites/default/files/resources/170024eng.pdf

Bunnell, T. (2014). *The changing landscape of international schooling: Implications for theory and practice*. Routledge.

Bunthoeurn, O. (2020, September 4). Cleaning campaign rolls out. *The Phnom Penh Post*. https://www.phnompenhpost.com/national/cleaning-campaign-rolls-out

Cabrera, A., & Unruh, G. (2012). *Being global: How to think, act, and lead in a transformed world*. Harvard Business Publishing.

Caruana, P. (2015). Global Citizenship and the Role of Education in the Twenty-First Century. *Symposia Melitensia Number*, *10*. https://core.ac.uk/download/pdf/46602797.pdf

Centre for Global Education. (2017). *A whole school approach to global learning: A guidance for schools education for a fair and sustainable world*. Centre for Global Education. Retrieved from: https://www.globallearningni.com/uploads/myresources/whole_school_guidance.pdf

Chea, V., & Chen, S. (2021, April 30). New Generation Schools: Addressing Cambodia's chronic inability to deliver quality education. *ISEAS-Yusof Ishak Institute*. https://www.iseas.edu.sg/articles-commentaries/iseas-perspective/2021-60-new-generation-schools-addressing-cambodias-chronic-inability-to-deliver-quality-education-by-vatana-chea-and-soklim-chen/

Chung, B., & Park, I. (2016). A review of the differences between ESD and GCED in SDGs: Focusing on the concepts of Global Citizenship Education. *Journal of International Cooperation in Education*, *18*(2), 17–35. https://cice.hiroshima-u.ac.jp/wp-content/uploads/2016/12/18-2-2.pdf

Dara, V. (2021, January 11). Ministry revises safe village-commune policy. *The Phnom Penh Post.* https://www.phnompenhpost.com/national/ministry-revises-safe-village-commune-policy#:~:text=The%20safe%20village%2Dcommune%20policy

David, S. (2021, August 21). Awards handed out to best STEM teachers and schools. *Khmer Times*. https://www.khmertimeskh.com/920385/awards-handed-out-to-best-stem-teachers-and-schools/

Donaher, M., & Wu, N. (2020). Cambodia's New Generation Schools reform. In Reimers, F.M. (Ed.). *Empowering Teachers to Build a Better World*. Singapore: Springer. pp. 103–120 https://doi.org/10.1007/978-981-15-2137-9_6

Fata, N., & Kreng, H. (2015). *School accountability: Community participation in performance of primary and lower secondary schools in Cambodia*. NGO Education Partnership. Retrieved from: http://ticambodia.org/library/wp-content/files_mf/1449504532FinalSchoolAccountabilityreport6Nov15notc.pdf

Flynn, G. (2020, January 14). Will Cambodia's education system make the grade? *Southeast Asia Globe*. https://southeastasiaglobe.com/making-the-grade/

Goren, H., & Yemini, M. (2017). Global citizenship education redefined – A systematic review of empirical studies on global citizenship education. *International Journal of Educational Research*, *82*, 170–183. https://doi.org/10.1016/j.ijer.2017.02.004

Henck, A. (2018). Looking beyond the classroom: Integrating global citizenship education throughout your whole school. *Childhood Education*, *94*(4), 75–77. https://doi.org/10.1080/00094056.2018.1494456

Horey, D., Fortune, T., Nicolacopoulos, T., Kashima, E., & Mathisen, B. (2018). Global citizenship and higher education: A scoping review of the empirical evidence. *Journal of Studies in International Education*, *22*(5), 472–492. https://doi.org/10.1177/1028315318786443

Hughes, C. (2020). International schools and global citizenship education. In Akkari A., Maleq K. (Eds) Global Citizenship Education. Springer, Cham. pp. 177–190. https://doi.org/10.1007/978-3-030-44617-8_13

Hunt, F., & King, R. P. (2015). *Supporting whole school approaches to global learning: focusing learning and mapping impact* (Research Paper No. 13). Development Education Research Center, UCL Institute of Education. https://www.ucl.ac.uk/ioe/sites/ioe/files/franhunt2015supportingwholeschoolapproach estogloballearning.pdf

Jarkiewicz, A., & Leek, J. (2016). *Youth participation and global citizenship: Challenges and recommendations for future Youth School Forums*. Oxfam GB and University of Łódź. https://oxfamilibrary.openrepository.com/bitstream/handle/10546/620142/rr-youth-participation-global-citizenship-081116-en.pdf?sequence=1&isAllowed=y

Kampuchea Action to Promote Education (KAPE). (2020). *New Generation School (NGS)*. Kampuchea Action to Promote Education. http://www.kapekh.org/en/what-we-do/16/?pro_id=20

Kimmarita, L. (2021, January 11). Schools hold monthly clean-up contest. *The Phnom Penh Post.* https://www.phnompenhpost.com/national/schools-hold-monthly-clean-contest

Landorf, H., & Feldman, E. (2015). Global perspectives on global citizenship. In Reynolds R., Bradbery, D., Brown, J., Carroll, K., Donnelly, D., Ferguson-Patrick, K., Macqueen, S. (Eds) *Contesting and Constructing International Perspectives in Global Education.* Rotterdam: SensePublishers. pp. 43–52. https://doi.org/10.1007/978-94-6209-989-0_4

Lanvin, B., & Monteiro, F. (Eds.) (2020). *The Global Talent Competitiveness Index 2020: Global talent in the age of artificial intelligence*. INSEAD: The Business School of the World. https://www.insead.edu/sites/default/files/assets/dept/globalindices/docs/GTCI-2020-report.pdf

Menten, A. (2015, September 25). What is "global citizenship education"?. *Asia Society*. https://asiasociety.org/blog/asia/what-global-citizenship-education

Ministry of Education, Youth, and Sports (MoEYS). (2019a). *Education Strategic Plan 2019-2023*. Department of Policy Planning. Ministry of Education, Youth, and Sports. https://www.moeys.gov.kh/index.php/en/policies-and-strategies/3206.html

Ministry of Education, Youth, and Sports (MoEYS). (2019b). *New Generation School Operational Policy Guidelines*. Department of Policy Planning. Ministry of Education, Youth, and Sports. Retrieved from: http://www.kapekh.org/files/report_file/156-en.pdf

Ministry of Education. (2021). *Policies and Programs: Major tasks*. Ministry of Education of the Republic of Korea. http://english.moe.go.kr/sub/info.do?m=040101&s=english

Morais, D. B., & Ogden, A. C. (2010). Initial development and validation of the global citizenship scale. *Journal of Studies in International Education*, *15*(5), 445–466. https://doi.org/10.1177/1028315310375308

Noh, J.-E. (2018). The legitimacy of development nongovernmental organizations as global citizenship education providers in Korea. *Education, Citizenship and Social Justice*, *14*(3), 241–259. https://doi.org/10.1177/1746197918799972

Northbridge International School of Cambodia. (2021, August 24). *What makes a Nord Anglia Education special?* Nord Anglia Education. https://www.nordangliaeducation.com/en/our-schools/cambodia

Oxfam GB. (2015). *Education for Global Citizenship: A guide for schools* (pp. 1–24). Oxfam Education and Youth. https://oxfamilibrary.openrepository.com/bitstream/handle/10546/620105/edu-global-citizenship-schools-guide-091115-en.pdf?sequence=11&isAllowed=y

Pak, S.-Y. (2013). *Global citizenship education: Goals and challenges in the new millennium* (pp. 1–29). Asia-Pacific Centre for International Understanding. https://www.gcedclearinghouse.org/sites/default/files/resources/GCE_Report.pdf

Rinne, A. (2017, September 16). *What global citizenship is not*. Medium. https://medium.com/@aprilrinne/what-global-citizenship-is-not-5ec87bec4a8a

Sacker, J. (2017, October 17). Model schools teach a new generation of students. *The Phnom Penh Post*. https://www.phnompenhpost.com/post-plus/model-schools-teach-new-generation-students

Smart Axiata. (2020, December 18). *Cambodia's model citizen stands to win 10,000 USD*. Smart Axiata. https://www.smart.com.kh/cambodias-model-citizen-stands-to-win-10000-usd/

Soco, R. M. (2020, December 24). Cambodians to pay tribute to good citizens. *The Khmer Times*. https://www.khmertimeskh.com/50797077/cambodians-to-pay-tribute-to-good-citizens/

Sokunkolyan, T., Nan, T., Khuneary, H., & Paul, C. (2016). *Developing and implementing 5- Year development plans and 3-Year rolling investment plans at the Sangkat Administrations in Phnom Penh* [The Senate Region 1 Briefing Note]. Parliamentary Institute of Cambodia. https://www.pic.org.kh/images/2016Research/20170523%20Development%20Plans_Sangkat%20Administrations_Eng.pdf

Stenbock-Fermor, A. (2017, July 3). *Global citizenship education in Asia-Pacific: Diverse interpretations in a dynamic region*. UNESCO Bangkok. https://bangkok.unesco.org/content/global-citizenship-education-asia-pacific-diverse-interpretations-dynamic-region

The Global Climate Change Alliance. (2020). *The eco-school in Cambodia*. The Global Climate Change Alliance plus Initiative. https://www.gcca.eu/photos/eco-school-cambodia

The Phnom Penh Post. (2020, January 30). Race for private schooling raises the bar. *The Phnom Penh Post*. https://www.phnompenhpost.com/education/race-private-schooling-raises-bar

The Phnom Penh Post. (2021, February 2). Strengthening student ethics to elevate quality of education. *The Phnom Penh Post.* https://www.phnompenhpost.com/national/strengthening-student-ethics-elevate-quality-education

Thida, K. (2011). Exploring the implementation of school-based management in selected public schools in Cambodia: A multiple case study [Master Thesis, De La Salle University]. Animo Repository. https://animorepository.dlsu.edu.ph/etd_masteral/4783/

Tibbitts, F (2016). *Global citizenship concepts in the curriculum of Cambodia: Analysis and initial recommendations*. UNESCO International Bureau of Education.

Torres, C. A. (2017). Education for global citizenship. *Oxford Research Encyclopedia of Education*. https://doi.org/10.1093/acrefore/9780190264093.013.91

Trede, F., Bowles, W., & Bridges, D. (2013). Developing intercultural competence and global citizenship through international experiences: academics' perceptions. *Intercultural Education*, *24*(5), 442–455. https://doi.org/10.1080/14675986.2013.825578

UNESCO. (2015). *Global citizenship education: Topics and learning objectives*. UNESCO.

UNESCO. (2017). *The ABCs of Global Citizenship Education*. UNESCO Digital Library. https://unesdoc.unesco.org/ark:/48223/pf0000248232#:~:text=In%20all%20cases%2C% 20global%20citizenship

UNESCO. (2018a, January 9). *What is global citizenship education?* UNESCO. https://en.unesco.org/themes/gced/definition

UNESCO. (2018b, July 25). *Global citizenship education*. UNESCO. https://en.unesco.org/themes/gced

UNICEF UK. (2016). *What is a Rights Respecting School?* The UK Committee for UNICEF. https://www.unicef.org.uk/rights-respecting-schools/the-rrsa/what-is-a-rights-respecting-school/

Vicheanon, K. (2016). *Global citizenship concepts in the curriculum of Cambodia: Analysis and initial recommendations: Situational analysis report of Cambodia.* UNESCO International Bureau of Education

World Health Organization. (2020, June 25). *"A Small Country with a Big Heart" – Welcoming the Westerdam*. World Health Organization; https://www.who.int/cambodia/news/feature-stories/detail/a-small-country-with-a-big-heart-welcoming-the-westerdam

Xinhua. (2020, October 12). China, Cambodia vow to deepen cooperation in all areas - *Xinhua | English.news.cn*. *Xinhua Net*. http://www.xinhuanet.com/english/2020-10/12/c_139435023.htm

Chapter 12 | Telehealth in Cambodia:
Addressing Challenges of the Healthcare System During COVID-19

Vouchnea TANG

Future Scenario

Despite waking up early, Haratey is rushing to work and simultaneously preparing meals for her sons. In her 40s, Haratey, a wealthy businesswoman and entrepreneur, is very busy with her work and family tasks. She has no time to do exercise and does not always have regular meals. Due to her tight work schedule, she rarely has a health checkup. Having unhealthy and irregular eating habits, she starts to feel pain in the left side of her stomach. She tries to ignore the symptom and focuses on her daily work. But on the advice of her colleagues, she decides to consult with a medical doctor.

In 2080, every Cambodian has health insurance and is able to access healthcare for free. Haratey realizes that she needs to have a medical consultation for her stomach pain, but she is mostly occupied during the daytime. Thanks to technological advancements in the healthcare system, Haratey doesn't have to go to a healthcare facility, instead, she can use a telehealth application on a smartphone. The app is a combination of a telehealth app and an Artificial Intelligence (AI) doctor. Opening the mobile application, she selects the type of service she needs and clicks on the symptoms that she currently has. The app will automatically link her with an AI doctor through a 3D hologram lens equipped in the smartphone. The process is as simple as a face-to-face consultation; however, it requires Haratey to have an external and wearable device for measuring blood pressure, heart rate, glucose level, etc. Haratey doesn't have to tell the AI doctor her basic information as her information is already stored in the telehealth app or transmitted from her wearable device. She simply has to answer the AI doctor's questions and follow instructions as per the AI doctor's request. The consultation takes only a few minutes, and the AI doctor can give her a prescription or refer her to an in-person consultation in the hospital if she needs an additional assessment or treatment from a specialist. The result of the consultation visually shows on the mobile phone and Haratey is relieved to see her condition is not serious. She receives a prescription from the AI doctor for purchasing medicines by herself.

Haratey was very impressed by her experience with the application. Having a telehealth application with a 3D hologram of an AI doctor, saved her time, and she did not have to wait at the triage in the hospital all day. In 2020, telehealth services emerged to help manage the COVID-19 pandemic by providing broad access to big data as well as health care service remotely. It used to take many days to track the contacts of each infected patient but digital health services reduced healthcare workers and surveillance groups' burden in monitoring the outbreak by digital contact tracing.

Haratey is amazed at the current healthcare system and how it fills in the gaps of the classical healthcare system using information technology infrastructure and mobile computing power. She feels blessed to be born in this modern time.

Introduction

After the WHO declared COVID-19 (the disease caused by SARS-CoV-2) a global pandemic, mitigating the impact of the disease became the focus of nearly every country. Even in countries with strong healthcare systems, the overwhelming number of COVID-19 cases caused their healthcare systems to be overstretched. In a lower-income country like Cambodia where the healthcare system is already weak, the threat from COVID-19 is severe.

To slow the spread of the virus, movement restrictions have become the new normal in countries around the world, while many cities or areas were entirely locked down (Papadimos et al., 2018). These regulations are intended to reduce transmission but have significantly affected people who need critical and regular care (particularly older people and those with underlying diseases), delaying their access to treatment and putting them at greater risk of complications from their chronic disease (Papdimos et al., 2018). Consequently, the number of non-COVID-19 deaths in 2020 was higher than the previous year (Jacobson and Jokela, 2020). Given this situation, there is an urgent need for a platform to provide health access to patients without exposure to virus transmission.

This paper explores the importance of digitalization as an innovative solution to improve the Cambodian healthcare system in the future. The ideal scenario, in this view, aims to see the telehealth reduces provider burden and increases patient convenience. Digitalization and Information and Communication Technology can fill the gaps in the current healthcare system, particularly healthcare worker shortage and other barriers that prevent the patient from accessing services. This chapter will explore feasible scenarios and propose a policy solution for Cambodia by introducing the current situation of the healthcare system and exploring policy solutions that high-income countries have used to mitigate the challenges of COVID-19 and improve the healthcare system. Telehealth technology, which is one feasible solution that has been used elsewhere successfully, will be examined as a potential model for Cambodia as a pathway to realize improved outcomes for patients in the future.

Context Analysis

Cambodian healthcare system and challenges

The current healthcare system in Cambodia is constrained by inadequate resources including understaffing, limited diagnostic capacity, and an insufficient supply of medicines and health commodities, all of which result in an inadequate quality of health services (DPHI, 2018). These problems are even more severe in rural areas, triggered by the lack of health professionals and distance to health facilities, as well as limited availability of healthcare services which causes inequity in access to healthcare. There are approximately 19,457 healthcare professionals in

Cambodia, most of which are nurses and midwives, with only 2,157 doctors (Annear et al., 2015, p.89). In 2012, the ratio of medical doctors was 1.51, and specialist doctors was 0.18 per 10,000 population, which is one of the lowest numbers in Southeast Asia (Annear et al., 2015, p.89). Moreover, doctors are mainly concentrated in the capital and at the provincial level. The unequal human resource distribution and inadequacy of supplies and facilities shows the current system cannot provide basic and quality healthcare to all populations.

The increasing number of COVID-19 cases has reduced healthcare access even for non-COVID patients as many hospitals are overwhelmed by the COVID-19 patients who require critical beds, especially during large outbreak (Huzar, 2020). Several factors can restrict people's access to medical care including canceled appointments, suspension of transportation services, fear of being in the emergency room or an altruistic thought not to burden the healthcare system (CDC, 2021). Even when non-COVID patients are able to receive treatment at the healthcare facility, the quality of service delivery might not be the same as previously as facilities might be more crowded or healthcare staff may prioritize the treatment of COVID-19 patients. During the pandemic, the avoidance and delay of non-COVID-19 medical care contributes to excess deaths beyond those caused by COVID-19 (Czeisler et al., 2020). This problem is compounded for Cambodians, who often seek medical care abroad from neighboring countries such as Thailand, Singapore, and Vietnam (Marady and Huaifu, 2017).

Global evidence shows that there have been 1.3 million excess deaths not related to COVID-19 compared to the previous year; the number is mostly attributed to older people and those with chronic health conditions (Jacobson and Jokela, 2020). There is no available data showing whether more older and middle-aged people passed away due to delays of treatment for non-COVID illnesses during the pandemic in Cambodia. However, plenty of anecdotal evidence illustrates that many well-known and high-ranking people lost their lives or their loved ones due to their underlying illness during this epidemic (see for example Rinith, 2021; Khmer Times, 2021; Ben, 2020).

However, it is important to note that even before the pandemic, barriers to accessing healthcare services were a challenge for poor and vulnerable people in rural areas. Jacobs et al. (2012) assessed the barriers to access to healthcare services in low-income Asian countries, in which two case studies in Cambodia were raised responding to the barriers using consequent interventions. The authors found that barriers could be classified as either affecting the supply or the demand side of healthcare services, as shown in Table 1. Demand side challenges include means of transport available, indirect costs to household (transport cost), and lack of health awareness, while supply side challenges refer to service location, unqualified health workers, staff absenteeism and opening hours, waiting time, etc.

To address the supply challenges, performance-based incentives have been introduced in Cambodia to deal with low salaries and motivate health personnel. For a demand-side solution, Health Equity Fund (HEF) provides free healthcare access to the Cambodian poor to increase their access to public health facilities (Jacobs et al., 2012). Even though HEF beneficiaries can access free healthcare services at public health facilities, a large proportion of the poor still seek care at

private health facilities; this is probably attributed to a lower quality of care in the public health sector (World Bank, 2014). Health-seeking behavior is deterred by the cost of transportation, poor quality of care, restricted hours of the facility and long waiting times (Jacobs et al., 2007). In addition, people with disabilities face physical barriers, such as a lack of access to ramps and accessible toilets, and affordable transportation to health centers (Kleinitz et al., 2012). Therefore, free health care service and performance-based incentives cannot fully resolve issues of health care access among all populations.

Table 1: Overview of supply-side and demand-side barriers in four dimensions of access in healthcare

Supply-side barriers	Demand-side barriers
Geographic accessibility • Service location	• Indirect costs to household (transport cost) • Means of transport available
Availability • Unqualified health workers, staff absenteeism, opening hours • Waiting time • Motivation of staff • Drugs, and other consumable • Non-integration of health services • Lack of opportunity (exclusion from services) • Late or no referral	• Information on health care choice/providers • Education
Affordability • Costs and prices of services • Public-private dual practices	• Household resources and willingness to pay • Opportunity costs • Cash flow within society
Acceptability • Complexity of billing system and inability for patients to know prices beforehand • Staff interpersonal skills, including trust	• Households' expectation • Low self-esteem and little assertiveness • Community and cultural preferences • Stigma • Lack of health awareness

Source: Adapted from Jacobs et al., 2012.

Even though the healthcare system has been improved in recent years, it does not completely respond to factors of patient preference, value, cost, and efficiency (Heskett, 2001). For example, marginalized groups such as people living with disabilities, older people, and people living in remote areas are still facing geographic barriers, logistic barriers, etc., to receiving healthcare. As such, there should be a mechanism initiated to address inequality in access to healthcare for the vulnerable. Kruse et al. (2018) showed that telehealth could reduce the geographical and time obstacles posed by the current system of receiving care.

Telehealth

According to the World Health Organization (2010), telehealth and telemedicine are interchangeable, defined as " the delivery of health care services, where distance is a critical factor, by all health care professionals using information and communication technologies for the exchange of valid information for diagnosis, treatment and prevention of disease and injuries, research and evaluation, and for the continuing education of health care providers, all in the interests of advancing the health of individuals and their communities" (p.9).

Telehealth aims to provide clinical support, overcome geographical barriers in receiving health care, use various types of Information Communication Technology, and improve health outcomes (WHO, 2010, p.9). Telehealth is used to increase general and specialized health care access, provide healthcare service in rural areas, give flexibility in scheduling and save patients' time and money in receiving health care service (Kruse, et al., 2018).

Before the COVID-19 pandemic, the concept of telehealth had been receiving attention and there were many studies exploring telehealth in recent years (Dorsey and Topol, 2016). Telehealth technology has been proven as an effective, personalized, way to monitor patients with non-communicable disease at home. Srivastava et al. (2018) found telehealth successfully reduced outpatient and urgent care visits, and healthcare-associated costs in patients with heart failure.

Although telehealth technology aims to improve the quality of care, increase patients' satisfaction and reduce cost, it could pose risks to the privacy and personal security of patients' information. The privacy risk refers to patients lacking control over data collection, use, or sharing data and security risks posed by unauthorized access of data during transmission, storage, and collection (Hale and Kvedar, 2014). Even though developers are aware of these risks and have tried to create secure apps, there are still flaws posing a threat to the security of the telehealth systems. Amid the COVID-19 pandemic, the number of healthcare breaches is rising; the rate of data leakage has increased by 51% from the previous year; cyber security like ransomware has also risen (Jercich, 2021).

Telehealth during the pandemic

Using telehealth technology during the pandemic could help to keep both patient and healthcare staff safe, and increase the availability of healthcare staff (Smith et al., 2020; Cheng et al., 2004). To meet the need for social distancing, healthcare staff provide service remotely to patients, especially in non-emergency, routine care, and other services like psychological services that do not require direct patient and provider interaction (Fortney et al., 2007).

Like in many other sectors, telehealth has been expanded and received much attention during the COVID-19 pandemic (Hollander and Carr, 2020). For example, the National Institute of Health in the US will launch a virtual workshop to identify gaps in telehealth services with the aim of expanding telehealth nationwide. Meanwhile, mental telehealth service has been expanded to include vulnerable and rural populations (The White House, 2021).

However, telehealth's ability to improve patient and population health has predominantly been shown in high-income countries (Scott and Mars, 2015). Table 2 shows the current type of telehealth used in a selection of high-income countries to follow up or check up on COVID-19 patients at home.

Table 2 Type of Telehealth in high-income countries

Country	Type of Telehealth
Iran	Social media platforms including messaging software, WhatsApp, and email
UK	Live video conferencing, mobile, and laptops
USA	Applications including Apple FaceTime, Facebook Messenger video chat, Skype, and Mobile health technology
	Social media or other digital platforms including telephone, email and videoconferencing
	Electronic medical record, patient portal messaging, digital photography, video using a Health Insurance Portability and Accountability Act-compliant platform, website
Canada	Social media or other digital platforms including telephone, email and videoconferencing
Italy	Telephone, video, and laptops
Canada	Telephone, electronic medical record, patient portal messaging, digital photography, video using a Health Insurance Portability and Accountability Act-compliant platform, website
China	Combined mode of Massive Open Online Courses micro-video Live video conferencing and mobile

Adapted from Monaghesh & Hajizadeh, 2020

Several countries, particularly China, have utilized telehealth services and have received satisfactory outcomes in managing the number of COVID-19 cases to below 100 per day and the number of deaths to below 500 since March 2020 (Keshvardoost et al., 2020). Other countries have also started to use ICT to respond to the crisis; for example, some virtual health companies in the United States have launched platforms allowing providers and patients to communicate through secure video chat. With legal support from the government, virtual health companies can program telehealth using smartphones with audio and video capabilities to provide health services to remote areas in an unhindered manner (Augenstein, 2020).

The prevalence of telehealth technology is also rising in Southeast Asia. However, it is often in the form of a digital healthcare startup. In some countries, telehealth has become a lucrative business and reached a large number of people. In Indonesia, Halodoc digital healthcare startup has reached 20 million people (Loh, 2020). Singapore telehealth startup, Doctor Anywhere, raised US$27 million and is looking to expand to Malaysia and the Philippines (Loh, 2020). There are many reasons for the successful growth of telehealth in these contexts including a large market, high levels of digital literacy, government support, the quality of the telehealth service, and user trust, all of which are challenges for the Cambodian telehealth industry.

Telehealth in Cambodia

Telehealth is not yet widely known in Cambodia. A pilot study of telehealth was conducted in rural Cambodia in 2001, requiring nurses to travel to the target village monthly to deliver the telehealth service to the clients by transferring their information through email to the doctors (Brandling-Bennett et al., 2005). The study identified that all patients were either "satisfied" or "very satisfied" and most of them were willing to pay for the services (Brandling-Bennett et al., 2005).

Twenty years later, Meet Doctor, the country's first telehealth startup, was created driven by the challenge of access to healthcare for people in remote areas (Heng, 2021). Like other telehealth services in high-income countries, Meet Doctor provides medical consultations with a medical specialist through existing communication platforms. However, Meet Doctor has not yet reached many people even during the pandemic as there were only a few hundred clients seeking general consultations from this telehealth service while about a thousand people consulted with physicians around COVID-19 concerns through the application (Heng, 2020).

There are several factors explaining the difficulty in promoting telehealth in Cambodia. First, there are no guidelines and regulations for telehealth and the medical information systems protection used in hospitals and telehealth companies, which are very important to protect personal information online (Nit et al., 2021). Without guidelines, it is risky for companies to invest in telehealth. Patient privacy concerns will be a barrier for this technology to achieve public access to telehealth and reach a massive number of clients.

Besides lacking policy guidelines, the existing telehealth market is small as there is a huge gap in digital skills among the Cambodian population. Among those with tertiary education, only 32.4%

in Cambodia are using computers and the internet compared to 68.1% in Indonesia, and 89.7% in Thailand (Velde et al., 2020, p.22). Moreover, 79% of the total Cambodian population and 90% of Cambodians living in poverty live in rural areas (UNESCO, 2018). Low digital literacy and high poverty rate may raise doubts about the ability of the Cambodian population to possess a digital platform and access telehealth. The speed of mobile data causes another challenge to realize full telehealth's potential since only 50 per 100 inhabitants can access active mobile internet subscriptions (ITU, 2017).

Lacking government support in raising awareness and funding to establish telehealth technology in Cambodia also hinders its potential. Many developed countries have created a friendly policy environment related to telehealth, which builds a strong foundation for successful telehealth in those countries. As an example, the Ministry of Economy and the Ministry of Health in Japan had issued guidelines together stating clear guidelines about the handling of personal information and cloud storage (Nit et al., 2021). Consequently, telehealth is thriving in Japan with one telehealth company asserting 84 million of its users live in Japan while about 16,100 Japanese institutions offered medical services through the telehealth application (Kaneko & Nakagawa, 2020).

While telehealth is prevalent and recognized as routine monitor care in many high-income countries; in Cambodia, where the healthcare system is already overburdened, patients and medical providers are not yet accessing the advantages of telehealth.

Policy Solution

Prerequisite to achieve the proposed policy

The Cambodian health system would benefit greatly from a telehealth system that can respond to the specific health needs of each facility, which could reduce the provider's burden and increase patient's convenience. However, achieving this ideal vision demands technological advancement, supporting policy from the government, and digital literacy from users. To realize full-fledged telehealth in Cambodia, there are several barriers: legal, social, and clinical issues must be considered and the necessary policies put into place.

A telehealth initiative would have difficulty achieving nationwide acceptance unless it is initiated and supported by the government considering its responsibility for setting policy, ability to provide financial incentive, and influence in mobilizing relevant stakeholders in this industry. The government has a very pivotal role in promoting telehealth once it is rolled out to the population. Promotion and support from official government channels will give people confidence in using the telehealth system. The following policies are prerequisites to achieving telehealth in Cambodia:

Government-led telehealth initiative

- Establish relevant regulations and laws that allow Information and Communication Technology (ICT) to be integrated into the healthcare system. This would open an opportunity for telehealth investors abroad or existing health startups to expand their operations without any legal concerns. The government can initiate a national telehealth system or support existing telehealth initiatives in terms of technology and funding.
- Identify a specific focal institution, an inter-ministerial committee, or council to prepare and implement telehealth policy and put it into action. The inter-ministerial committee or council is responsible for coordinating policy and technical support related to health and ICT for any implementing agency.

Ensure that telehealth reaches people who need it, especially vulnerable groups

- All people should have access to digital infrastructure (such as smartphones) to ensure telehealth is accessible to all. Currently, not all people have a smartphone, especially people in rural areas. Making it possible to purchase a phone with monthly payments at very low cost for underserved populations, like poor people in both rural and urban areas, or people with an Identification of Poor Households (IDPoor) card,[1] should be a mechanism to increase telehealth access. This policy initiative should be accompanied by outreach programs and technical support in using new technology to access telehealth to ensure marginalized populations are not excluded (Dorsey and Topol, 2016).
- Identify a low-cost telehealth model that responds to levels of internet capability in the country as well as digital infrastructure (compatible with low-cost smartphones or other portable devices). The design of telehealth has to ensure that people in rural areas can use the service without internet barriers and digital device challenges. The proposed 5G network may provide a favorable environment for telehealth to roll out in rural areas.

Ensure healthcare quality and reduce risk provided by telehealth

- Telehealth focuses on providing medical consultation; its quality is limited due to the nature of remote care as there is no physical examination between physician and patient. Its use should focus on non-emergency service, following up on those who need regular care, and other services such as psychological consultation.
- Prescriptions for high-risk medication should not be provided by telehealth nor should care be given for serious symptoms as it requires a patient to have an initial visit with physicians (Dorsey and Topol, 2016). There should be a referral system within the telehealth application to an in-person consultation if the patient's symptoms are high risk or likely to develop into high risk. Moreover, home-visits from physicians should be activated to increase patient's convenience, especially for vulnerable groups, such as people with limited mobility and disabilities, and older people.

---

[1] Identification of Poor Households (IDPoor) mechanism is a social registry system to identify poor and vulnerable households, so they can access social, healthcare, and other services benefits (Doetinchem, n.d.).

Cooperate with in-country insurance providers to ensure that beneficiaries can access telehealth

- People covered by health insurance should be able to access telehealth and have the service charged by their insurance provider. There are three social health schemes: Health Equity Funds for the poor, Social Health Insurance for civil servants (NSSFC) and the private sector under NSSF (WHO, 2019). The fragmentation of health insurance is another barrier for telehealth to expand to all populations, as only approximately 4.7 million Cambodians are insured by a healthcare scheme (Kolesar, 2019). Universal Health Coverage has not been realized, posing a challenge for full national access to telehealth. However, telehealth could be designed to be inclusive to people who are not covered by health insurance. For example, they could register themselves, use the service, and pay for it through internet banking or cash.
- If the telehealth operates nationwide, there will be challenges related to data management because of the fragmentation among multiple health providers and due to the sheer number of patients. Therefore, an electronic medical record system should be used to store patient medical information in telehealth. The system should link to current national hospital management, like Patient Management and Registration System (PMRS)[2], as a single operator to enhance the electronic medical record management. This way, physicians at public health facilities can access the patient's electronic medical records when they have an in-person consultation.

Collaborate with non-state actors to achieve sustainable telehealth

- It is crucial that the design of telehealth should involve many actors, including the government, private sector, donors, international organizations, and others. In other countries, the telehealth system has typically been operated by private sector partners, as the private sector may have strong technological and management skills, fostering an innovative design of telehealth. Moreover, a public-private partnership could open an investment opportunity, contributing to telehealth's financial sustainability. With finance and skills flowing from the private sector, the government must provide the legal framework for the public-private partnership by establishing laws and guidelines for digital health or telehealth.
- Donors and international organizations could provide technical assistance and funding and work hand in hand with the government to monitor and evaluate telehealth compliance and other legal aspects to increase healthcare quality or to achieve further goals.

---

[2] Patient Management and Registration System (PMSR) is internet-based system used by public health facilities in Cambodia for managing patient records, particularly Health Equity Fund beneficiaries and partly expanding to record non HEF beneficiaries for referral hospitals (DPHI, 2016).

Establishment of guidelines and policies enabling a friendly environment for developers and increasing the number of users

-   Telehealth cannot maximize its impact and success without policies and guidelines related to telehealth. Moreover, the current policies do not provide specific or sufficient guidelines or regulations to developers. There should be policies that give telehealth providers clear guidelines and regulations, such as payment policy, payment rate, the definition of the type of care, etc., to ensure consistency and regulate all providers.
-   To achieve telehealth's full potential, patient privacy and data security must be ensured. Data encryption for only authorized users could protect patients' privacy. The data is very crucial as well as risky for patient privacy if it is not stored and managed properly. There should be one single operator or agency to oversee and enforce telehealth privacy and security regulations. With these regulations and guidelines in place, patients can be confident to use the telehealth service without privacy concerns.

Scope of the telehealth

During the pandemic, the current telehealth design aims to relieve the provider's burden and increase patient access but its efficiency and effectiveness are limited due to the limitation of current digitalization and technology. Current telehealth models partly reduce the provider's administration work and out-patient consultation, but not all provider's tasks. With existing technology, telehealth can help patients to eliminate the risk of communicable diseases, and receive regular care. However, providers face limitations in their work due to the need to provide consultation services through communication platforms. Telehealth can be improved when complemented by wearable and self-care equipment such as glucometers, blood pressure monitors, pulse oximeters, and digital stethoscopes (Scott and Mars, 2015). The current telehealth models are limited to consultations and mainly address non-emergency cases, which is very applicable and helpful to older people and other vulnerable groups. However, there should be further research on telehealth to maximize effectiveness based on an innovative design responding to people's needs. Moreover, more research studies in telehealth are needed to explore feasibility models to implement telehealth in Cambodia as there is currently very little data available.

Conclusion

The telehealth industry has been growing in high-income countries during the pandemic. These systems can improve access to health services for those who need regular care and follow-up while reducing the risk of transmission. In the long term, telehealth could be a partial solution to address the shortage of health workers and specialists in Cambodia and eliminate physical barriers to attain equity access at healthcare facilities. Building a telehealth system will need political will and government support, digital literacy among users, as well as digital infrastructure. It seems arduous for lower-income countries like Cambodia to achieve this now, but as the positive outcomes are potentially considerable, it is worth investing in telehealth. Telehealth should not only help to address the current problems posed by the pandemic, but it

also needs to go beyond COVID-19 to be part of the solution to long-standing health care challenges.

References

Annear, P. L., Grundy, J., Ir, P., Jacobs, B., Men, C., Nachtnebel, M., . . . Ros, C. E. (2015). The Kingdom of Cambodia Health System Review. *Health Systems in Transition*, *5*(2). https://apps.who.int/iris/handle/10665/208213

Augenstein, J. (2020). Opportunities to expand telehealth use amid the coronavirus pandemic. Health Affairs Blog. https://www.healthaffairs.org/do/10.1377/hblog20200315.319008/full/

Ben, S. (2020, May 4). *PM's mother-in-law passes away*. Retrieved from Khmer Times: https://www.khmertimeskh.com/719798/pms-mother-in-law-passes-away/

Brandling-Bennett, H. A., Kedar, I., Pallin, D. J., Jacques, G., Gumley, G. J., & Kvedar, J. C. (2005). Delivering Health Care in Rural Cambodia via Store-and-Forward Telemedicine: A Pilot Study. *Telemedicine and E-Health*, *11*(1), doi: 10.1089/tmj.2005.11.56.

CDC. (2021, August). *Reduced Access to Care.* Retrieved from Centers of Disease Control and Prevention: https://www.cdc.gov/nchs/covid19/rands/reduced-access-to-care.htm

Chang, T., Lee, J., & Wu, S. (2004). The Telemedicine and Teleconsultation System Application in Clinical Medicine. *The 26th Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, 3392-3395.

Czeisler, M., Marynak, K., Clarke, K. E., & Salah, Z. (2020). Delay or Avoidance of Medical Care Because of COVID-19–Related Concerns — United States, June 2020. *Morbidity and Mortality Weekly Report*, 1250-1257.

Department of Planning & Health Information (DPHI). (2016). *THE THIRD HEALTH STRATEGIC PLAN 2016-2020 (HSP3).* Ministry of Health. http://hismohcambodia.org/public/fileupload/carousel/HSP3-(2016-2020).pdf

Doetinchem, O. (n.d.). *Identification of poor households.* Retrieved from GIZ: https://www.giz.de/en/worldwide/17300.html

Dorsey, E. R., & Topol, E. J. (2016). State of Telehealth. *The New England Journal of Medicine*, *375*(2), 154-161. doi: 10.1056/NEJMra1601705.

DPHI. (2018). *Patient Management and Registration System*. Retrieved from Department of Planning and Health Information Cambodia: https://pmrscambodia.org/about

Fortney, J. C., Pyne, J. M., Edlund, M. J., Williams, D. K., Robinson, D. E., Mittal, D., & Henderson, K. L. (2007). A Randomized Trial of Telemedicine-based Collaborative Care

for Depression. *Journal of General Internal Medicine*, *22*(8), 1086-1093. doi: 10.1007/s11606-007-0201-9

Hale, T. M., & Kvedar, J. C. (2014). Privacy and Security Concerns in Telehealth. *Health Affairs (Millwood)*, *33*(2), 216-221. doi: 10.1001/virtualmentor.2014.16.12.jdsc1-1412.

Heng, S. (Host). (2020, March 19). [Audio podcast]. Dr. Nith Buntong Yi launched Cambodia's first digital health consulting service. Retrieved from RFI: https://www.rfi.fr/km/%E1%9E%80%E1%9E%98%E1%9F%92%E1%9E%98%E1%9E%9C%E1%9E%B7%E1%9E%92%E1%9E%B8%E1%9E%95%E1%9F%92%E1%9E%9F%E1%9F%81%E1%9E%84%E1%9E%91%E1%9F%80%E1%9E%8F/%E1%9E%94%E1%9E%91%E1%9E%99%E1%9E%80%E1%9E%80%E1%9E%B6%E1%9E%9A%E1%9E%8E%E1%9F%8D/20210319-%E1%9E%80%E1%9E%98%E1%9F%92%E1%9E%96%E1%9E%BB%E1%9E%87%E1%9E%B6-%E1%9E%9F%E1%9E%84%E1%9F%92%E1%9E%82%E1%9E%98-%E1%9E%A2%E1%9E%94%E1%9F%8B%E1%9E%9A%E1%9F%86-%E1%9E%9F%E1%9E%BB%E1%9E%81%E1%9E%97%E1%9E%B6%E1%9E%96-%E1%9E%87%E1%9E%B8%E1%9E%9C%E1%9E%B7%E1%9E%8F%E1%9E%AF%E1%9E%80%E1%9E%87%E1%9E%93

Heskett, J. (2001). Past, Present, and Future in Design for Industry. *Design Issues*, *17*(1), 18-26. https://doi.org/10.1162/07479360152103804

Hollander, J. E., & Carr, B. G. (2020). Virtually Perfect? Telemedicine for Covid-19. *The New England Journal of Medicine*, *382,* 1679-1681. doi: 10.1056/NEJMp2003539

Huzar, T. (2020, November 20). Study investigates non-COVID-19 deaths during the pandemic. *Medical News Today*: https://www.medicalnewstoday.com/articles/study-investigates-non-covid-19-deaths-during-the-pandemic

ITU. (2017). *ITU*. Retrieved from ICT Development Index 2017: https://www.itu.int/net4/ITU-D/idi/2017/index.html#idi2017economycard-tab&KHM

Jacobs, B., Price, N. L., & Oeun, S. (2007). Do exemptions from user fees mean free access to health services? A case study from a rural Cambodian hospital. *Tropical Medicine and International Health*, *12*(11), 1391-401. doi: 10.1111/j.1365-3156.2007.01926.x.

Jacobs, B., Ir, P., Bigdeli, M., Annear, P. L., & Damme, W. V. (2012). Addressing access barriers to health services: an analytical framework for selecting appropriate interventions in low-income Asian countries. *Health Policy and Planning*, *27*(4), 288-300. doi: 10.1093/heapol/czr038

Jacobson, S., & Jokela, J. (2020). Non–COVID-19 excess deaths by age and gender in the United States during the first three months of the COVID-19 pandemic. *Public Health*, *189* 101-103. doi: 10.1016/j.puhe.2020.10.004

Jercich, K. (2021, August 05). *Healthcare data breaches on the rise.* Healthcare IT News. Retrieved from: https://www.healthcareitnews.com/news/healthcare-data-breaches-rise

Kaneko, K., & Nakagawa, I. (2020, July). With apps and remote medicine, Japan offers glimpse of doctor visits in post-corona era. *Reuters*, https://www.reuters.com/article/us-health-coronavirus-japan-telehealth-idINKBN24A01K

Keshvardoost, S., Bahaadinbeigy, K., & Fatehi, F. (2020). Role of Telehealth in the Management of COVID-19: Lessons Learned from Previous SARS, MERS, and Ebola Outbreaks. *Telemedicine And E-Health*, *26*(7), 850-852. doi: 10.1089/tmj.2020.0105

Kleinitz, P., Nimul, O., Walji, F., Mannava, P., & Vichetra, K. (2012). Barriers to and Facilitators of Health Services for People with Disabilities in Cambodia. *Health Policy & Health Finance Knowledge Hub*. https://niph.org.kh/niph/uploads/library/pdf/OT015_nossal_on_access_care_disabled_cambodia.pdf

Khmer Times. (2021, June 1). *Senior Minister, His Excellency Tram Iv Tek, passes away*. *Khmer Times*. https://www.khmertimeskh.com/50866227/senior-minister-his-excellency-tram-iv-tek-passes-away/

Kolesar, R. (2019). *Comparing Social Health Protection Schemes in Cambodia.* Washington, DC: Health Policy Plus.

Kruse, C. S., Karem, P., Shifflett, K., Vegi, L., Ravi, K., & Brooks, M. (2018). Evaluating barriers to adopting Telemedicine worldwide: A systematic review. *Journal of Telemedicine and Telecare*, *24*(1), 4-12. doi: 10.1177/1357633X16674087.

Loh, D. (2020, December). Telehealth services rush to relieve ASEAN hospitals' COVID burden. *Nikkei Asia*,https://asia.nikkei.com/Spotlight/Coronavirus/Telehealth-services-rush-to-relieve-ASEAN-hospitals-COVID-burden

Marady, H., & Huaifu, X. (2017). Why people prefer seeking care from one country to other countries: a case study from Cambodia. *MOJ Public Health*, *6*(4), 373–376. doi: 10.15406/mojph.2017.06.00178

Monaghesh, E., & Hajizadeh, A. (2020). The role of telehealth during COVID-19 outbreak: a systematic review based on current evidence. *BMC Public Health*, *1193*(2020). https://doi.org/10.1186/s12889-020-09301-4

Nit, B., Kobashi, Y., Vory, S., Lim, S., Chea, S., Ito, S., & Tsubokura, M. (2021). The introduction of telemedicine is required immediately in Cambodia: Barriers and lessons from COVID-19. *Journal of Global Health, 11,* 03047. doi: 10.7189/jogh.11.03047

Papadimos, T. J., Marcolini, E. G., Hadian, M., Hardart, G. E., Ward, N., Levy, M. M., . . . Davidson, J. E. (2018). Ethics of Outbreaks Position Statement. Part 2: Family-Centered Care. Critical Care Medicine, 46(11), 1856-1860. doi: 10.1097/CCM.0000000000003363

Rinith, T. (2021, January 15). Prince Norodom Yuvaneath succumbs to illness. Retrieved from Khmer Times: https://www.khmertimeskh.com/50804135/prince-norodom-yuvaneath-succumbs-to-illness/

Scott, R. E., & Mars, M. (2015). Telehealth in the developing world: current status and future prospects. *Smart Homecare Technology and TeleHealth*, *2015*(3), 25-37. doi:10.2147/SHTT.S75184

Smith, A. C., Thomas, E., Snoswell, C. L., Haydon, H., Mehrotra, A., Clemensen, J., & Caffery, L. J. (2020). Telehealth for global emergencies: Implications for coronavirus disease 2019 (COVID-19). *Journal of Telemedicine and Telecare*, 26 (5), 309-313. doi: 10.1177/1357633X20916567.

Srivastava, A., Do, J.-M., Sales, V. L., Ly, S., & Joseph, J. (2018). Impact of patient-centred home telehealth programme on outcomes in heart failure. *Journal of Telemedicine and Telecare, 25*(7), 425-430. doi: 10.1177/1357633X18775852.

The White House. (2021, August 13). *Fact Sheet: Biden Administration Takes Steps to Address COVID-19 in Rural America and Build Rural Health Back Better*. Retrieved from The White House: https://www.whitehouse.gov/briefing-room/statements-releases/2021/08/13/fact-sheet-biden-administration-takes-steps-to-address-covid-19-in-rural-america-and-build-rural-health-back-better/

UNESCO. (2018). *Overview of Internal Migration in Cambodia.* Bangkok: UNESCO. Retrieved from: https://bangkok.unesco.org/sites/default/files/assets/article/Social%20and%20Human%20Sciences/publications/Brief%202%20-%20Country%20Brief%20-%20Cambodia.pdf

Velde, D. W., Chandarany, O., Hokkheang, H., Monyoudom, Y., Kelsall, T., Lemma, A., . . . Evans., J. (2020). *Fostering an inclusive digital transformation in Cambodia.* Supporting Economic Transformation. Retrieved from: https://set.odi.org/wp-content/uploads/2020/06/Fostering-an-Inclusive-Digitalisation-Transformation-in-Cambodia-Final.pdf

WHO. (2010). *Telemedicine: Opportunities and Developments in Member States: report on the second global survey on Ehealth.* Geneva: World Health Organization. https://apps.who.int/iris/bitstream/handle/10665/44497/9789241564144_eng.pdf?sequence=1&isAllowed=y

WHO. (2019). *Cambodia National Health Accounts (2012-2016).* Manila: World Health
    Organization.
    https://iris.wpro.who.int/bitstream/handle/10665.1/14362/9789290618690-eng.pdf

World Bank. (2014). *Where Have All The Poor Gone? Cambodia Poverty Assessment 2013.*
    Washington, D.C.: World Bank.
    https://openknowledge.worldbank.org/bitstream/handle/10986/17546/ACS45450REV
    ISE00English0260May02014.pdf?sequence=5&isAllowed=y

Chapter 13 | A Feasible Action Plan for Phnom Penh's Food Waste

Ty Keithya OUNG

Future Scenario

Several years into a radical reform of the government's food waste management policies and programs, the city of Phnom Penh enjoys a new norm of sustainability in managing its organic and food waste. For the general public, managing organic waste has become a habit rather than an obligation. For the food service industry efficiency is prioritized, limiting food waste through investing in technology and creativity, such as mobile apps that link producers with oversupply to consumers looking for food. Food waste is being sustainably managed and collected by a qualified private agency with frequent oversight by the city government for safety and quality control. The collected food waste becomes a useful commodity for Cambodia's agricultural sector in the form of compost to use as natural fertilizer.

The separation of waste has become mandatory in Phnom Penh. For residents and businesses, each unit is required to have three bins: a trash bin for general non-recyclable waste, a recycling bin for all the recyclable waste, and a compost bin for organic, food, and waste from the kitchen. The waste collection service imposes fees based on the volume of waste; the rate for trash collection is much higher than for recycling and composting bins. This differentiated rate structure proves to be effective in changing behaviors, incentivizing people to do more recycling and composting. Fines and penalties are also put in place for residents and businesses who fail to properly segregate their waste.

Waste collection service remains a public-private partnership. However, the assessment on the performance of the companies in charge has been rigorously monitored by an independent auditing body in order to assure the quality of the service provided. Likewise, recycling and composting has been commercialized into large-scale operations. The same company who is in charge of waste collection also manages recycling and composting duties through processing the collected waste at separating centers. This sole management not only provides a sense of full ownership and accountability but also limits unnecessary administrative and transactional fees and processes, hence proving to be efficient and effective. However, the assessment of the entire process is meticulous and the contract can be revoked through any breach or failure to provide quality services.

The emergence of recycling and composting centers creates thousands of jobs mainly at the outskirts of the city, where these centers are located. These jobs provide opportunities for both skilled and unskilled labor to cover both technical and labor-intensive aspects of recycling and composting. Composting becomes a major success story for the country's agriculture sector as the natural fertilizer is demonstrated to be healthier for soil and propels the growth of organic produce throughout the country.

For food service industries such as restaurants and groceries stores, technology and creativity have created opportunities for many start-ups to help businesses to solve their issues with waste such as limiting overproduction as well as leftover and unsold food. For instance, one start-up has created a mobile app to connect stores with excess food to consumers looking for unsold food or food that is beyond the best-before date at discounted prices. Most restaurants are connected to a food app that notifies consumers when restaurants offer meal discounts an hour before closing instead of turning their leftovers into food waste. Another app connects food donors to charities for a minimal fee. Community and charity organizations have established food banks offering free food for the homeless and those who are in need of food with donations of leftover or unsold food from the food service industry.

Through these policies and programs, Phnom Penh has annually diverted more than 50% of its waste into recyclable products and compost and most importantly, cut down on a dramatic amount of waste previously going into landfill and incineration. The immense reduction in food waste in Phnom Penh has set an example for other cities, municipalities and provinces in Cambodia to adopt and implement similar policies. This snowball effect of sustainable waste management has grown into a nationwide achievement, helping Cambodia to meet its target of reducing its greenhouse gas emissions in line with the Paris Agreement. Achieving high efficiency in food usage and management, Cambodia has managed to save an extensive amount of energy lost through food waste and hundreds of thousands of tons worth of carbon dioxide previously emitted into the atmosphere. This has become Cambodia's success story, making the country an unpredicted champion of sustainability and attracting more sustainable investment for its economy. In addition, this has gained Cambodia regional recognition, inspiring fellow developing countries to replicate this model.

Introduction

Food waste is a global issue. According to a report by the UN Food and Agriculture Organization (FAO) in 2011, 1.3 billion tons of food are wasted each year; equivalent to one-third of world food production (Gustavsson et al., 2011, p.56). At the same time, more than 820 million people do not have enough to eat (FAO, 2019). Food losses and waste from households and retail, catering and manufacturing industries amounts to roughly US$ 680 billion in industrialized countries and US$ 310 billion in developing countries, for a total of around US$ 1 trillion lost (Fox and Fimeche, 2013; Gustavsson et al., 2011). In addition to these social and economic losses, food waste plays a tremendous role in contributing to the effects of climate change. Food production is responsible for 26% of global greenhouse gas emissions, through supply chain (18%), livestock and fisheries (31%), crop production (27%), land use (24%) (Poore and Nemecek, 2018, pp.987-992). Furthermore, food losses and waste accounts for 6% of total global emissions. Food waste is sent to landfills, where it degrades in anaerobic conditions to release methane as a potent greenhouse gas (Ghani et al., 2013). Landfilled food waste can produce methane gas that results in 21 times greater impact on global warming than carbon dioxide (EPA, 2021).

These global indicators are reflected at the national level in Cambodia. In developing countries like Cambodia, landfill is the most common waste-management strategy due to its simple application, cost effectiveness, and accommodation of varied types of waste and available land.

However, landfill operations are neither sanitary nor environmentally safe as they are done with no or irregular soil cover, no leachate treatment facility, no landfill gas-capturing facility, and hundreds of waste scavengers on the sites (World Bank, 2004; Talyan et al., 2008; Zhen-shan et al., 2009; Manaf et al., 2009). Organic waste is the main cause of public health risk and environmental impact through transmission of diseases, emission of greenhouse gases, soil pollution, and contamination of surface and groundwater (Seng et al., 2013, p.216).

This paper will provide an overview of the issue of food losses and food/organic waste in the city of Phnom Penh and propose a set of focused, actionable plans to tackle this issue. First, the paper will briefly present the overview of the current practices of municipal solid waste management in the city. Second, success stories in managing food will be presented along with an introduction to existing policy recommendations on this issue. Third, the research will examine and underline key limitations in the current management of food waste in Phnom Penh and its associated policy framework. Finally, the author will present policy solutions with key action plans to reduce food waste while improving the current management of food losses and waste in the city of Phnom Penh.

Context Analysis

Waste Management in Phnom Penh

Phnom Penh, the capital city of Cambodia, has seen rapid economic growth and urbanization. This growth has resulted in a change in lifestyle of the urban population, mainly an increase in consumption, which in turn has given rise to a rapid increase in waste generation. With regards to waste composition in Phnom Penh, kitchen waste makes up the largest portion at 51.9% (See Figure 1) (Seng, 2015). Categorized by sources (see Figure 2), municipal solid waste in Phnom Penh is generated by: household (55%), hotels/guesthouses (17%), restaurants (14%), markets (8%), shops (5%), offices (1%) (Seng, 2015). In terms of volume, Phnom Penh generates around 4.09 million t/year with a per-capita rate of 0.73 kg/day (EuroCham Cambodia, 2019, p.1).
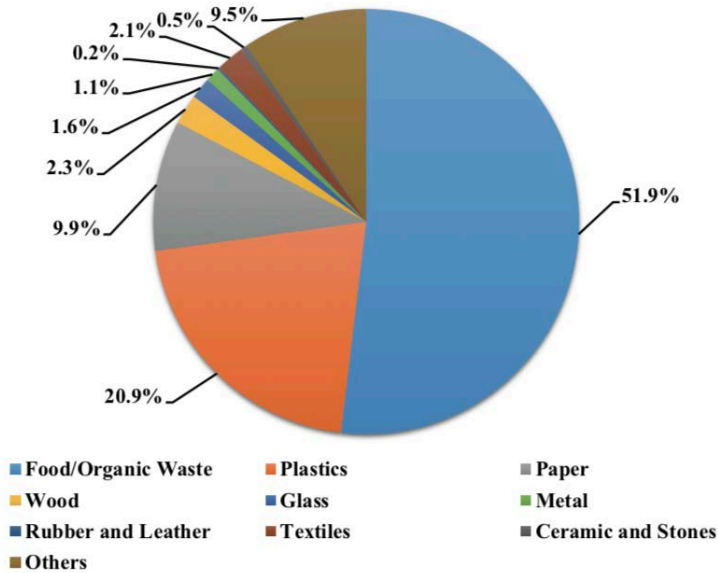
Figure 1. Waste Composition in Phnom Penh
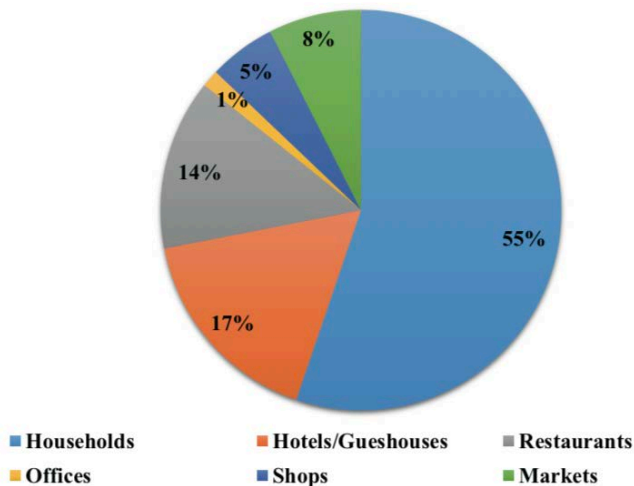**Source: Seng, 2015**

Figure 2. Municipal Solid Waste in Phnom Penh by source
Source: Seng, 2015

Until 1994, Phnom Penh's municipal solid waste management (MSWM) was the responsibility of the Department of Public Works and Transport of the Municipality of Phnom Penh (MPP) (Seng et al., 2011). However, due to the city's rapid population growth and subsequent growth of waste generated, MPP outsourced its MSWM to private contractors. CINTRI Co., Ltd. has been responsible for waste management in the capital since 2002, with an exclusive agreement for a term of 49 years, giving the operator major responsibilities to provide garbage collection services

(Singh et al., 2020, p.9). In 2019, the license of Cintri was been revoked by the government due to series of public complaints regarding its poor collection service (Nhim, 2019; Tran et al., 2020; Hutt, 2020). Three companies: GAEA Public Limited, Mizuda Group Co, Ltd. and CINTRI (Cambodia/Everbright (China) have now been granted rights to collect and transport garbage in Phnom Penh. The three will share and divide their duties among 14 districts in the city and have commenced their operations since July 2021 (Chea, 2021).

Landfill is the leading waste disposal option of MPP. Phnom Penh relies almost entirely on the Dangkor landfill site for the final treatment and disposal of MSW generated within the jurisdiction (Phnom Penh Capital Administration (PPCA) et al., 2018, p.19). The landfill, developed with the assistance of Japan International Cooperation Agency (JICA), started operating in July 2009 following the closure of its predecessor, Stueng Mean Chey landfill site, which had reached capacity (PPCA et al., 2018, p.19). However, landfills have many negative impacts such as gas emissions consisting mainly of nitrous oxide (N_2O) which has a global-warming potential 310 times higher than CO_2, and lasts in the atmosphere for around 120 years (IPCC, 1995). It is also important to mention the social impacts associated with landfill sites. Typically, there are communities of waste pickers and scavengers residing at the landfill operations. At the Stueng Mean Chey landfill site, there were about 2000 workers including 600 children, sifting through 700 tons of garbage a day (Bryne, 2009). These waste scavengers face high rates of serious diseases such hepatitis, tuberculosis and even HIV/AIDS due to possible wounds from sharp-edged metals and broken glass (Bryne, 2009).

The majority of the city's waste is dumped in the landfill and the small fraction that is recycled is done by 3,000 informal waste collectors roaming the streets of Phnom Penh gathering recyclable materials (EuroCham Cambodia, 2019). There is limited data on recycling in Cambodia because a large quantity of collected waste is being transported to Thailand and Vietnam due to the lack of domestic recycling infrastructure and facilities (EuroCham Cambodia, 2019). In 2003, the total volume of waste recycled was found to be about 9.3% of the total waste generated, of which 40.3% and 20.9% was paper and metals respectively, whereas only 1.6% (around 0.15% of the total waste generated) was food waste (JICA, 2005). The very low levels of recycling of food waste is probably due to the low-cost recovery of end products, landfill availability, difficulty of waste separation, and/or scarcity of technology and human resources (Seng et al., 2011).

Key Challenges for Waste Management in Phnom Penh
Numerous studies have addressed weaknesses of the current waste management policies in Phnom Penh. According to these studies, there are multiple factors that contribute to the poor status of solid waste management in Phnom Penh including:
- Residents' limited general awareness and understanding,
- Poor waste separation at source as a major obstacle to promote effective waste reduction and recycling activities
- Gaps in the technical and managerial capacity of competent authorities, including in areas such as construction, waste treatment, and operation and management of landfills
- Limited available data and inconsistencies in the data related to illegal dumping, total recycled waste volumes, number of recyclers and recycling operations

(Singh et al., 2020, p.27)

Singh et al. (2020) also point out the lack of capacity and insufficient funding as reasons for the city's poor MSWM. There is also a disparity in waste collection service in the city. While more developed inner khans (districts) in Phnom Penh have almost complete coverage of waste collection, the outer khans with significantly fewer and poorer roads suffer much poorer collection rates (PPCA et al., 2018). A 2019 annual report by Sahmakum Teang Tnaut (STT) on waste management in Phnom Phnom revealed that 99 (35.7%) of 277 urban poor communities still receive no waste management, compared to their wealthier neighbors receiving doorstep waste collection (STT, 2019, p.1). Such communities also tend to be unable to advocate on their own behalf with regards to capacity to pay or in requesting better services or infrastructure (PPCA et al., 2018).

Other reports indicated that employees of the contractor hired by the city authority are often poorly skilled and lack social safeguards further contributing to the city's poor waste management. The company in charge of waste management in Phnom Penh, Cintri (Cambodia) Co., Ltd. has been criticized on numerous occasions for its poor service and the poor working conditions of its employees (Nhim, 2019; Tran et al., 2020; Hutt, 2020). For example, employees were only given a green company shirt and not supplied with any safety materials, such as protective work clothing to adequately mitigate the risks of a dangerous workplace (STT, 2019, p.16). Since 2015, 14 Cintri workers have been killed because of job-related accidents while 380 incidents of injury have been reported since 2016 (STT, 2019).

Prime Minister Hun Sen has publicly announced that Cintri's contract would be revoked and waste management would temporarily be put under state control by dividing the trash collection in the city into four zones and handing over responsibility to four separate companies (Nhim, 2019; Hutt, 2020). Bunrith Seng, a former operations specialist for Cintri said that the issue with poor waste management service was caused by only having one licensed firm – Cintri – allowed to operate (Spiess, 2017). He believed that the waste management sector should be opened up to private sector competition. Seng also stated that the lack of laws and proper guidelines regarding waste management services was an issue, and he would like to see Phnom Penh City Hall become more active in streamlining the process (Spiess, 2017).

Models of Food Waste Management

The Waste Management Hierarchy (see Figure 3) shows the guiding principles for dealing with the issue of food waste is to first aim for reduction (minimization), followed by re-use, recycling and energy recovery and to avoid if at all possible uncontrolled disposal in landfill. Uncontrolled disposal such as landfill is the least favored option because of its negative impacts on health for the residing communities there and the environment in general (PPCA et al., 2018).
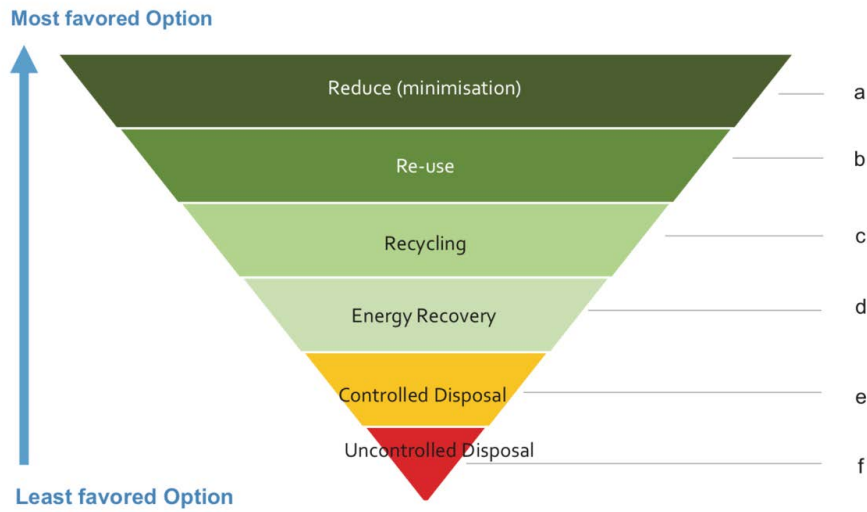
Figure 3. Waste Management Hierarchy
Source: PPCA et al., 2018

In dealing with food waste, many countries' main aim is to divert biodegradable waste (food and organic waste) out of landfills. For example, the European Union's waste minimization strategy includes: waste prevention (more efficient production technologies), internal recycling of production waste, source-oriented improvement of waste quality; and reuse of products or parts of products, for the same purpose (Pap et al., 2004). Meanwhile, the US Department of Agriculture announced a collaborative effort called the US Food Waste Challenge to raise awareness of the environmental, health, and nutrition issues created by food waste (USDA, 2013). The Challenge urges participants to: "Reduce" for food loss and waste, "Recover" wholesome food for human consumption, and "Recycle" for other uses, including animal feed, composting, and energy generation (USDA, 2013).

Composting and Waste Separation
The importance of composting, waste separation, and food utilization is commonly understood by those promoting better MSWM in Phnom Penh. A 2014 study on commercial solid waste generation and composition in Phnom Penh proposed methods for treating commercial solid waste in the city such as separation of food waste for animal feed, composting, and bio-digestion (Mongtoeun et al., 2014). The study also noted "composting of recyclable food waste might be the most appropriate option among others for SWM in Phnom Penh since it is low cost and simple" (p.54). The environmental benefits of composting include: improving soil health and structure, and reducing the consumption of fertilizer and pesticides, and reduction of greenhouse gas (GHG) emission (Mongtoeun et al., 2014).

The separation of plastics helps to enhance both composting and recycling rates, as such source separation between plastic and organic waste is strongly recommended. Organic waste can be used as a resource for composting; plastic waste can be used for refuse derived fuel production or direct incineration for energy recovery; and unburnable waste is disposed of in landfill (Seng et al., 2012). Furthermore, composting or organic waste recycling provides both direct and

indirect advantages compared to landfill as it can minimize health risks and environmental impacts, increase job opportunities for local communities, extend landfill life, produce compost products and most importantly minimize GHG emission (Seng et al., 2012).

These findings clearly demonstrate the benefits of composting in treating food waste through its low-cost application and utility benefits as fertilizers. In the meantime, waste separation will be a compulsory and complementary step to achieve effective composting. Therefore, composting and waste separation should be a priority for any strategy addressing food waste in Phnom Penh.

Food Waste Innovations

With regards to solutions to food waste, there are plenty of innovative ideas being implemented in other cities that Phnom Penh can seek inspiration from. Studies show that innovation and technology can contribute to the reduction of food waste (Gould, 2013). For instance, the smartphone application "Too Good To Go" has been developed to help consumers buy prepared meals from restaurants at significantly lower prices at the end of the day, thus reducing waste and waste disposal costs, and increasing sales at the same time (Kilibarda et al., 2019). According to their data, "Too Good To Go" is currently used in 14 European countries, numbering more than 26 million meals sold which is equivalent to 66,000,000 kg of CO_2 emissions prevented — about the same as taking 11,000 cars off the road for a year (Filimonau and De Coteau, 2019). This is one of the many examples showing that business opportunities can be generated alongside solutions to food waste through the use of innovation and technology. Likewise, there is a great potential for local apps and IT developers to explore these innovative ideas in Phnom Penh.

With the complex challenges of poor solid waste management particularly with respect to the working relations with its private contractors, MPP can learn a lot from the case of San Francisco. In 2002, San Francisco set a goal of 75% diversion by 2010 and in 2003 Zero Waste by 2020. The city implemented the first and largest urban food scraps composting collection program in the U.S., covering both commercial and residential sectors. In 2012, San Francisco had a nearly 80% diversion rate - the highest rate of any major U.S. city. San Francisco's success is attributed to a unique and strong partnership between the city and Recology Inc. to collaborate where the city provides oversight, research and outreach and the service provider, Recology Inc., develops infrastructure, provides collection, processing and reporting (EPA, 2020). To ensure success, San Francisco and Recology senior program managers maintain regular weekly communication to oversee performance, review tasks and resolve any outstanding issues. This exclusive partnership between the two allows San Francisco and Recology Inc. to successfully implement innovative policy initiatives such as:
- Ordinances requiring mandatory recycling and composting
- Plastic bag ban and checkout bag charge
- Compostable or recyclable food service ware and polystyrene foam ban,
- Cigarette butt fee
- Technological outreach program covering residences, commercial establishments, schools and events

There are also incentives to food service providers and generators for reducing waste. For instance, businesses will receive a rate discount based on actual diversion, which provides a strong financial incentive to reduce waste, recycle and compost (EPA, 2020).

Policy Recommendations

This paper aims to provide actionable policy solutions to reduce the amount of food waste and to address key limitations of the existing plans to manage solid waste in Phnom Penh.

The paper proposes 5 key actions to tackle the issue of food waste in Phnom Penh:
> Action 1: Enhancing quality of waste collection service through reforming Public Private Partnership between Municipality of Phnom Penh and the Service Provider
> Action 2: Imposing mandatory waste separation duties for all residents and businesses
> Action 3: Commercializing recycling and composting
> Action 4: Promoting technological and innovative ideas in dealing with food waste
> Action 5: Promoting public awareness and engagement on the issue of food waste

Actions for Tackling Food Waste in Phnom Penh:

1. Enhancing quality of waste collection service through reforming Public Private Partnership (PPP) between the Municipality of Phnom Penh and the Service Provider

The initial step toward improving the issue of food waste in the city is to enhance the quality of the service provider responsible for waste collection. The main service provider, Cintri Co. Ltd, has faced accusations of poor service provision and performance due to the lack of strict operational standards and technical capacity in their service provision (Nhim, 2019; Tran et al., 2020; Hutt, 2020). The Municipality of Phnom Penh should transform the waste collection industry by making a drastic reform in the Public Private Partnership in order to identify a competent service provider with technical capability and an adequate workforce.

1.1 Make PPP of MSW collection exclusive to one service provider to achieve better governance and accountability

A narrower governing structure is required to improve the ownership, leadership and accountability of the duties of waste management in the city. In the Public Private Partnership for Municipal Solid Waste Management, there should only be two parties: MPP and the service provider. MPP takes the leadership role, providing technical and performance oversight and outreach to the service provider, while the service provider implements the framework, provides collection service, processing and reporting to MPP. This exclusive ownership of the service can promote effective implementation as it limits unnecessary transactional fees and administrative processes; this has been a key contributor to San Francisco's successful Zero Waste Initiative with Recology Inc. (EPA, 2020). In addition, this type of PPP can be easily assessed and audited to ensure quality service and performance, leading to better accountability.

1.2 Setting proper standard operating procedures and strict assessments for the service provider

In order to ensure the service providers are qualified, equipped with technical capacity and an adequate workforce, MPP shall initiate a reform of the PPP by setting up standard operating procedures and strict assessments for the service provider. The standard operating procedures should outline the entire process of waste collection and disposal service provision with detailed information on technical, machinery, logistical, and safety requirements, labor capacity, procedure of handling different types of wastes, collection methods, with guiding principles of

hygiene and sustainability. The standard operating procedures for waste collection will also be used as an assessment tool to evaluate performance. The assessment should be done by an independent auditor in a regular and timely manner and also include clauses for revocation of the deal in the event that the service provider fails to deliver on fundamental parts of the contract or causes any potential environmental hazards to the public.

1.3 Create an open and competitive selection process for the service provider

MPP should establish an open and fair bidding competition for the selection process of the service provider for SWM. The selection process shall require submissions and review of documents including: working framework, sustainability plan, labor and technical capacity and capability of interested companies. This competitive selection process will enable MPP to hire a qualified company with the right technical capacity and adequate workforce to handle the job.

2. Imposing mandatory waste separation duties for all residents and businesses

2.1 Distributing color-coded and labeled bins for waste separation to households and businesses

According to most studies on food waste management, recycling and composting cannot be made possible without proper waste separation. MPP should impose a mandatory waste separation duty on all residents and businesses in the city. This would require all residents and businesses to separate their waste into 3 categories:

- Recyclables (Blue bin) – for recyclable waste such as bottles, cans, glasses, and other products.
- Compostable (Green bin) – for food waste, food scraps from kitchen, paper and plants
- Trash (Black bin) – for non-recyclable or compostable waste

A citywide education and outreach campaign must be carried out by MPP and the service provider to ensure public know-how and adherence to the proposed law (see Action 5).

2.2 Fees for Service Provided and Fines for Non-Compliance

MPP and the service provider should conduct public engagement involving citizens from different khans, districts, and communes to determine the rate setting for collection fees. The fees shall be determined by the volume of waste. MPP should also utilize a differentiated rate structure by imposing higher fees for trash bins than recycling and composting bins in order to incentivize people to do more recycling and composting. Fines in the form of monthly fees attached with the waste collection bill will be given in cases of non-compliance such as failure to separate waste or improper separation by waste type.

3. Commercializing recycling and composting

Industry-level recycling and composting facilities can be an important contributing factor for achieving a high diversion rate of waste from landfill. Establishing an industry for recycling and composting requires strong government support and private investment to commercialize the waste industry. The emergence of this industry can create job opportunities, in particular it can offer a safer alternative for the communities who are residing and benefiting from scavenging at the disposal sites and landfills. The profitability from commercialization of recycling and composting should be highlighted with possible revenue streams from energy recovery,

production of new products from waste recycling, and turning food and organic waste into revenue from natural fertilizer sales.

3.1 Promoting Investment in Recycling and Composting

The government should create the conditions to welcome either local and/or foreign investors in the waste management industry. The government can incentivize recycling and composting by easing legal and administrative paperwork and by providing tax benefits and credits through eliminating tax barriers. Profits from both recycling waste into new products and making natural compost will be revenue for the operator or the investor. However, a standard operating procedure should be strictly imposed, maintained, and monitored for recycling and composting facilities to minimize GHG emissions and other environmental impacts.

Ideally, a waste industrialization cycle from collecting, processing, sorting, recycling, and composting should be executed by one service provider in order to secure ownership and to enhance efficiency and accountability. Therefore, during the bidding and selection process, MPP should also prioritize candidates with recycling and composting capabilities and facilities.

4. Promoting technology and innovative ideas in dealing with food waste

To incorporate technology and innovative solutions into the issue of food waste, the government should initially organize business forums with industries in food service, hospitality, and other sectors to foster innovative changes in their approaches to waste management. The forum would create an open dialogue with the private sector to raise awareness of the issue of food waste and to encourage innovation into the issue of waste management. Possible initiatives for MPP include:

4.1 Introducing economic incentives for businesses and communities to develop solutions to their food waste:

The government can consider adopting positive and negative economic incentives to encourage businesses to prevent and reduce food waste. Positive incentives encourage certain actions by promising a reward, while negative incentives seek to motivate actions by threatening a punishment (Aramyan et al., 2016). For instance, positive incentives are grants or subsidies for food waste reduction technologies, or tax incentives for food waste donations. An example of a negative incentive would be placing a tax on wasted food.

Introducing negative incentives such as taxes on food waste would be difficult for a developing country like Cambodia. Therefore, the government should explore the possibility of adopting positive incentives. The government collaborate with international organizations, especially aid agencies, to provide subsidies in the form of technological and financial support to businesses whose operations try to reduce, reuse, or recycle food waste. The subsidies should also target communities and residents whose livelihood includes sustainable practices such as composting and recycling. In addition, the government can introduce tax incentives such as VAT exemption for restaurants that offer food donations. These incentives will stimulate voluntary actions from businesses and communities to work toward reducing food waste.

*4.2   **Promoting start-up competitions and businesses with a focus on food waste reduction***
Many food-related start-ups are created on the basic principle that what is considered waste for one may become a resource for another (Perey et al., 2018). Start-ups and business competitions can be initiated by the government, private corporations, or a collaboration between the two. The government can take the initiative by providing incentives to private corporations (see section 4.1) who organize and support start-up competitions. These competitions will function as creative platforms and give a financial boost to new business start-ups who provide solutions to the issue of food waste in the city.

There are many examples of great innovations established through start-ups. For instance, Flashfood is a Canadian startup that developed the Flashfood smartphone application to connect customers with surplus food at grocery stores. The Flashfood app allows buyers to recover costs and significantly reduce their carbon footprint by selling products that have reached their best before dates. The consumers are also able to buy food items such as produce, meat, and prepared meals at discounted prices. This startup diverts potential food waste by redistributing it to customers looking for more sustainable options (Startus Insights, 2021). The "Good For Food" device, built by a Singaporean startup, helps reduce food waste by equipping dustbins with camera technology using artificial intelligence (AI) to identify each dish going into the bin while measuring its weight through a weighing scale. Through this dustbin technology, restaurants will know what food they are throwing out, so they can modify the portions of each of their dishes for their next serving. The device has helped restaurants reduce food waste by 30-40% (CAN Insider, 2019).

In addition to start-up competitions, the government should also promote existing businesses who are already implementing practices that limit their food or plastic waste through their business transactions. Currently, in Cambodia, there are companies offering food delivery services with waste-reduction features. For example, mobile applications for food services such as Food Panda and Nham24 have included an opt-out option at the checkout for "no utensils" to cut down on plastic waste. Businesses with such features should be rewarded with financial incentives, to motivate other business owners to incorporate similar practices in their enterprises.

*4.3   **Establishing food banks and centers for poor communities***
Food banks have been referred as a "green solution to hunger" as they are able to simultaneously address the issues of global hunger and food loss and waste (The Global Foodbanking Network (GFN), 2019, p.3). Food banks are mainly community-based or nonprofit organizations that collect food surplus that would otherwise be lost or wasted in the food system and redirect these surpluses to feed hungry communities through networks of local charities and grassroots organizations (GFN, 2019, p.3). According to the 2019 report by GFN, food banks operating in 57 countries around the world serve about 62.5 million people and prevent around 2.68 million metric tons of safe, edible surplus food from being wasted as well as mitigate around 10.54 billion kg of CO_2 annually (GFN, 2019).

If MPP and relevant authorities can establish food banks while promoting these startups with food-reduction features, this will help foster virtual and non-virtual connections between sellers

(restaurants, groceries stores, markets) and consumers to reduce excess or leftover food. While creating business opportunities, successful implementation of these initiatives can foster a vibrant, clean, and environmentally-friendly ecosystem of food management between business operations and consumers.

5. Promoting public awareness and engagement on the issue of food waste

The whole action plan for food waste management would not be possible without public buy-in and engagement. Public awareness campaigns must be carried out along with the implementation of other actions. For instance, without support from the public the new law on mandatory waste separation, recycling and composting is unlikely to be well-received. Awareness raising can also serve to promote behavior change toward the issue of waste. Therefore, to ensure the success of the action plan, MPP should collaborate with service providers and relevant authorities to administer the following initiatives:

- Introducing the issue of food waste into mainstream media (TV, newspaper, social media, etc.)
- Organizing social campaigns and public outreach in public settings
- Establishing a dedicated phone number as an information center on the issue

MPP must cooperate with the Ministry of Education, Ministry of Information, and local and international development partners to ensure the creation and broadcasting of appropriate content. This is a necessary step to improve understanding among the public and to limit confusion. Key topics should include: the negative effects of food waste, the benefits of composting and recycling, steps for compliance and possible fines regarding the mandatory waste separation law and other topics relevant to food waste management.

Mainstreaming the issue of food waste into a feasible policy action plan is not an overnight task. It requires tremendous effort and constant collaboration between key stakeholders to turn this idea into a reality. However, without an idea in the first place, there will be no action. Hence, this chapter aims to act as a catalyst to open a discussion on the issue of food waste among policy makers.

Conclusion

The issue of food waste and food loss is just one example of the world's problems in inefficiency, inequality, climate change, and many other severe social and environmental issues. This global issue is also deeply important in the Cambodian context with food being the major source of solid waste in the country's capital. While the majority of existing publications and policy recommendations include the issue of food waste within solid waste management, this paper aims to highlight food waste as its own issue for the city of Phnom Penh to consider. For policy recommendations, the paper suggests five key actions that directly address the limitations of the current situation in the capital. The five policies include: 1) enhancing the quality of waste collection service through reforming the Public Private Partnership between the Municipality of Phnom Penh and the service provider, 2) imposing mandatory waste separation duties for all residents and businesses, 3) commercializing recycling and composting, 4) promoting

technological and innovative ideas in dealing with food waste, and 5) promoting public awareness and engagement on the issue of food waste. Implementing innovative solutions to Phnom Penh's food waste challenges will help to enhance the city's sustainability in managing its food resources and waste, hence improving the quality of life for all the city's residents.

References

Aramyan, L., Valeeva, N., Vittuari, M., Gaiani, S., Politano, A., Gheoldus, M., Mahon, P., Scherhaufer, S., Paschali, D., Cseh, B., Ujhelyi, K., Hanssen, O. J. (2016). *Market-based instruments and other socio-economic incentives enhancing food waste prevention and reduction*. Wageningen: Fusions.

Bryne, R. (2009). Cambodian Garbage Scavengers Face Deadly Health Risks. *VOA.* https://www.voanews.com/archive/cambodian-garbage-scavengers-face-deadly-health-risks

CAN Insider. (2019). Young Singaporeans' Smart Answer to the World's Food Waste Problem. *Channel News Asia Insider.* https://www.youtube.com/watch?v=zd2GOpsLFaU

Chea, V. (2021). New Firms Commence Garbage Collection in Phnom Penh. *Khmer Times.* https://www.khmertimeskh.com/50884779/new-firms-commence-garbage-collection-in-phnom-penh/

EPA, (2020). *Zero Waste Case Study: San Francisco*. United States Environmental Protection Agency. Retrieved from: https://www.epa.gov/transforming-waste-tool/zero-waste-case-study-san-francisco

EPA (2021). *Basic Information about Landfill Gas*. United States Environmental Protection Agency. Retrieved from: https://www.epa.gov/lmop/basic-information-about-landfill-gas

EuroCham Cambodia, (2019). Partnership Ready Cambodia: Waste Management. Global Business Network (GBN) Program. GIZ. Retrieved from: https://www.giz.de/en/downloads/GBN_Sector%20Brief_Kambodscha_Waste_E_WEB.pdf

FAO, (2019). *Key Facts on Food Loss and Waste You Should Know!*. Retrieved from: https://twosides.info/includes/files/upload/files/UK/Myths_and_Facts_2016_Sources/18-19/Key_facts_on_food_loss_and_waste_you_should_know-FAO_2016.pdf

Filimonau, V. & De Coteau, D. A. (2019). Food waste management in hospitality operations: A critical review. *Tourism Management*, 71, 234–245. doi: 10.1016/j.tour- man.2018.10.009.

Fox, T., & Fimeche, C. (2013). *Global food: Waste not, want not*. London: Institution of Mechanical Engineers.

GFN, (2019). Waste Not Want Not Toward Zero Hunger. Food Banks as Green Solution to Hunger. The Global FoodBanking Network. http://www.foodbanking.org/wp-content/uploads/2019/03/GFN_WasteNot.pdf.

Ghani, W. A., Rusli, I. F., Biak, D. R., & Idris, A. (2013). An application of the theory of planned behaviour to study the influencing factors of participation in source separation of food

waste. *Waste Management*, 33(5), pp. 1276–1281.
https://doi.org/10.1016/j.wasman.2012.09.019

Gould, L. H. Rosenblum. I., Nicholas, D., Phan, Q. & Jones, T. F. (2013). Contributing factors in
restaurant-associated foodborne disease outbreaks. *Journal of Food Protection*, *76*, 1824–
1828. doi: 10.4315/0362–028X.JFP–13–037

Gustavsson, J., Cederberg, C., Sonesson, U., Van Otterdijk, R., & Meybeck, A. (2011). *Global food
losses and food waste*. Rome: Food and Agriculture Organization of the United Nations
(FAO).

Hutt, D. (2019). Confronting Cambodia's Waste Management Challenge. *The Diplomat.*
https://thediplomat.com/2019/10/confronting-cambodias-waste-management-challenge/

IPCC, (1995). *Climate Change 1995: The Science of Climate Change*. Cambridge: Cambridge
University Press.

JICA. (2005). Study on Solid Waste Management in the Municipality of Phnom Penh in the
Kingdom of Cambodia. Retrieved from:
http://open_jicareport.jica.go.jp/pdf/11784451_01.pdf

Kilibarda, N., Djokovic, F., & Suzić, R. (2019). Food Waste Management — Reducing and
Managing Food Waste in Hospitality. *Meat Technology*. 60. 134-142.

Manaf, A.L., Samah, A.A.M., Zukki, M.L.N., (2009). *Municipal solid waste management in
Malaysia: practices and challenges*. *Waste Management*. 29.

Mongtoeun, Y., Fujiwara, T., & Sethy, S. (2014). A Study of Commercial Solid Waste Generation
and Composition in Phnom Penh City, CAMBODIA. *Journal of Natural Sciences Research*, *4*,
pp. 49-54.

Nhim, S. (2019). Trash Collector Cintri to Lose Monopoly in Phnom Penh. *VOD*.
https://vodenglish.news/trash-collector-cintri-to-lose-monopoly-in-phnom-penh/

Pap, N., & Pongrácz, E., & Myllykoski, L., & Keiski, R., (2004). *Waste minimization and utilization
in the food industry: Processing of arctic berries, and extraction of valuable compounds from
juice- processing by- products*. Proceedings of the Waste Minimization and Resources Use
Optimization Conference.

Perey, R., Benn, S., Agarwal, R., & Edwards, M. (2018). The place of waste: Changing business
value for the circular economy. *Business Strategy and the Environment, 27*(5), 631–642.

Poore, J., & Nemecek, T. (2018). Reducing food's environmental impacts through producers and
consumers. *Science*, 360(6392), 987-992.

PPCA, IGES, Nexus, UN Environment, CCCA. *(2018). Phnom Penh Waste Management Strategy and Action Plan 2018-2035. Phnom Penh, Cambodia.* https://www.researchgate.net/publication/329771406_Phnom_Penh_Waste_management _strategy_and_action_plan_2018-2035_web

Seng, B., Kaneko, H., Hirayama, K., & Katayama-Hirayama, K. (2011). Municipal solid waste management in Phnom Penh, capital city of Cambodia. *Waste management & Research: Journal of the International Solid Wastes and Public Cleansing Association, ISWA*, *29*(5), 491–500. https://doi.org/10.1177/0734242X1038099

Seng, B., Hirayama, K., Katayama-Hirayama, K., Ochiai, S., Kaneko, H., (2013). Scenario analysis of the benefit of municipal organic-waste composting over landfill, Cambodia. *Journal of Environmental Management* 114, 216–224. https://www.sciencedirect.com/science/article/pii/S0301479712005063

Seng, K. (2015). Analysis of solid waste composition and waste forecasting in Phnom Penh with the production of methane from Dangkor landfill, Cambodia. Institute of Technology of Cambodia.

Singh, R., Dickella, P., Yagasa, R., & Onogawa, K. (2020). *State of Waste Management in Phnom Penh, Cambodia (Version 2, 2020)*. IGES Centre Collaborating with UNEP on Environmental Technologies (CCET) of Institute for Global Environmental Strategies (IGES).

Spiess, R. (2017). Cintri chided by former exec. *The Phnom Penh Post.* https://www.phnompenhpost.com/business/cintri-chided-former-exec

Startus Insights (2021). Discover 5 Top Startups developing Food Waste Management Solutions. https://www.startus-insights.com/innovators-guide/discover-5-top-startups-developing-food-waste-management-solutions/

STT, (2019). *Waste Management in Phnom Penh. A review of waste management from the streets*. Urban Governance. https://teangtnaut.org/wp-content/uploads/2019/01/20190129_STT_Final_Annual_Report_English_version-compressed.pdf

Talyan, V., Dahiya, R.P., Sreekrishnan, T.R., (2008). *State of municipal solid waste management in Delhi, the capital of India*. *Waste Management*. 28.

Tran, T. & Vuth, C. (2020). Trash Piles Up as Workers Fear Cintri Restructuring, Go on Strike. *VOD*. https://vodenglish.news/trash-piles-up-as-workers-fear-cintri-restructuring-go-on-strike/

USDA, (2013). USDA and EPA Launch U.S. Food Waste Challenge. https://www.usda.gov/media/press-releases/2013/06/04/usda-and-epa-launch-us-food-

waste-challenge" https://www.usda.gov/media/press-releases/2013/06/04/usda-and-epa-launch-us-food-waste-challenge

World Bank, (2004). *Solid Waste, Vietnam Environment Monitor*. http://siteresources.worldbank.org/INTVIETNAM/Data%20and%20Reference/ 20533187/VEMeng.pdf (accessed 10.11.09.).

Zhen-shan, L., Lei, Y., Xiao-Yan, Q., Yu-mei, S., (2009). Municipal solid waste management in Beijing city. *Waste Management*, 29.

Chapter 14 | Natural Resource Management: Improving Effective Law and Policy Implementation

Phidor KONG

Future Scenario

It is the year 2050 and a normal day in a Community Protected Area (CPA) in Mondulkiri province. Phalporos (ផលប្ផូស), a 25-year-old Phnong-indigenous woman, listens to the news on a digital media-broadcast application on her tablet while she gets herself ready for work. Phalporos likes to read and listen to the daily news about national development. Her favorite topic is natural resource development and conservation. From the media broadcast today, she briefly learns that there is a new business investment in Mondulkiri province. Right after the news ends, Phalporos leaves the app, and opens another one called DevelopmentInfo. The DevelopmentInfo app allows her to access all available data and information related to Cambodia's national development, including natural resource governance. It only excludes confidential data and information. In the Environment and Natural Resource menu on the app, she sees some newly uploaded information talking about the business investment license that the government recently approved. At the same time, she also receives an updated annual national budget plan on Natural Resource Management (NRM) for 2051 from the Royal Government of Cambodia. She notes it and then goes for breakfast.

After her breakfast, Phalporos heads to her CPA's forest with other CPA members to collect orchids. Phalporos and her fellow CPA members carefully and skillfully collect this non-timber forest product (NTFP) as they have already been trained how to collect and use their natural resources sustainably by civil society partners and the Ministry of Environment (MoE). All of the orchids that Phalporos collects from the forest are sold to a private company at a standard price. Orchid is not the only NTFP that her community collects to use and/or sell, but one of many including honey, mushrooms, resin, bamboo, etc. Phalporos's family, like other families in her community, collects each resource according to its season and an approved timeline. Selling orchids and other NTFP financially supports her family, making their income as high as most others across the country. The resources of the CPA are the main source of their income.

In the afternoon, Phalporos, who participates as a member of a community committee, goes to her CPA office to join a community meeting. Her meeting that day is about an annual national budget plan in NRM that the government released recently. Phalporos leads the meeting, and all

CPA members discuss the national budget plan and the proposed budget plan for CPAs. Like the previous year, her CPA receives financial support for NRM from the MoE, non-governmental organizations (NGOs), some private sector actors including companies that buy their NTFPs, and their own CPA. After learning about the national budget plan and their own budgets, all members actively participate to set up next year's annual budget plan for their own community in order to continue an efficient use of the budget in their NRM. Her community ends the meeting with a discussion of the new business investment project that the media broadcaster reported in the morning, and based on the information available on the DevelopmentInfo app.

At night, Phalporos joins a cultural event in her Phnong community until almost midnight. They have invited a group of university students and researchers who come to conduct research on community natural resource management and conservation in her CPA as this CPA succeeds in the sustainable use of natural resources. The community is welcoming and cooperates with the students and researchers as they understand the importance of research and the involvement of scholarly groups in NRM. Moreover, they understand that their cooperation is important for NRM studies.

Two days later, Phalporos and other CPA members are invited to participate in a two-day national forum to discuss NRM and the sustainable development plan. It is conducted remotely (online) so that she does not have to travel from Mondulkiri province to Phnom Penh. This saves her a lot of time and money. The forum is a national-level discussion for generating ideas and agreement, making plans, and decision-making that will be used to make the Natural Resource Management Plan for the next 5-year term. It is not only Phalporos's CPA that joins the meeting, but also other CPAs, local and international non-governmental organizations, civil society, and all levels of government. At the end, they all agree to adopt alternatives of high technology on natural resource management at each NRM level, for example, using a drone as a forest ranger.

Introduction

Sustainable Natural Resource Management. Cambodia is rich in natural resources. It is home to millions of hectares of forest, tons of fishery resources, fertile land, the Tonle Sap Lake and Mekong River (500 km), wetlands, plants, wildlife, and mineral resources. These resources contribute to building Cambodia's economy and support the lives of millions of people. In fact, almost two third of the population relies on natural resources for their livelihoods (ODC, 2018a). The country's natural resources also contribute to mitigating climate change, balance the global ecosystem, provide habitat to hundreds of plants and wildlife, and protect the culture and identity of many Cambodian peoples; especially indigenous groups (ODC, 2018a).

Unfortunately, economic development experienced since the 1990s has put these resources under pressure. Deforestation, overfishing, uncontrolled mineral resource extraction, unsustainable land use, water pollution, and natural resource conflicts are all degrading Cambodia's resources (USAID, 2021). Cambodia's limited natural resource management has so far been unable to solve these problems and sustain the resources for the future because of many issues such as a lack of transparency in the management system (U.S. Department of State, 2020), ineffective law and policy implementation and limited financial budget (RGC, 2019a). The challenge of law and policy implementation seems to be the major problem. The limited understanding and capacity of sub-national officials as well as local communities and the limited participation of private sector actors and the local community make law and policy implementation a struggle (RGC, 2019a).

The Royal Government of Cambodia (RGC) has committed to sustainable development in Cambodia Vision 2050, Cambodia's development vision which aims to transform Cambodia into a high-income country by 2050. Ensuring the sustainable use of natural resources is a key part of this strategy (RGC, 2018). Achieving this goal requires a practical approach to NRG through improving law and policy implementation and capacity and knowledge building.

Context Analysis

Current context

Cambodia boasts an abundance of natural resources that are important to the country's natural and cultural heritage, livelihoods, and economic development. Currently, 47.17 percent of Cambodia's total land area is covered by forest (World Bank, 2021a). Approximately 8,260 species of plants, 500 species of birds, and more than 250 defined species of amphibians and reptiles are living there (ODC, 2018a). In 2014, Cambodia was a home to about 500 inland fish species and 520 marine fish species (FiA, 2014). In 2018, 910,153 tons of fishery production were caught (Ngin, 2019). The country benefits from around 75,000 million cubic meters (m^3) of surface water runoff in the wet season annually (Mak, 2017). Furthermore, the state has many types of mineral resources including gemstones, gas, oil, phosphates, manganese, iron, and gold, many of which are newly discovered (AZoMining, 2012).

Yet, these natural resources are not sustainably used. Between 2001 and 2020, the nation lost 30 percent of its tree cover (Figure 1) (Kresek, 2019).
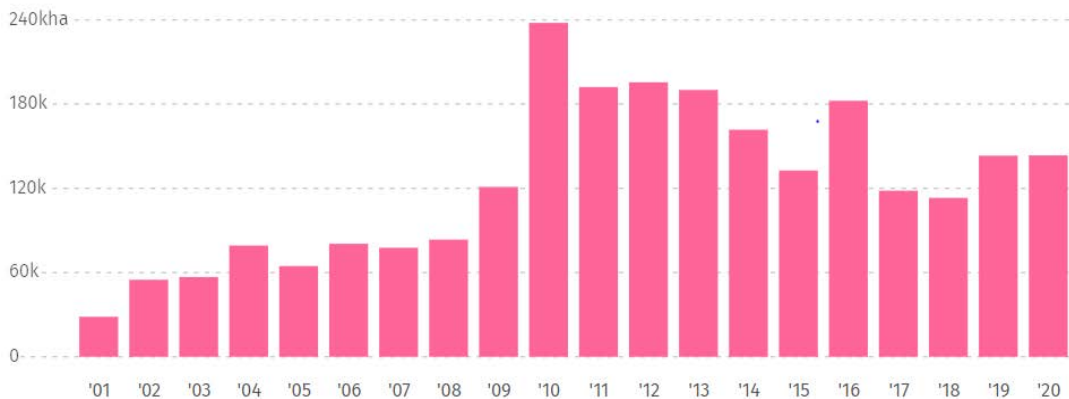
Figure 1: Tree Cover Loss in Cambodia 2001-2020
Source: Kresek, 2019

From 2015-2016, Cambodia lost tons of fishery resources through overfishing, environmental change, and water pollution and revenue decreased from 1.03 million to 565, 284 in U.S. dollars (ODC, 2018b). Fish production across the Mekong basin is predicted to drop by up to 70% as a result of the planned Mekong River system dams, which is expected to cause a drop in Cambodia's annual Gross Domestic Product (GDP) of USD 3 to 5 billion by 2040 (ODC, 2018b). Cambodia's water resources are also becoming scarcer due to pollution, conflict and competition for the Mekong (the volume of available water is declining due to the existence of many up-stream dams) and global disaster (e.g. climate change) (SWM, 2019). In the extractive industries, private companies have exploited mineral resources such as oil, gas, gold, and others with minimal information of their operations available to the public due to weaknesses in the governance of the industry (NGO Forum, 2011). Last, but not least, land-use practices are not sustainable. Many land disputes remain unresolved (LICADHO, 2016) and the land is still used in an unsustainable way while the Cambodian population is expected to rise to 22.5 million by 2050 (MoP, 2013). This will lead to an increase in the demand for natural resources accordingly.

Natural Resource Goals and Policy Alternatives

Cambodia has committed to becoming a high-middle-income country in 2030 and a high-income, prosperous, socially inclusive, and environmentally sustainable developed country in 2050 (RGC, 2018, p.09). In 2018, the RGC established the *Rectangular Strategy for Growth, Employment, Equity and Efficiency Phase IV (RSG-EEE IV 2018)* and created an NRM plan under the 'Inclusive Sustainable Development' pillar, the fourth pillar of the policy. This sustainability agenda includes objectives of recovering forest cover to more than 60 percent of land area, promoting the preservation and management of fisheries resources and biodiversity and continuing to preserve

and develop cultural heritage. This work also promotes the *National Policy on Mineral Resources 2018-2028* (RGC, 2018, p.39-40).

By following the *National Strategic Development Plan (NSDP) 2014-2018* and *National Environment Strategy and Action Plan (NESAP) 2016-2023*, which aims to ensure environmental protection and sustainable NRM by strengthening cross-sector collaboration, resource use efficiency, financing management and capacity, the RGC has recovered some forest cover, withdrawn more than 410,000 hectares of economic land concessions, designated about 970,000 hectares for fisheries preservation area, and established 610 forestry and 516 fishing associations (RGC, 2018). The *NSDP 2019-2023* continues to improve NRM by working on natural resource reforms (land, forest, and fishery), mining and petroleum policy, and environmental and biodiversity conservation policy. It also focuses on fighting corruption, legal and judicial reform, human resource development, decentralization and deconcentration as well as public financial management.

Additionally, with respect to the need for environmental and natural resource regulation, the MoE has been drafting the *Environmental and Natural Resource Code (ENR Code)* that provides higher levels of environmental protection, openness, and accountability than the existing environmental and natural resource law (MoE, 2018). This code promotes the rights of all citizens, including indigenous groups, in natural resource development, regulation and policy implementation, decision-making, information transparency, roles of institutions and legal requirements for natural resource use in economic development. So far, the latest draft is the ENR Code Version 11, despite the pressing need for policy makers to implement and support the law (MoE, 2018).

Although Cambodia has taken important steps to put in place the necessary laws (including regulations) and policies to ensure natural resource sustainability in the last decade, the question of how the laws and policies can be effectively implemented in order to improve NRG remains to be answered. In 2018, the state undertook the Voluntary National Review on the Cambodia Sustainable Development Goals to review the implementation and delivery arrangements and measure progress against the goals as a means to promote learning and opportunities for innovative and impactful solutions (RGC, 2019b). This review has been helpful for the government to monitor the progress of law and policy implementation. However, Cambodia's governance in the natural resource sector is far from being effective. According to the Natural Resource Governance Institution (2017) the kingdom scored 30 out of 100 in the Resource Governance Index in 2017. There is still a long way to go for Cambodia to have strong resource management.

The gap between laws and policies and their implementation seems to be the major concern for Cambodia's NRM (RGC, 2018, p.11, 39). Despite legislative efforts, deforestation, overfishing and land conflict continue, while illegal mining still remains a problem (Nov, 2021). Land registration, for example, has yet to be completed (MoE, 2017, p.5). As of August 2021, some indigenous community collective land has not been registered successfully due to the slow process of the registration and internal problems in the community itself, although the government's land registration plan is supposed to be completed by 2021 (Nov, 2021). Also, the lack of boundary demarcation, management and zoning plans in protected areas further affects the integrity of protected areas as well as leaving space for illegal and unauthorized activities like deforestation, illegal wildlife trading, land conflict, and some development (like building construction) (MoE, 2017, p.5). In recognition of the problems, the *National Environment Strategy and Action Plan (NESAP) 2016-2023* was established to detail the roles and responsibilities for implementing agencies, strengthening cross-sector collaboration, improving resource use efficiency, developing financing management and building the capacity of sub-national governmental officials (RGC, 2017).

The fact that the capacity, understanding, and participation of sub-national officials, private sector actors, and the local community are limited is one of the main reasons for weak implementation of policies and laws. In the *NSDP 2019-2023*, the RGC raised concerns that institutional capacity and expertise which are needed to ensure cooperation and alignment in the implementation of policies, laws, documents, strategies, and action plans are not yet widespread (RGC, 2019a, p.39). For example, the Kingdom has only 1,200 rangers to guard more than 7.3 million hectares of protected forests. In Mondulkiri province, there is less than one ranger per 100 square kilometers, an area which needs eight rangers at international standards (Tum, 2021). This is not to mention limitations in capacity due to inadequate resources and insufficient technical training and limited technical capacity of professional staff in the area (MoE, 2017, p.5). In addition, the Cambodian government has not completed the mainstreaming of basic principles of sustainable development, including climate change, green economy, biodiversity, and science and technology into the sectoral action plans (RGC, 2019a, p.39). Awareness and understanding of these concepts must still be improved amongst sub-national officials and other stakeholders.

For the local community, whose role is to use, manage and protect natural resources, their capacity and understanding are also limited. Although the literacy rate of Cambodians has been increasing, the literacy rate of rural Cambodians is only 83.8 percent, about 10 percent lower than the urban rate (Sen, 2021). The literacy rate for men in urban areas is 91 percent while for women it is 86.2 percent. The gap between men and women in rural areas is even higher. This lack of literacy for the local community affects their capacity to understand and participate in NRM. In addition, some local communities' capacity for operation management is not strong

enough. For example, many CPAs in Siem Reap were found to be "less effective" in operation management (general management, finance, communication, and activity aspects), scoring 42 of out 100 (Learning Institute, 2014). At the same time, no resource center has been established to serve as a local institution for providing knowledge and information about the environment, even though information and data on biodiversity and natural resources is desperately needed (Learning Institute, 2014, p.40).

The lack of understanding and capacity amongst private sector actors and other stakeholders (including community members) prevents active participation in NRM as well as the implementation of laws and policies. Some private companies are not cooperating well with the MoE, while they and others are also failing to follow the full legal procedures of existing environmental regulations. Smooth cooperation and participation of private sector actors is critical to NRM. These problems require careful attention as well as action on capacity and knowledge building and active participation from all stakeholders.

Policy Solutions

To have sustainable natural resource management, achieve Cambodia's Vision 2050, and bring to fruition the ideal scenario outlined at the beginning of this chapter, a new policy roadmap needs to be designed which can address existing challenges to fulfill the effective implementation of current laws and policies. This goal can be achieved by 1) building capacity and knowledge, and 2) good financial management. This roadmap requires the full participation and cooperation of all stakeholders including responsible ministries (Ministry of the Environment, Ministry of Mines and Energy, Ministry of Agriculture, Forestry, and Fishery, Ministry of Water Resources and Meteorology, and others (where relevant)), sub-national institutions, sub-national officials, civil society (including development partners), educational institutions, private-sector actors, and local communities.

Building Capacity and Knowledge

To build capacity and knowledge, the RGC, relevant ministries, and civil society must focus on three different groups: community members, sub-national officials, and academia. As each group has different responsibilities, the capacity and knowledge building must be specific to each group.

Local community

The local community has a strong connection with the natural resources since its members live and work with the resources daily. Community members can protect and determine the destiny of Cambodia's natural resources. Without the active participation of local communities, the sustainability of Cambodia's natural resources is hard to guarantee. That is why the capacity and

understanding of this group matters. They need to be aware of their resources and know how to use and protect them sustainably. First, awareness and education should be provided properly to local communities, including both women and men. The governmental agencies (responsible ministries or sub-national institutions) and/or civil society should set awareness-raising and education plans by having a specific agenda including NRM information and knowledge, schedule, human resources, and other resources. Information and knowledge should include relevant national developments, updated NRM data and information regarding natural changes in the ecosystem (predicted natural disasters for example). Communities should be made aware not only of knowledge related to their natural resources but also relevant knowledge about natural resource conservation, legal procedures, legal information, related technology and media, and finance. Governmental agencies and civil society must cooperate to develop and deliver this training, where data and information literacy is included. The local community's level of capacity, understanding, resources and needs should be studied before the plans are made so that the designed plan fits their needs and capacities and is effective. For example, training for communities with low literacy levels can include audio, drawing, or pictures.

Second, governmental agencies and civil society should provide legal, technical, and other skills (like finance, leadership, communication, etc.) to local communities through training. It should consist of legal, financial, and technological management skills training to ensure that they understand updated legal reforms, laws and policies, and can work skillfully and with knowledge of management and technical ability in community work. Importantly, the responsible institutions (MoE and civil society) should teach and train local communities on how to use or collect natural resources sustainably. For example, the appropriate age at which a tree can be harvested.

In addition to the training, the government should support educational resources for the local community which includes relevant NRM books from its training, NRM laws, major national plans, training manuals, articles, and others. This will allow them to expand their learning beyond the actual training.

Sub-national officials

Sub-national officials work closely with the communities and functionally implement the laws and policies. Their capacity and knowledge contribute to the success of law enforcement and policy implementation. Thus, their capacity and knowledge must be advanced. Decentralization must stimulate capacity building at this level. The ministries must train the officials under their governance in NRM, management, and legal and technical knowledge and skills that are required in NRM. Skills and knowledge should be provided according to the skills needed for each group. For an administration team, technical training on legal knowledge and management skills should

be improved, while a technical team will require specific technical training such as digital mapping, advanced digital tools, etc. For example, rangers should be equipped with technical skills for their patrol such as using technical and updated digital tools (e.g. digital mapping).

The MoE should provide more opportunities for sub-national officials to continue their education through scholarships to take advanced skills training (GPS, mapping, computer or digital learning) or pursue higher education in relevant subjects such as natural resource management, environmental studies, environmental science, environmental justice, forest science, fishery science management, community development, etc.

Academia

Academic institutions are an important resource in NRM because they are sources of further studies and NRM data which can help to improve understanding of Cambodia's natural resources. Academic bodies support innovation, knowledge building, science and technology and publish research findings and data on natural resources. Currently, data and information related to natural resources in Cambodia are still limited and need to be improved. The RGC and all natural resource-related ministries should closely cooperate with academic institutions to develop human resources (like researchers and scholars) in this area. The government should support academic institutions such as the Department of Natural Resource Management and the Centre for Biodiversity Conservation of the Royal University of Phnom Penh and Department of Forest Science of the Royal University of Agriculture by providing technological and financial support. This support would not only go to produce more human resources in this area, but also support studies, research, programs, and projects in natural resources management as well.

Capacity-building programs should give opportunities for both sub-national officials and the local community to participate in conferences, forums, workshops, and vocational training at all levels, including international, national, provincial, and community level, to help build their knowledge and capacity. Opportunities to cooperate with international educational institutions should be sought out as this is an area of global concern.

Access to information

Sub-national officials and local communities need to be informed about natural resource management in order to increase their capacity to effectively understand and participate. Information relevant to their needs includes legal documents, natural resource revenue and budget, national development plans, national budget plans, monitoring and assessment/evaluation data, decision and approval letters, licenses and contracts for development project investment, research studies and updated NRM information. Once these stakeholders are informed about natural resource management around the country, they will be

more aware of their rights and responsibilities. Making information (including data) accessible to sub-national authorities and communities not only keeps local communities and all related stakeholders aware of updated information related to NRM but makes management and governance systems more open and transparent as well. NRM information empowers and engages citizens to participate in the country's development by informing and educating people. To achieve this, Cambodia needs an NRM information system that can provide all related information to local communities, sub-national officials, other stakeholders as well as the general public. Cambodia currently has neither an NRM data center nor an NRM information system that can store and share all information related to natural resource management (RGC, 2018, p.39). There are a few information sources like Open Development Cambodia (website) that share natural resource data and information in Cambodia and openly allow the public to access them; but they have limited data and information available. In addition, these websites may not reach people across the country, but are more commonly used by students, scholars, or researchers. Currently, some data and information resources in both physical and digital formats are published by governmental institutions, development partners, research institutions, a few educational institutions, and civil society. Since there is no resource center, the published information is not sent widely to local institutions, local communities and rural areas (RGC, 2019a, p.40).

There are two strategies to improve the dissemination of data and information related to NRM in Cambodia. The first is to create an open information system for natural resource management to allow easy access to the data and information. It should be a state-owned information system, and the RGC should be responsible for creating, managing, and financing it to ensure its sustainability. The possible steps are:

- **System**: creating an NRM information system that can store and make accessible all data and information that relates to national development, except confidential data and information. The NRM topic must be included. For the NRM area, all information (including data) from all governmental institutions and agencies, again except the confidential information, must be made public. Information from other trusted sources such as development partners, non-governmental institutions and educational institutions should be included as well. This system must be free of charge for the public and accessible both online and offline. This means that people with no ability to access the internet can still access the information resources. The government (especially MoE) and civil society should work closely with local institutions and communities to assist them to access the NRM information they need.

- **Digitalization**: while the off-line information system is set up, the same information should be digitized as well. Users can easily access the information through their digital devices like smartphones, tablets and computers. Cambodia's information technology has improved

significantly. According to the World Bank (2021b), the percentage of the Cambodian population who can access the internet increased from 0.53 percent in 2009 to 40.54 percent in 2018. By January 2021, the percentage of internet users in Cambodia stood at 52.6 percent, a 14-percent increase rate from 2020 to 2021 (Datareportal, 2021). This trend is likely to continue in the next few years. Therefore, building a digital information system will invite a proportion of the population to access data and information openly, quickly, and easily. In addition, a digital information system is more affordable because it requires less material resources, management, and human resources than a physical library. At the same time, it can be run 24/7. To do so, government agencies and other institutions can publish their information and related publications digitally, remotely, and easily, at a lower cost.

- **Financial subsidy**: although the digital information system helps reduce cost, the government still needs to subsidize the information system to increase information accessibility. The information should be available free of charge to all users. The government must budget for the information system in the national budget plan to ensure sufficient financing is available. This subsidy will not cover publications of non-governmental institutions and others. These institutions are financially responsible for their own publications, but they can share their publication within the system for free if they choose.

The second way to improve the availability of information on NRM is to increase the engagement of media agencies in NRM information broadcasting. Media can help the government to educate and inform Cambodian citizens on NRM/NRG. In 2014, the BBC Media Action, Research & Learning found that 92 percent of Cambodian youths (15-30 years old) accessed both TV and radio, while 34 percent accessed the internet. About 73 percent of those who accessed the internet used it to access news (BBC Media Action, 2014, p.4). This shows high potential for media to play a big role in educating the public. The RGC and relevant ministries should work closely with the Ministry of Information to create a plan for information dissemination. The RGC should advise all governmental institutions to cooperate with media institutions, journalists, and reporters to create a welcoming, friendly, and free environment for media agencies to work in this sector. The cooperation between media and organizations, such as civil society, private sector actors, and community members should be also improved. To achieve this, the government has to communicate, educate, and raise the awareness of officials under its authorization (especially sub-national officials) to understand the importance of the media and increase their willingness to cooperate.

Decentralization and Deconcentration in Natural Resource Management

The decentralization and deconcentration program has been implemented since (at least) the *NSDP 2014-2018*. This program aimed to put a deeper focus on reform management, good

governance, human resource development and management, service delivery and local development, and financial decentralization (RGC, 2019a, p.11). A key focus was the improvement of the governance system and the involvement of sub-national governmental officials. However, decentralization and deconcentration faces a lot of challenges due to the weak performance and capacity of officers at sub-national levels. In the *NSDP 2019-2023*, the RGC continues the decentralization and deconcentration program; but focuses on the delegation of powers, transferring of functions, and the sharing of resources and technology to all levels of administrative units under the governance of the Ministries, such as public institutions and sub-national administrations to ensure they have appropriate autonomy in decision-making, management, and resource allocation. Additionally, the program promotes innovation and unified administration as well as strengthening sharing mechanisms and information regarding public administration at all levels to increase resource utilization and management efficiency. This policy will apply to all areas of public administration.

The MoE and other responsible ministries must prioritize this program because it boosts the capacity of sub-national officials and promotes the effectiveness of law and policy implementation. Ministries must strictly implement decentralization for NRM with a planned timeline set by the RGC. The ministries are responsible for building the capacity of sub-national institutions and officials as well as the transfer of functions and delegation of power to administrative units at all levels under their governance. While strong partnerships with civil society must be a priority of the decentralization and deconcentration program, the local community must be involved as well.

The ministries should increase the participation and cooperation of local communities, such as CPA or Forest Community, Fishery Community, etc. To do so, the ministries must closely cooperate with development partners and civil society to raise awareness, build capacity, and invite full and meaningful participation of the local community. Local communities should be regularly invited and encouraged to be involved in the process of natural resource development, law, regulation and policy development, and decision making. Resources (including materials, transportation, and finance) should be provided, according to each community's need, to increase their capacity and ability to be involved in NRM. Last but not least, the ministries have to inform local officials and communities of this decentralization and deconcentration plan to ensure that they are aware of the plan and their responsibilities.

Financing sustainable natural resource management

This policy initiative is strongly dependent on the availability of financial resources. Sustainable NRM is implemented together with environmental protection in the *NESAP 2016-2023,* so its budget requirement is combined with the environmental protection plan. In 2017, the total available funding for the plan was about USD 263,500,000, which is equivalent to around 72 percent of the total budget needed for the entire program (RGC, 2017, p.38). This available funding can only meet 21 key objectives of *NESAP 2016-2023* and leaves a gap for the four other key NESAP objectives including public awareness, capacity development and budgeting sustainability and inclusiveness, and public private partnership in green and sustainable development (p.38). This funding is generated from co-sharing and co-financing between the RGC with development partners, relevant investment funds, and private resources. Cambodia is still in need of almost 30% of the total planned budget (RGC, 2017).

First of all, the MoE should incorporate the finance plan for *NESAP 2016-2023* with the National Development Framework and Budgeting, the national financial and budget plan of Cambodia, to secure the finance (Figure 2). This means the rest of funding for *NESAP 2016-2023* will need to be secured from public financing, global funding, private investment, and development partners.
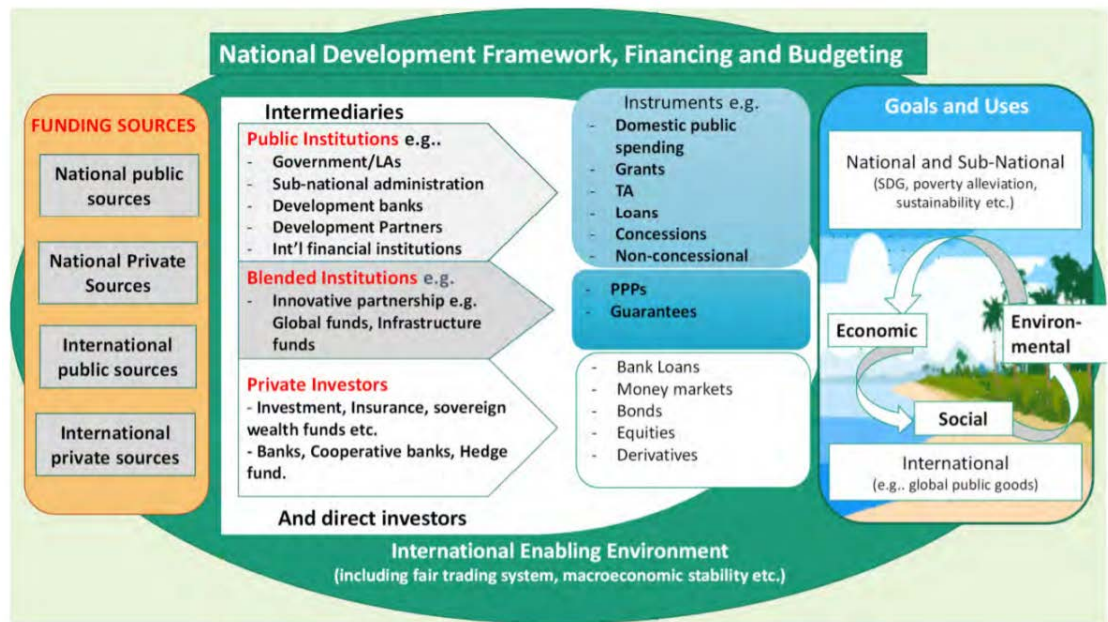

Figure 2: National Development Framework, Financing and Budgeting
Source: RGC, 2017

- **Public financing:** domestic revenue is one of the most important sources for development financing in Cambodia. In 2020, although COVID-19 badly affected Cambodia's economy, the nation's domestic revenue still represented 19 percent of total GDP and it will rise to 22.5 percent by the end of 2025 (Figure 3) (UNDP, 2021). Rising domestic revenue increases the opportunity for financial investment in *NESAP 2016-2023* and NRM which can support the policy recommendations above. The MoE and other responsible ministries should advocate for higher expenditure to invest in NRM.
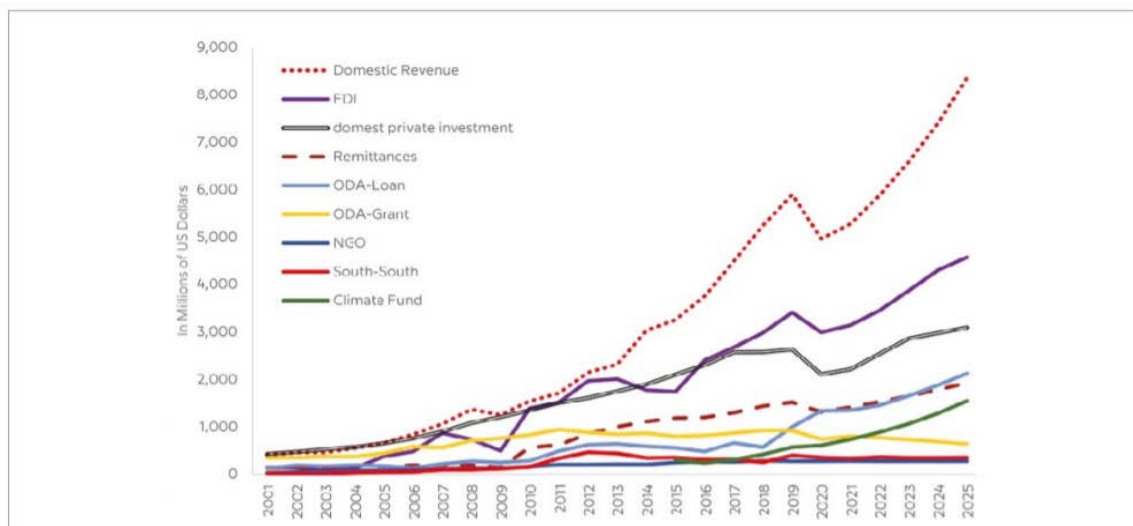

Figure 3: Total financing flows for Cambodia (projected to 2025)
Source: UNDP, 2021

- **Development partners**: development partners are a big source of financial support in NRM. The government must work closely with development partners and strengthen their relationships to increase financial cooperation. The RGC can also build new relationships for more cooperation with development partners, both with other countries and with non-governmental partners (like international organizations) in order to raise enough funding in this area. To attract more and deeper cooperation with development partners, the RGC and relevant ministries should design and advocate for the benefits of natural resource development and NRM taking into account important issues such as vulnerable communities (including children and the needs of men and women), national and international development priorities, climate change, food security and education.
- **International funding and advocacy**: Cambodia's NRM is not only the responsibility of the RGC and Cambodian residents but also the international community. Natural resource loss is a global issue. The change of Cambodia's forest cover, fishery resources, water flow, land use, and

biodiversity partly result from global environmental problems like climate change, while the sustainability of these resources will contribute to reducing climate change, mitigating pollution as well as balancing the global ecosystem. The protection of Cambodia's natural resources therefore requires responsibility from international institutions and high emission countries responsible for climate change. The RGC must closely work with development partners and other vulnerable countries to advocate at the international level to claim financial support from major-polluting countries.

- **Private sector investment**: Private sector actors can contribute an important source of finance. However, so far they have participated in a limited way in natural resource management because of a lack of cooperation, engagement and understanding. Relevant ministries with support from the RGC must promote sustainability in public-private investment locally, nationally, and internationally to increase private sector interest in investing in natural resources in Cambodia. The MoE, in cooperation with development partners, must first raise awareness of the importance of natural resource development and sustainability to private sector actors by engaging them in the natural resource development sector and environmentally friendly themed activities. Subsequently, the government needs to create opportunities and strengthen cooperation with private sector actors to allow more investment aligned with the priorities of NRM. For example, arranging public-private partnership finance, providing low interest-rate loans and/or lowering tax rates for investment in processing-NTFP (for example, the use of NTFPs to make a new product, like making perfumes from orchids). The government should also support private sector actors in NRM policies, relevant skills upgrade, and other legal consultations.

Conclusion

Natural resources are key to Cambodia's economic development, but they have been overexploited by unsustainable economic development since the 1990s. Deforestation, overfishing, unsustainable land use, overexploited mineral resources and energy sources, water pollution, and natural resource conflict have taken a toll and led to unsustainable development. The RGC has included the sustainable use of natural resources on the agenda of Cambodia's Vision 2050 where the government has committed to making Cambodia a developed [high income] country by 2050. However, Cambodia's natural resource governance suffers from the ineffective implementation of laws and policies due to limitations of knowledge and capacity of sub-national officials and local communities, the lack of participation of the local community and private sector actors, and a lack of financial support. To promote good natural resource governance, implementation of laws and policies must be improved. Knowledge and capacity building of sub-national officials and local communities must be undertaken urgently so they can participate fully and more effectively in NRM. The government should encourage and support private sector actors to participate in this sector as well. At the same time, financial support is

needed to improve knowledge and capacity building activities as well as general policy enforcement. These targeted actions will help the state to achieve effective governance in natural resource management and bring a sustainable use of natural resources to Cambodia no later than 2050.

References

AZoMining. (2012). Cambodia: Mining, Minerals and Fuel Resources. AZoMining. Retrieved from
https://www.azomining.com/Article.aspx?ArticleID=216#:~:text=Cambodia's%20key%20natural%20resources%20include,stone%20and%20sand%20and%20gravel

BBC Media Action, Research & Learning. (2014). Media Habits and Information Sources of Youth in Cambodia. BBC Media Action, Research & Learning. Retrieved from
https://www.bbc.co.uk/mediaaction/publications-and-resources/research/reports/asia/cambodia/media-habits

Datareportal. (2021). Digital 2021: Cambodia. Datareportal. Retrieved from
https://datareportal.com/reports/digital-2021-cambodia

Fisheries Administration (FiA). (2014). *Cambodian Fisheries at a Glance. Fisheries Administration of Cambodia*. Phnom Penh: FiA.

Kresek, K. (2019). What's Happening in Cambodia's Forests. *Global Forest Watch.* Retrieved from https://www.globalforestwatch.org/blog/data-and-research/whats-happening-in-cambodias-forests/

Learning Institute. (2014). Assessing Community-Based Natural Resource Management Effectiveness in Siem Reap Province, Cambodia. LI. Retrieved from https://idl-bnc-idrc.dspacedirect.org/bitstream/handle/10625/58700/IDL%20-%2058700.pdf?sequence=2&isAllowed=y

LICADHO (Cambodian League for the Promotion and Defense of Human Rights). (2016). Hundreds of villagers petition commune chiefs over decade-long land dispute with sugar company. LICADHO. Retrieved from https://www.licadho-cambodia.org/flashnews.php?perm=154

Mak, S. (2017). *Water Governance in Cambodia: From Centralized Water Governance to Farmer Water User Community*. Cambodia Development Resource Institute. Retrieved from https://www.mdpi.com/2079-9276/6/3/44/htm

Ministry of Environment (MoE). (2017). *National Protected Area Strategic Management Plan 2017-2031*. MoE. Retrieved from https://redd.unfccc.int/uploads/54_2_cambodia_nat_protected_area_strategic_plan_eng_27_jul_2017.pdf

Ministry of Environment. (2018). *Draft Environment and Natural Resources Code.* MoE. Retrieved from https://data.opendevelopmentcambodia.net/en/laws_record/draft-environment-and-natural-resources-code-11th-draft

Ministry of Planning (MoP). (2013). *Aging and Migration in Cambodia*. RGC.

Natural Resource Governance Institution. (2017). Countries: Cambodia. Retrieved from http://resourcegovernanceindex.org/country-profiles/KHM/mining

Ngin, K. (2019). *Country Fisheries Trade: Cambodia*. Southeast Asia Fishery Development Center. Retrieved from http://www.seafdec.org/country-trade-cambodia/

NGO Forum on Cambodia. (2011). *A Brief Guide to Information on Extractive Industry Revenue Management in Cambodia*. NGO Forum on Cambodia, Development Issues Programme, & Economic Development Policy Project. Retrieved from http://ngoforum.org.kh/files/ecop_briefguidetoinfooneirevenuemanagement_en_kh.pdf

Nov, S. (2021). Cambodia's indigenous peoples request land registration reforms. *Phnom Penh Post*. Retrieved from https://www.phnompenhpost.com/national/cambodias-indigenous-peoples-request-land-registration-reforms

Open Development Cambodia (ODC). (2018a). Environment and Natural Resources. ODC. Retrieved from https://opendevelopmentcambodia.net/topics/environment-and-natural-resources/

ODC. (2018b). Fishing, Fisheries and Aquaculture. ODC. Retrieved from https://opendevelopmentcambodia.net/topics/fishing-fisheries-and-aquaculture/

RGC. (2017). *National Environment Strategy and Action Plan (NESAP) 2016-2023.* RGC. Retrieved from http://extwprlegs1.fao.org/docs/pdf/cam178822.pdf

RGC. (2018). *Rectangular Strategy for Growth, Employment, Equity, and Efficiency: Building the Foundation Toward the Realizing the Cambodia Vision 2050 (Phrase IV).* RGC. Retrieved from https://policy.asiapacificenergy.org/sites/default/files/Rectangular-Strategy-Phase-IV-of-the-Royal-Government-of-Cambodia-of-the-Sixth-Legislature-of-the-National-Assembly-2018-2023.pdf

RGC. (2019a). *National Strategic Development Plan 2019-2023*. RGC. Retrieved from https://data.opendevelopmentcambodia.net/dataset/national-strategic-development-plan-nsdp-2019-2023/resource/bb62a621-8616-4728-842f-33ce7e199ef3

RGC. (2019b). *Cambodia's Voluntary National Review 2019 On the Implementation of the 2030 Agenda for Sustainable Development*. United Nations. Retrieved from https://www.kh.undp.org/content/cambodia/en/home/library/environment_energy/cambodia_s-voluntary-national-review-2019.html

Sen, D. (2021). Literacy rates 'increase significantly. *Khmer Times.* Retrieved from https://www.khmertimeskh.com/50807840/literacy-rates-increase-significantly/#:~:text=It%20said%20that%20the%20adult%20literacy%20rate%20in,percent%20compared%20to%2083.8%20percent%20in%20rural%20areas.

Smart Water Magazine (SWM). (2019). Global issues: Cambodia's water crisis. *Smart Water Magazine*. Retrieved from https://smartwatermagazine.com/news/membracon/global-issues-cambodias-water-crisis

Tum, M. (2021). *Cambodia's Rangers Risk Lives Protecting Environment*. Voice of America (VOA). Retrieved from https://www.voanews.com/east-asia-pacific/cambodias-rangers-risk-lives-protecting-environment

United Nations Development Programme (UNDP). (2021). *Cambodia's Development Finance Assessment*. UNDP. Retrieved from https://www.kh.undp.org/content/cambodia/en/home/presscenter/pressreleases/2021/domestic-revenue-is-an-increasingly-important-source-of-developm.html

USAID. (2021). Cambodia: Environment and Resilience. USAID. Retrieved from https://www.usaid.gov/cambodia/environment-and-global-climate-change

U.S. Department of State. (2020). *2020 Investment Climate Statements: Cambodia. U.S. Department of State*. Retrieved from https://www.state.gov/reports/2020-investment-climate-statements/cambodia/#:~:text=In%20general%2C%20Cambodia%E2%80%99s%20regulatory%20system%2C%20while%20improving%2C%20still,and%20is%20exacerbated%20by%20a%20weak%20court%20system.

World Bank. (2021a). Forest area (% of land area) – Cambodia. World Bank. Retrieved from https://data.worldbank.org/indicator/AG.LND.FRST.ZS?locations=KH

World Bank. (2021b). Individuals using the Internet (% of population) – Cambodia. World Bank. Restreived from https://data.worldbank.org/indicator/IT.NET.USER.ZS?locations=KH

Chapter 15 | Sustainable Electricity in Cambodia in 2050: A Study on Innovative Micro-Grid System

Vichet PRUM

Future Scenario

In Preaek Tnoat Commune in Tuek Chhou District located in Kampot Province in Cambodia in 2050, Sok's family is one of families in the community that tends to use the most energy and electricity for their household business and daily usage. Most of Sok's family members own individual cars and drive to work every day. Sok's small business is a bakery shop in his area in which he produces bread to sell. It also requires a lot of electricity. Sok used to have electricity bills that were more expensive than other households in the community, but now that electricity in Cambodia is affordable and sufficient for usage, Sok has not had problems with high electrical bills. The government had planned for all rural areas to be connected to the national grid by 2030, which was achieved for his community. There is a micro-grid system locally generates electricity from renewable resource, which was established by a Chinese company.

Prior to these efforts to promote rural electrification, Cambodia was struggling to meet its electricity needs. Before 2030, Cambodia's electricity still depended on hydro dams and much of it was imported from other countries. However, hydro dams had many negative environmental impacts. Furthermore, due to overconsumption and overpopulation with the rise of globalization, Cambodia's sources of non-renewable energy such as oil, coal, natural gas were diminishing.

What made the electricity situation in Preaek Tnot Commune better and more sustainable is the connection that was built from new alternative energy resources to the installed micro-grid system, which can distribute sustainable electricity in local areas supported by a partnership between the government and foreign investment. These alternative energy resources such as

solar and wind turbines are cheaper than traditional energy sources used to be. The solar projectors as well as solar batteries that can store electricity for use at night became cheaper after a subsidy from the government as well as the low tariff on energy efficiency products.

With these incentives in place, in Tuek Chhou District, a tidal energy system and a wind turbine were set up and connected to a micro-grid in Sok's community. This process involved a Chinese company that worked with Électricité Du Cambodge (EDC) and rural electrification enterprises (REE) to assist in operating the micro-grid system.

In the northern and southern part of Cambodia, which are the windy areas, the government has installed some wind turbines along the mountain range and coastal area, which can generate electricity and connect to many micro-grids in rural areas as well as the national grid. Again, a Chinese company collaborated with EDC and REE to assist in operating the distribution line. In 2015, wind turbines are affordable to install and operate. Along with these alternative resources, the existing renewable energy sources such as hydro dams and solar systems also contribute electricity to the national grid. These are also supported by financial partnerships especially from banks that can share the burden with households in rural areas.

Rural electrification enterprises with Électricité Du Cambodge provide assistance in teaching communities members about generating electricity from their agricultural waste. The sustainability of electricity in the next few decades also comes from a regionally connected grid connected to other micro-grids near the borders and other partners such as China and Japan that are a driving force to reach energy security inside Cambodia.

Some policy recommendations have been implemented to make electricity in Cambodia more sustainable. The government has encouraged the development of alternative renewable energy resources such as biomass gas from agricultural waste for cooking in rural area, wave/tidal for areas that near the ocean, and wind turbines. As Sok's community is located in Tuek Chhou District, there is an innovative way to capture energy by building a grid under the ocean and generating electricity through waves. With alternative options such as solar energy, efficient hydro dams, affordable wind turbines, and the rise of biomass generators, in 2050, Cambodia will

have capabilities to make these alternative sources more equitable and sustainable. In addition, Cambodia expected to have nuclear power plants by 2040, whose electricity will be available for domestic demand, connected to micro-grids in rural areas as well as the national grid.

Energy saving measures are also promoted. Carpooling to work is encouraged as well as the use of energy efficient products such as LEDs and, light control system that can save up to 50% of the electricity used by traditional products. Sok can also generate electricity in his household by using biomass from burning agricultural waste. Installing a micro-grid system in one respective area provides affordable and sustainable electricity for a whole area as in Sok's community.

The future of Cambodia's electricity is predicted to be affordable and sustainable by 2060. The country will have many alternative choices such as solar panels and wind turbines and generating power from nuclear energy and alternative sources will become cheaper and cheaper. Micro-grid systems in rural areas in the northern and western parts of Cambodia will provide reliable and sustainable energy for many more Cambodians.

Introduction

Electricity is one of the basic needs for households, business places, small and medium enterprises, companies and any light or heavy industries. In this modern world, people cannot live without electricity, as simple activities such as turning on the light, opening a refrigerator to get some food, charging your phone, and especially using fans or an air conditioner at night, all consume quite an amount of electricity and are necessary to enhance our quality of life. However, life in rural areas is not the same as in the city where the majority of people enjoy regular access to electricity. In rural areas, the level of accessibility and affordability of electricity is still limited (Marabona, 2019).

Electricity demand is increasing significantly from decade to decade (Energypedia, 2018). Domestically demand exceeds the electricity supply that is generated in the country from coal, fuel, oil and, hydro leaving Cambodia to import electricity from its neighboring countries (Poch,

2013). In the first half of 2020, power consumption dropped from 1,900 megawatts to 1,700 megawatts because the COVID-19 pandemic forced the closure of many factories and tourism-related facilities (Chea, 2020). However, the global pandemic cannot be a driving force to decrease the demand of energy consumption in the long term. The impact of generating electricity from non-renewable sources has harmed environment severely, which could pose a threat to energy security in the region. Therefore, it is imperative for Cambodia to achieve sustainability of electricity for the whole nation.

Context Analysis

The Royal Government of Cambodia expects to provide electricity to all rural areas in Cambodia by 2030 (ADB, 2018). By 2050, rural areas in Cambodia will achieve the sustainability of electricity, meaning the transition to a system using 100 percent renewable energy that meets today's demand without depletion in the future (Burger et al., 2012). Current electricity supply for the country comes from coal (35 percent), hydroelectricity (48 percent), fuel oil (2 percent), and other renewable sources like solar (less than 1 percent) and imports from Thailand, Vietnam and Laos (14 percent) (Electricity Authority of Cambodia, 2018). The Royal Government of Cambodia has tried to seek financial support from international development partners, other Cambodian private, and public sector investors to take part in grid expansion projects (De Ferranti et al., 2016). Recently, ADB has approved a US$127.8 million loan to support Électricité du Cambodge (EDC) to strengthen its transmission infrastructure by financing the construction of four 115–230 kilovolt transmission lines and 10 substations in Phnom Penh and Kampong Chhang, Kampong Cham, and Takeo provinces (ADB, 2020).

According to the Electricity Authority of Cambodia (EAC) annual report in 2019, there were nine hydropower dams operating in Cambodia that connected to the national grid and to other provincial grids, as well as three coal-fired power plants, four biomass companies that generate electricity from biomass and other waste, and only one 90 MW solar farm in Kompong Speu province (EAC, 2019). The Ministry of Mines and Energy has said that there will be no further hydropower dams built on the Mekong River and the focus for future electricity generation will

be on renewable energies, but they will also construct two coal-fired electricity plants with a total output of 900 MW (Kijewski, 2020). Five solar parks that account for 160 MW a year are under construction and will be connected to the national grid (Chhut, 2020). Moreover, Électricité du Cambodge negotiated with The Blue Circle Company to construct an 80 MW wind power farm in Kampot province and plans to build more wind turbines in Sihanoukville and Mondulkiri province (Hin, 2020). Non-renewable energy sources will eventually face exhaustion in the future while some renewable energy especially hydro dam can have negative environmental impacts such as restricting the movement of fish to the lower Mekong, increasing flood risk potential and causing pollution to the river during construction. As such, the government needs to consider promoting other types of renewable energies such as more solar farms and wind turbines.

Figure 1: Rural household benefit from solar home system program of rural electrification enterprise

Source: Department of Rural Electrification, 2021

Some households in rural areas still cannot access the national grid and only have access to small rural electrification enterprises, who are private power producers that operate micro grids supplied by diesel generators; these micro-grids are more pollution-intensive and more expensive than electricity provided by the grid (De Ferranti et al., 2016).

The Rural Electrification Fund under the EDC has implemented two essential programs, which are Power 2 Poor (P2P) and Solar Home System. The Power 2 Poor program has helped poor households in rural areas to access electricity from the grid supply by providing interest free loans to meet the costs for connection fees, deposit, equipment and the installation of wires from the connection point to houses as well as the costs to cover the purchase of materials and labor for the installation of in-house wiring. The Solar Home System program helps install solar panels for poor households in rural areas that cannot connect to the national grid. After the purchaser has paid the remaining cost in full, the Solar Home System will become the property of the purchaser. During 2020, 9,834 rural families equivalent to 45,236 individuals have directly benefited from this program as show in Figure 1, rural households received each solar home panel and other solar-related equipment from the program (Department of Rural Electrification, 2021, p.27). However, the programs from the Rural Electrification Fund have some challenges such as a lack of coordination among the parties involved, a lack of financial support, and some projects have been put on hold. At the end of 2020, the electricity supply by the national grid to rural areas reached 97.13% of total villages and the remaining are non-electrified due to the delay of the expansion plan amid of the outbreak of the COVID-19 pandemic (Electricity Authority of Cambodia, 2021). What concerns those using solar panels in rural areas the most is the price of equipment which continues to rise due to import tariffs. The regulation from authorities needs to be improved to ease these problems so that households in rural areas can access electricity via renewable sources more easily.

In order to give rural areas in Cambodia sustainable access to electricity, Cambodia must introduce more alternative renewable energy resources and install micro-grid systems in hard-to-reach areas. Micro-grids are small, privately owned and operated systems with a generation capacity of up to 10 megawatts and which can distribute power to multiple customers (Castalia, 2017). A micro-grid can be supplied by distributed generators, batteries, and/or renewable energies like solar panels and it can disconnect from the main grid and operate autonomously (Lantero, 2014). Better access to micro-grids in rural areas would make the future of electricity in Cambodia more sustainable

Policy Recommendations

To make electricity in rural areas in Cambodia more sustainable by 2050, several actions should be considered by the Ministry of Mines and Energy, the Electricity Authority of Cambodia and other public-private partnerships especially foreign investors in the electricity sector. These include promoting more renewable energy sources that could connect to micro-grids as well as improving regulations.

Accessibility, affordability and sustainability of renewable energies

Cambodia should consider expanding opportunities for more types of renewable energy. Currently, the price of solar panels might be a barrier for Cambodia to promote more solar farms at the community level, but prices may come down as the demand for solar equipment increases, as is expected over the next decade, according to the International Energy Agency's annual report (Calma, 2020). In Cambodia, the price of a solar panel is based on the type of power that panel can generate. Solar farms constructed by private partnerships such as Schneitec Infinite, have set a small tariff to EDC of only USD 0.076 per kWh, but for solar rooftop installations, the current market price is around USD 800-1000 per kWp (kilowatt peak). However, over the next two decades, it has been predicted that the price might fall to USD 10 per kWh (Sevea, 2020).

Since the price is still high, rural electrification enterprises should take action to install solar rooftop systems that can be shared within communities for low-income people to access electricity. Rural electrification enterprises might face difficulty with the price when solar photovoltaic (PV) systems are not connected to the national grid, but if all rural areas are connected to the national grid, enterprises can reduce their operating costs by assisting in financial incentives for households that are using micro-grids with renewable energies and providing a reliable supply of energy in the area.

Moreover, the power per unit area that is received from the Sun in Cambodia of five kWh/m^2 is considered very good for investing in solar energy (UNDP, 2019).

Similarly, wind turbines also have high upfront costs, but wind energy will be applicable for the future of Cambodia's electricity as well. Strong winds in the northeast and southern part of Cambodia make those the most promising locations for wind energy in the future. The

government should promote more small scale solar panels and wind turbines by rural enterprises or independent producers to install in rural areas, so people can access electricity with the help of funds from rural enterprises and enjoy having electricity before national grid connected to their areas.

Promoting innovative micro-grid system with renewable energy sources in remoted areas

In order to achieve a sustainable and efficient electricity system in the whole nation, an innovative micro-grid system should be promoted and installed in off-grid areas. According to EAC, there are approximately 300 mini-grids operating in Cambodia, but those mini-grids are mostly connected to non-renewable energy resources such as coal and oil. Given the immense potential in Cambodia for renewable energy such as solar and wind energy, micro-grid systems that draw from renewable energy sources and connect from the main grid to remote areas offer an excellent alternative. For example, a Singaporean company has introduced an innovative micro-grid on Koh Rong Sanloem Island, transforming the island from diesel power to solar-battery power that can provide clean and sustainable electricity for the whole island (Thou, 2020). Cambodia is expected to construct more solar farms as well as wind turbines in the northern and eastern parts of the country, where plenty of rural households are off-grid. Therefore, there is very high potential for installing micro-grids in those remote areas by connecting a distribution line from the main renewable energy resource to the micro-grid. However, the process of installing micro-grids and connections from renewable energy sources might face potential barriers. It requires last-longing storage devices or batteries, an inverter that converts DC power generated by solar PV systems into an AC power supply, and a suitable area for installing the grid near to the renewable energy source, solar farm or wind farm (Murali et al., 2012). While micro-grids with renewable energy sources will make the electricity sector in Cambodia more sustainable and reliable, there are still many challenges to be addressed and the next section will look at improvements needed in regulations toward micro-grid systems.

Policies and regulations toward innovative micro-grids

There are a number of regulations that need to be improved in order to ensure sustainable and reliable energy access for rural areas. The Ministry of Mines and Energy (MME) is in charge of providing policies or strategies for the power sector, while the Electricity Authority of Cambodia is in charge of setting tariffs, enforcing regulations and reviewing of policies. Moreover, Électricité du Cambodge is responsible for generator transmission and distribution of power and working with independent power producers, rural electricity enterprises, and provincial electricity companies (Sevea, 2020). The relations between each stakeholder needs to improve by lessening the authority of Électricité du Cambodge and giving more authority and power to the sub-sectors, especially in rural areas to initiate micro-grids with renewable energies more easily. Moreover, these actions need to be overseen by the Electricity Authority of Cambodia to ensure the sustainability of policies working in the rural areas. The Ministry of Mines and Energy and the Electricity Authority of Cambodia should provide financial incentives for rural electricity enterprises and provincial electricity companies to distribute their electricity generators such as solar home systems and biomass generators in rural areas, which would allow people to access them efficiently. Financial incentives could also be offered to other private sector actors that want to invest in an innovative micro-grid system to increase their productivity (Poch, 2013).

In order to operate a micro-grid, operators, either private sector or independent power producers need to apply for many licenses from MME; otherwise, their operations are against Electricity Law (Castalia, 2017). The process of granting all the licenses is very complicated and can take up to 25 years; a process which needs to be improved or shortened (Castalia, 2017).

The setting of tariffs, financing and subsidies of micro-grids should be reviewed as well. Some micro-grids are charging up to USD 1 dollar per kWh according to the EAC (2019). This rate is prohibitively expensive for many rural areas. The Electricity Authority of Cambodia needs to provide subsidies or a financial incentive to reduce tariffs on innovative micro-grids with renewable energy. Households in rural areas would enjoy stable and affordable electricity from those independent power producers. However, besides providing financial incentives, EDC should open the market to local and foreign investors to invest in and operate renewable energy

companies to conduct and install innovative micro-grids in off-grid areas. This can provide affordability, accessibility and efficiency of electricity supply in rural areas before the completion of full access to the national grid.

Conclusion

Demand for electricity is continually increasing, but the supply chain for electricity is raising concerns. People in rural areas have been suffering due to unequal access to electricity, but the proposed solutions about innovative micro-grid systems and improvement to regulations will be able to solve this problem and provide efficiency, affordability, and sustainability to the electricity sector in all rural areas. The future scenario in 2050 sees all rural areas in Cambodia that are not connected to the national grid, installing innovative micro-grids with connections from the nearest renewable energy resources. Alongside new regulations to facilitate those micro-grid operations, we believe this intervention will ensure that Cambodia will have electricity independence and fulfill the demands of households in rural areas by 2050.

References

Asian Development Bank (ADB). (December, 2018). Cambodia energy sector assessment, strategy, and road map. *Asian Development Bank.* DOI: http://dx.doi.org/10.22617/TCS189801

Asian Development Bank (ADB). (September 11, 2020). $127.8 million ADB loan to help expand power grid in Cambodia. *Asian Development Bank.* Retrieved from: https://www.adb.org/news/127-8-million-adb-loan-help-expand-power-grid-cambodia

Burger, A., Lunenburger, B., & Osiek, D. (August, 2012). *Sustainability electricity for the future.* Umwelt Bundes Amt. Retrieved from: https://www.umweltbundesamt.de/sites/default/files/medien/378/publikationen/sustainable_electricity_for_the_future_-neu.pdf

Calma, J. (October 13, 2020). Solar energy reaches historically low costs. *The Verge.* Retrieved from: https://www.theverge.com/2020/10/13/21514902/solar-energy-cost-historic-low-energy-agency-outlook-2020

Castalia. (November, 2017). Mini Grids in Cambodia: A Case Study of a Success Story. *The World Bank.* Retrieved from: https://openknowledge.worldbank.org/handle/10986/29019

Chea, V. (August 20, 2020). Cambodia's energy demand drops in H1 of 2020. *Khmer Times.* Retrieved from: https://www.khmertimeskh.com/755733/cambodias-energy-demand-drops-in-h1-of-2020/

Chhut, B. (February 18, 2020). Five new solar farms to be connected to the national grid. *Khmer Times.* Retrieved from: https://www.khmertimeskh.com/692029/five-new-solar-farms-to-be-connected-to-the-national-grid/

De Ferranti, R., Fullbrook, D., Higgins, S., & McGinley, J. (March, 2016). *Switching on: Cambodia's path to sustainable energy security.* Mekong Strategic Partners. Phnom Penh. Retrieved from: https://www.researchgate.net/publication/329266884_Switching_on_Cambodia%27s_path_to_sustainable_electricity_security

Department of Rural Electrification. (2021). *Report on transferring the real benefits to the rural population for the year 2020.* Électricité du Cambodge. Retrieved from: http://ref.gov.kh/page/admin/public/asset/article-asset/2021/Report2020/REF%20Annual%20Report%202020_Eg%E2%80%8B%E2%80%8B.pdf

Electricity Authority of Cambodia. (2018). *Salient features of power development in Kingdom of Cambodia until December 2018.* Retrieved from: https://www.eac.gov.kh/site/index?lang=en

Electricity Authority of Cambodia. (2019). *Annual Report 2019*. Retrieved from: https://www.eac.gov.kh/site/viewfile?param=annual_report%2Fkhmer%2FAnnual-Report-2019-kh.pdf

Electricity Authority of Cambodia. (2021). *Salient features of power development in the Kingdom of Cambodia until December 2020.* Retrieved from: https://www.eac.gov.kh/uploads/salient_feature/english/salient_feature_2020_en.pdf

Energypedia. (2018). *Cambodia energy situation.* Retrieved from: https://energypedia.info/wiki/Cambodia_Energy_Situation

Hin, P. (2020, 7 June). Wind power on horizon. *The Phnom Penh Post.* Retrieved from: https://www.phnompenhpost.com/business/wind-power-horizon

Kijewski, L. (2020, 1 April). Cambodia Halts Hydropower Construction on Mekong River Until 2030. *VOA News.* Retrieved from: https://www.voanews.com/east-asia-pacific/cambodia-halts-hydropower-construction-mekong-river-until-2030

Lantero, A. (June 17, 2014). *How micro-grids work.* U.S. Department of Energy. Retrieved from: https://www.energy.gov/articles/how-microgrids-work

Marabona, Y. (2019). *Status and challenges of rural electrification in Cambodia and renewable energy options.* Parliamentary Institute of Cambodia. Retrieved from: https://www.pic.org.kh/images/2019Research/20191014_Status%20and%20Challenges%20of%20Rural%20Electrification%20in%20Cambodia%20and%20Renewable%20Energy%20Options.pdf

Murali, J., Raman, P., Sakthivadivel, D., & Vigeneswaran, V.S. (2012). Opportunities and Challenges in Setting Up Solar Photovoltaic Based Micro Grids for Electrification in Rural Areas of India. *Renewable and Sustainable Energy Review*, 16, 3320-3325. DOI:10.1016/j.rser.2012.02.065

Poch, K. (2013), 'Renewable Energy Development in Cambodia: Status, Prospects and Policies', in Kimura, S., H. Phoumin and B. Jacobs (Eds.), *Energy Market Integration in East Asia: Renewable Energy and its Deployment into the Power System,* ERIA Research Project Report 2012-26, Jakarta: ERIA. pp.227-266.

Sevea, C. (2020). *Partnership ready Cambodia: Solar PV potential in the commercial and industrial sector.* GIZ. Retrieved from: https://www.giz.de/en/downloads/GBN_Sector%20Brief_Cambodia_Energie-Solar-PV_E_WEB.pdf

Thou, V. (December 02, 2020). Clean energy micro grid in pipeline for Koh Rong Sanloem. *The Phnom Penh Post.* Retrieved from: https://www.phnompenhpost.com/business/clean-energy-microgrid-pipeline-koh-rong-sanloem

UNDP. (2019). *Harnessing the solar energy potential in Cambodia.* Retrieved from: https://www1.undp.org/content/dam/cambodia/docs/ResearchAndPublication/DREIBooklet/DREI%20Booklet%20English.pdf

Chapter 16 | If Youth Become the Engine of International Development

Setthikun SUN

Future Scenario

United Youth Leader (UYL) Newsletter, 2040.

UYL is an online establishment for youth to exchange their thoughts on priority issues needed to be solved to foster international development under YOUD (Youth-Dialogue). It was initially a university-led tech-solution project that has grown to replace the likes of Facebook, Instagram, and other social media among youth. Annually, UYL holds the biggest online meeting for youth who are identify with global citizenship to share lessons-learnt, strategies, and technologies invented in their projects, and to build potential youth partner projects beyond borders.

As part of the celebration of its fifth anniversary, UYL is putting an article on its home page co-written by Jeff, a recently graduated Canadian student and Nita, a Cambodian junior, who were part of the YOUD development team and have been recently appointed as the new Chair and Vice-Chair of Global Youth to discuss and celebrate the achievement of UYL. The article reads as follows:

Reminiscing 25 years ago today, the world's governments promised us a world of peace and development, achieving through the adoption of the Sustainable Development Goals (SDGs). We all pictured the world after 2030 to be a better place to live in - a world of cooperation, friendly relations, where there would be no poverty, no one left behind, and equality existed whether it was between genders or between countries. However, this situation never came to be. Developed countries and developing countries were not hostile, but financial assistance and technological transfer for international development were no longer open for discussion.

The North was discontented with the idea that they were paying for the Global South to catch up with them economically and would eventually challenge their position in the global political arena. The issue of Intellectual Property Rights (IPR) triggered a ban on international technological diffusion as the South adopted almost zero IPR protection measures. In combination with the post-Covid-19 recovery periods, Official Development Assistant (ODA) dropped by more than 20% and Foreign Direct Investment (FDI) by 40%. The dominance of populism also contributed to a disruption in states' relations as the people were concerned with losing out on their benefits and jobs to new immigrants, as a result of deeper globalization and

integration. Consequently, the debt to the United Nations (UN) grew, causing the UN to cut down its areas of priority and focus, waiting for states to return to the international community and provide financial support for further action to be taken.

We then witnessed the setback of global development as trends on social media reflected how the end of states' partnership for development ended the lives of many people. Headlines began discussing the increase in the suicide rate after a university graduate student who had struggled with unemployment, committed suicide while live-streaming. On social media, users raised their concerns after numerous blog posts compared the livelihood of people in the West to Southeast Asia, raising how children there had no access to proper blended-learning.

These discussions as well as many others triggered a sense of collective responsibility among youth in this generation like it has never been there before. It started with a group of students from the Royal University of Phnom Penh together with the National University of Singapore initiating a community project to address inclusive education in a village in Siem Reap. With support from both universities, other institutions from within the region were invited to propose community projects to address various social issues, and the universities began to integrate community projects and initiatives as part of the curriculum. Soon after, we witnessed the pairing of students from different fields including those from media with those from social science, or natural science, to generate different outputs that go beyond just carrying out a community project, but expand into building applications for accessible and inclusive education, promoting tourism as a mean for economic development, and others based on their creativity.

With the success of YOUD in capturing a significant share of the younger generation in the global market, the increase in the number of matchmaking projects on YOUD, and the recognition from the government of YOUD as a social enterprise, United Youth Leaders was born as a symbol of the united force of youth in dealing with international development issues.

The international arena is no longer a place dominated by debates led by heads of government around the world, but also an active discussion platform for prominent youth figures. We witness promising young leaders: 1) calling for international action on newly emerging non-traditional security issues, 2) voicing their opinions, and 3) contributing their human resources (international youth team) to assist in development projects. This allows youth around the world to label themselves as another main actor in international development instead of being categorized as simply a stakeholder. Collaboration comes across as dynamic with international youth working hand in hand, trying to understand one another despite their backgrounds.

Who would have expected us to lead positive changes in the society they are living in, since in the eyes of the elders, they were just a group of kids who are wild and reckless? Now we witness

the younger generation raising their voice, fighting against social stigma, upgrading their skills, and creating their own opportunities as well as their generation's opportunities and equality.

Introduction

The rationale behind the dystopian scenario formulation – imagining the failure of state cooperation, is triggered by the need to prepare for the worst-case scenario of 21st-century global politics. The current world politics is characterized by international cooperation under external pressures from great power rivalry, populism, and uncertainties such as COVID-19, which have led to a drop in Official Development Assistance and Foreign Direct Investment by 20% and 40% respectively compared to the previous year (Kroenig, 2020; Sany and Sheehy, 2021; Mounk, 2021; United Nations, 2021a; Horner, 2019; United Nations Statistic Division, 2021). For international development, global partnerships must be strengthened at all costs to ensure the advancement of livelihoods for all the people on earth where "no one is left behind" (United Nations, 2021b). Yet, the heightening of external pressures may lead to the dystopian scenario, hindering global partnerships, and leading to a possible scenario where cooperation to combat poverty, hunger, climate change, health, and others will be put on hold.

Since international cooperation has been concentrated under the umbrella of the United Nations, or bi- and multilateral initiatives, the dependency on state-to-state cooperation may leave states vulnerable to external factors that influence their relationships (United Nations, 2020a; Horner, 2017; Horner, 2019). For example, the Sustainable Development Goals (SDGs) emphasizes states' commitment to solve their development issues as well as partnership between the North and the South, and the South and the South to speed up the realization of the goals (United Nations, 2020a; United Nations Development Program, 2021). Yet, financial support depends on the goodwill between nations. For instance, development assistance financed by China to developing countries under South-South cooperation alone rests at US$5 billion with US$3.1 billion allocated for climate change (Khor, 2016). Any circumstance that halts these financial flows will impact the developing countries' remedies which heavily rely on bilateral aid flows, including ODA, as well as FDI.

In such cases, an alternative can be sought through a global partnership of youth. Youth are an agent of change in state-led development projects (DFID–CSO Youth Working Group, 2010; Khin, 2017; Borkowska-Waszak et al., 2020). Under SDG 17, anyone including youth can take part in stimulating "global partnership for sustainable development" (United Nations, 2021b). This statement, if emphasized enough, can pave the way for youth partnerships, taking into account the current roles of youth in development projects.

Therefore, this paper aims to provide policy innovations to expand youth's role in achieving the targets of international development, broadening collaboration from the traditional reliance on state-to-state development assistance.

Context Analysis

Notions of Development and International Development

The concept of development in the second half of the 20th century revolved around the improvement of the livelihoods, measured by economic growth (Ray, 1987; UNDP, 1990; Meier and Stiglitz, 2002; Todaro and Smith, 2012). Scholars believed that development could be achieved through tan increase in economic activities and incomes (Ray, 1987; UNDP, 1990; Todaro and Smith, 2012). However, in the 1990s, the United Nations expanded the measurement to include life expectancy, and access to education, measured by the Human Development Index (HDI) (UNDP, 1990; Human Development Report Office Outreach, 2015). Although economic growth remains a must; high levels of life expectancy and education, on the other hand, indicate that the population possesses human capital which is necessary to develop technology, or foster innovation to expand the economy. This shift towards human development marked a new discussion of international development under the United Nations system, International, and Regional Development Banks, and ODA agencies to respond to collective development issues around the world (IATF, 2016; Horner, 2019). Human Development stresses enlarging the opportunities for people and freedom of choices (see Figure 1) (Human Development Report Office Outreach, 2015; UNDP Human Development Report Office, 2021). This approach which aims to establish a world of equality, justice and international harmony with no poverty, is foundational to the Millennium Development Goals (MDGs) and Sustainable Development Goals (Fukuda-Parr, 2011).
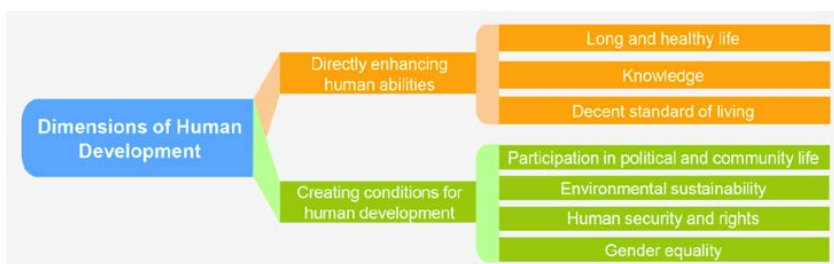

Figure 1: Dimensions of Human Development
Source: Human Development Report Office Outreach, 2015

In recognition of the importance of youth development in achieving the SDGs and MDGs, the Global Youth Development Index (YDI) was established. The YDI is an extension of the HDI, which adopts similar measurements concentrating on youth's "levels of education, health and well-being, employment and opportunity, civic participation and political participation" (Commonwealth Health Hub, 2021). The index highlights youth as the backbone to development, taking note of the importance of youth's employability to generate economic growth (Robalino et al., 2013; Ranis and Steward, 2000; MDG Achievement Fund, 2013).

The role of youth in development
a. Youth Demography

Youth are commonly understood to be between 15 to 24 years old, although some agencies may extend it to 35 years old (United Nations Department of Economic and Social Affairs, 2013). Globally, the youth population has been surging. Based on the Population Division of the United Nations Department of Economic and Social Affairs in 2019, youth amounted for 1.2 billion people which was equivalent to 16% of the world population. This is the largest proportion in history (Plan International, 2020). Within that, 85% to 90% live in the developing world of which around 207 million were from the least developed countries (Population Division of the United Nations Department of Economic and Social Affairs, 2019, p.1). It has been projected that by 2050 youth in developing countries will grow to 336 million – an increase of 62%, with Asia having the most young people. The global youth figures will rise to 1.4 billion people by 2065 (Population Division of the United Nations Department of Economic and Social Affairs, 2019, p.1).

b. How do youth contribute to development?

The youth dividend above represents potential forces of changes in international development if they can be empowered and engaged. If states and other development actors focus on building capacity – equipping youth with experiences as well as offering opportunities and freedoms, they can potentially be the active citizens needed to address existing and arising national development and international development issues.

In the economy, youth are the human resources to increase the economic productivity. If they received proper education and skills, countries with a large youth population can reap economic rewards from the youth dividend (The Economics Times, 2014). With a larger working-age population available in the economy, they can balance against the increasing dependent population.

In society, youth is key to future changes. Young people are "the innovators, creators, builders, and leaders of the future" (The Economics Times, 2014; Singh, 2020). In the field of international development, they may lead small community projects within the larger framework of international development cooperation, or may act as partners and/or recipients of projects (DFID CSO Youth Working Group, 2010) (See Figure 2). Typically, they are involved in raising awareness and knowledge sharing, addressing their communities and peer interests, and needs (Vite and Dibang-Achua, 2019).

Working for youth as beneficiaries	Defined as the basics of a good intervention for young people: • Youth as beneficiaries implies they are a **target group** and are adequately **informed**; • Explicitly focuses on youth issues through documentation; • Can **prepare the ground** for working with youth as partners.
Engaging with youth as partners	Defined as: • **Collaborative** interventions, where young people are fully **consulted** and informed; • Implies mutual co-operation and responsibility; • Recognises that young people generally need experience working at this level before progressing to becoming leaders and initiators of development (if appropriate) – a progression which not all will want or be able to make.
Supporting youth as leaders	Defined as: • **Enabling youth-initiated and directed** interventions; • Opening up a space for youth-led decision-making (delegation) within existing structures, systems and processes.

Figure 2: Role of Youth in development Project
Source: DFID CSO Youth Working Group, 2010

Since human development values the creativity of an individual, when youth are encouraged to make contributions to assist, engage, or/and lead development projects it also ensures the quality of human development (Human Development Report Office Outreach, 2015; UNDP Human Development Report Office, 2021; Hall, 2015). By engaging youth in development projects, it familiarizes them with the skills and processes needed to address future challenges or advocate for their interests (University of Florida, 2012; Hall, 2015). This, likewise, builds their confidence, and enables them to become long-term contributors (University of Florida 2012; Hall, 2015). Active youth participation in development projects also provides skills needed for their future jobs by building analytical skills, critical thinking, problem-solving and other necessary skills, which contributes to building their capacity and skills for the labor market (DFID CSO Youth Working Group, 2010). However, it must also be stressed that the quality of the participation determines the outcome of the development projects, not simply the act of participating.

c. Barriers for youth participation in development

The current models of youth engagement in policy development and the implementation of development projects, often sees young people participating in state-led initiatives linked to funds provided by organizations with their own agendas. For instance, the DFID CSO Youth Working Group (2010) indicates that development projects involving youth typically run on the donors' agenda, addressing things such as civic rights, democratization, governance, migration, and reproduction, and health projects. Although some may believe that it is not crucial whether development projects are youth or state-led, various scholars believe it is important to ask "whether young people have actual effects" in those development projects (Checkoway and Gutiérrez, 2006, p.2). Youth have the potential to play important roles in development, but for their participation to translate into productive and effective growth and social changes, the environment must be one which utilizes their capacity to ignite international development in the present, for their generation, and the future.

The potential for youth to contribute to development is undermined by barriers such as unemployment. A lack of education and training can compromise the chance of landing jobs in the scarce market (Plan International, 2020; Simmon and Thompson, 2014; DFID CSO Youth Working Group, 2010). As a result, young people may be forced to work in fields that were not part of their aspirations, generating a skills mismatch and gaps between expectation and reality, impacting their livelihood and adulthood together with the future career aspirations of their children (Simmon and Thompson, 2014; Lim and Grant, 2014; OECD, 2018). The ILO recorded that 22.5% of youth worldwide are not part of education, employment, and training of which 68% are female (ILO and SIDA, 2019) (See Figure 3). In the case of Cambodia, 40% of the labor force has no educational background, causing 50% of employers to experience skill gaps and mismatch (NEA,2018). If the problems of lack of job opportunities, skill mismatches, lack of education and training are not addressed, economic growth will be compromised and the quality of life for youth will also be impacted. Additionally, future generations will continue to experience poverty, limited education, or inadequate livelihoods (Hall, 2015).
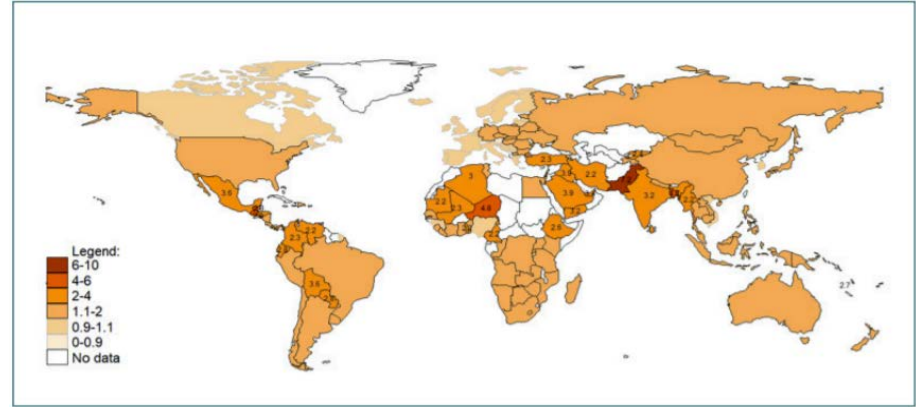
Figure 3: Share of young people not in employment, education or training by country 2019
Source: ILO & SIDA, 2019

A lack of education training and awareness of international development also hinders opportunities for youth to get involved in initiating development projects that address their own and their peers' needs (Government of West Australia, 2021; DFID CSO Youth Working Group, 2010). While youth engagement in development projects corresponds to better livelihoods in the future, it also requires investment in youth in the present. The quality of the opportunities for youth engagement is of the utmost importance. If young people are not able to participate in society in a meaningful way, it will not only create obstacles to jobs and adequate livelihoods but also prevent engagement in development projects due to the limited capacity of the youth population. If young people do not possess adequate analytical skills, critical thinking, or problem-solving, their contribution toward development projects will not satisfy its full potential.

Despite the acknowledgment of youth as agents of changes, policies on engaging and empowering youth to make minor changes in the community are not enough. There is a need to foster a sense of collective responsibility with youth as global citizens, and to create room for youth-driven innovation to go beyond borders, and to engage with youth on international platforms. Youth engagement in drafting and policy-making is very limited despite the existence of youth consultation. Taking the case of Cambodia as an example, the OECD (2014) found that initiatives are all top-down, led by the state or organizations to fit their interests. In fact, "youth voices are hardly reflected in the country's policies and programs, neither at the local nor at the national level" (OECD, 2014). When youth-led projects are in need of financial support, it has to be done in a format that aligns with those donors' interests, making the projects potentially more distant from the real urgent social issues.

Some challenges of youth participation revolve around cultural norms and institutional and other limits. For example, it has been stated that young people have been limited in their involvement in development projects due to a lack of trust and respect, which could be the result of cultural norms together with the limited education, resources, and experiences of many young people (Borkowska-Waszak et al., 2020; Çamur, 2006; Australian Infant, Child, Adolescent and Family Mental Health Association, 2008; Government of West Australia, 2021). Youth engagement seems to have been acknowledged in theory, but not in real life. There is a generalization in society, especially in Asia, that young people are not experienced and knowledgeable enough to share the social burden due to their age and lack of seniority (embedded in Confucius philosophy) (Borkowska-Waszak et al., 2020; Australian Infant, Child, Adolescent and Family Mental Health Association, 2008). Moreover, the insufficient information on how to involve young people, and the positive outcomes of their involvement is an obstacle for engagement, and for them to remain motivated (Government of West Australia, 2021).

Policy Recommendations

In order to address the barriers to youth involvement in development such as the lack of skills needed to fulfill future jobs, to play a part in development projects, and the cultural and social stereotypes toward youth, I propose two possible policies. First is Cross-universities: Youth Project-Based Learning. This aims to prepare youth with the skills needed for both the job market and to participate in development projects, including leadership, active participation, teamwork, creativity, and problem-solving skills. The second policy concentrates on promoting social recognition of youth efforts in development projects to incentivize youth to take on additional development activities.

Introducing Cross-Universities: Youth Project-Based Learning

a.   Overview

Cross Universities: Youth Project-based Learning is a blended educational curriculum in which students have the space to initiate projects to address social issues using the skills they have learned in class. The goals are to engage students in real work experiences, develop soft skills (including communication, critical thinking, leadership, management, and problem-solving), and connect lessons to real-world scenarios (going beyond theory-based learning). The project aims to build a sense of collective responsibility amongst young people. Youth are encouraged to feel ownership over their destiny by solving issues they have seen and experienced, or things they believe in, creating a sense of belonging and sharing responsibility. This project will contribute to building global citizenship in which youth are not just a citizen of a specific country and an agent of change in that country alone, but part of an identity that is shared internationally. Youth can become catalysts for change in the global arena and respond to issues worldwide.

b.   Justification

Youth participation in development projects yields positive impacts in three main areas (Checkoway, 1996). First, participation, whether as part of project-based learning or their own initiative, will enhance the knowledge and skills of young people by allowing them to engage with real social issues. This contributes to strengthening social responsibility among young people as citizens of a nation, as members of society, and as global citizens. Second, Project-Based Learning (PBL) is widely recognized to enhance the youth's personal development. PBL is a non-traditional teaching methodology that concentrates on the acquisition of real-life experiences and encourages students to experiment to build comprehension rather than learning only by lectures. Additionally, confronting the real-life experiments of PBL, students will encounter the need to

seek solutions, explain their new ideas, and debate with stakeholders (Krajcik and Blumenfeld, 2006). PBL gives youth the space for innovation and imagination, to take initiative, experience the real world and acquire information related to their field of interest, as well as solving problems by putting into practice what they learned in class (Krajcik and Blumenfeld, 2006; Bell, 2010). Moreover, research also found that PBL allows students to: 1) inspect the real-life scenario; 2) explain the situation and draw a conclusion; 3) produce new tools to respond to the challenges; 4) add value to the actual lessons since they have been exposed to it; 5) generate in-depth analysis and trigger critical thinking (Krajcik and Blumenfeld, 2006, p.322-328). As a result, participation can amplify their hard skills and soft skills, which are essential for 21st-century education. Youth participation generates "organizational development" as the youth involved learn to prioritize, initiate and execute the project, and make decisions for collective benefits. This will lead to "community development'' in which youth-led initiatives within the community such as becoming tutors, building libraries, and other activities will improve the social conditions of people in the communities in which the projects are located (Checkowy, 1996, p.4).

Cross-Universities mechanism is justified by the need to engage with students from different majors, different environment to produce well-rounded solutions offered to address the issues. Based on Lozano, collaboration leads to the success of sustainable development (Lukman, Krajn, and Glavic, 2009). In the process, all members as a team will bring in different values, innovations, experiences, thoughts, and skills which pushes for a dynamic and innovative solution ((Lukman, Krajn, and Glavic, 2009). When one university work alone, students may share differences in skills, or values; however, their perceptions on confronting issues, and experiences will be the same as they are surrounded by one same learning environment of the university. Whereas, for cross-university collaboration, students can bring in a more dynamic synergy, coming from different majors, experiencing different scenarios in daily lives, coming from different provinces and all. Diversity will quest for better communication, broader networking and team work, which are the soft skills while their discussion bridges the understanding and bring about new solution although hard skills are unlikely transferrable skills; for instance, collaboration between tech-students and education students can desirably generate a tech-solution on education. With that, it is expected that students will bring in numerous solutions on an issues which allows them to weight out pro and cons, and assess their capacitites before implementing it.

c. Implementation

Cross-Universities: Project-Based Learning requires cooperation between different universities to integrate project-based learning into the assessments. This can be achieved through:

Relevant Stakeholders	Roles and Responsibilities

Before Project Implementation	
Ministry of Education and line ministries	- Accreditation: Accreditation is an essential key to incentivize students to initiate, take the lead, and be involved in development projects. - Create University Networks (within the country and across the region): Initially, the university network within the country shall be established and enhanced to link universities from different fields together - generating cooperation between youth from different backgrounds, majors and skills.
Universities	- Modify the curriculum: the modification should mean that besides the compulsory courses, students will need to complete the compulsory Project Based Learning assignment at the end of the academic year to foster youth engagement, initiative, and collective responsibilities among students at all years. - Form an evaluation and assessment committee
Lecturers	- Provide PBL Project Instruction: rules, themes, timing, schedule and timeline, and assessment criteria - Coordinate team matchmaking process between universities - Arrange Project Planning and Implementation Workshops - Formulate Pre-implementation Questionnaires on youth skills and awareness on social issues - Formulate cross-university assessment and evaluation criteria
Students	Form a team with a mixture of

	students from different universities (either same or different fields) ● Propose topic of interest, scope, locations and concerns ● Write PBL Project Proposal and get approval ● Run pre-project campaign to further recruit volunteers, members, or raise necessary funds by carrying out activities such as selling flowers to the public, food or selling used items
During the Implementation	
Lecturers	● Provide consultation ● Assist and keep track of the project Implementation
Students	● Keep individual journal on their progress, understanding of the social issues they experience, reflections on their activities and their impacts, obstacles they went through, solutions, and lessons learned ● Submit term report to update on the progress of their team activities, reflect on the experiences and obstacles they encountered
After the Implementation	
Lecturers	● Collect Final Written Report ● Assess and Evaluate the Project ● Hand out Post-PBL Project Questionnaire on Skills Development and Social Responsibility ● Provide feedback
Students	● Launch a post-project questionnaire to gain feedback from beneficiaries of the project ● Conduct a final presentation on the project outputs

	• Submit final written report • Do the Post-PBL project questionnaire
Universities	• Publish each project and its impacts on social development on the universities' websites and social media pages
Relevant Stakeholders	• Take a survey on their perceptions of youth efforts in the development projects

These projects will be more than just an assignment to fulfill the credit requirements for graduation but will help youth to support other youth who might not be in education, training or employment. With the greater understanding that youth will bring to issues affecting young people, these projects will help to address issues that may otherwise be neglected. The projects will also improve relations and understanding between youth, inspiring other youth outside the educational field to start small changes within their community. In the long run, these projects can be extended into cross-nation project-based learning where people from different nations can cooperate to address social issues for the sake of future international development.

Promote Social Recognition on youth efforts in development projects:

Recognition of youth efforts and youth-led development projects is crucial for encouraging and engaging youth. Without recognition from society and the government, those efforts would go to waste. Therefore, it is essential for the government to fully support and promote recognition of youth efforts by engaging youth in the drafting process of a National Youth Policy. This can open a safe space for youth to contribute to policies that involve them, understand the process of policymaking and their right to participation. This process recognizes youth as a key actor despite the cultural stereotype that youth are inexperienced and lack the education and resources to initiate changes. Youth themselves should also broadcast their projects and achievements on social media to showcase their hard work in making an impact in society.

Social Recognition of youth efforts in development projects may be realized through three possible scenarios:

The first scenario is awarding youth for their effort in participating in or initiating development projects by the government. Although awards might seem like a small gesture, it generates a sense of appreciation and reinforces the benefits of participating in civic engagement. This small recognition motivates youth to keep up their actions and further produce fruitful social development projects. It may also inspire other youth to take their first step by getting involved

in existing youth-led development projects or initiate their own. It is also a gesture of appreciation toward youth's creativity and sense of responsibility and recognition that they have contributed to society.

The second scenario is through raising awareness of youth involvement and their achievements in addressing development issues within the country or society. Raising awareness can be done through broadcasting youth initiatives in the media for the public's acknowledgment. Formerly, the media has portrayed youth in negative images. As Checkoway and Gutiérrez (2006) argue, "the media often portray young people, especially young people of color, as perpetrators of crime, drug takers, school dropouts, or other problems of society" (p.2). Therefore, rebranding the youth image through media outlets will help to shift the public mindset to be more open, and respect youth creativity and their efforts to make positive changes.

The third scenario is sustaining youth involvement in development projects to mainstream youth as the engine of development. This can be done by establishing a supporting institution for youth projects which youth can approach for advice, mentorship, and consultation in the legal or financial aspects of project development. This body can help them to take steps toward being independent project initiators and creating an independent youth-led organization. While youth will have to go through a process of trial and errors to learn how to put to use their former experiences to solve problems additional knowledge on various the implementation environment and procedures will be beneficial. Therefore, having a place that youth can seek help will guide youth toward achieving their project objectives while building up their necessary knowledge.

Conclusion

The responsibility of pioneering development projects to improve the welfare of all nations has primarily been in the hands of states and international organizations. However, vulnerabilities and uncertainty in international politics call for a new solution in which the role of youth can be explored. Youth can also play an important role as partners of states and international organizations and can even initiate their own development projects to address their community needs. Nonetheless, if youth are not given opportunities to build their capacities, there will be an increased risk of unemployment, lack of education and training, job dissatisfaction, low quality development projects, and cycles of inter-generational poverty. Therefore, establishing a system to accredit social projects into the educational curriculum can help young people to gain a sense of social responsibility as well as learning to design and execute projects and contribute to individual, organizational, and community development. Simultaneously, promoting social recognition for youth efforts in development and creating supporting institutions to assist and sustain youth initiatives will incentivize youth to further engage in the field.

References

Australian Infant, Child, Adolescent and Family Mental Health Association. (2008). *Challenges of Youth Participation.* Retrieved from: https://www.copmi.net.au/images/pdf/Get-Involved/report_fact02.pdf

Bell, S. (2010). Project-Based Learning for the 21st Century: Skills for the Future*. The Clearing House: A Journal of Educational Strategies, Issues and Ideas, 83.* Retrieved from: https://doi.org/10.1080/00098650903505415

Borkowska-Waszak, S., Diamantopoulos, S. E., Lavelle, P., & Martinello, O. (2020). Mid-term Deliverable Report of the project 'Youth for a Just Transition': Good Practices of Youth Participation. *European External Action Service: European Commission.* Retrieved from: https://ec.europa.eu/info/sites/default/files/eu_regional_and_urban_development/top ics/documents/youth_for_a_just_transition_mid-term_deliverable_report_final.pdf

Çamur, H. (2006). *Barriers to Young People's Active Participation and Role of Civil Society Institutions.* Retrieved from: researchgate.net/publication/228160432_Barriers_to_Young_People's_Active_Participa tion_and_Role_of_Civil_Society_Institutions

Checkoway, B. (1996). Adults as Allies*. Partnerships/Community. 38.* Retrieved from: https://digitalcommons.unomaha.edu/cgi/viewcontent.cgi?referer=https://www.google .com/&httpsredir=1&article=1036&context=slcepartnerships

Checkoway, B., & Gutiérrez, L. (2006). Youth Participation and Community Changes*. Journal of Community Practice 14*(1-2). Retrieved from: https://www.researchgate.net/publication/233020765_Youth_Participation_and_Com munity_Change

Commonwealth Health Hub. (2021). Global Youth Development Index (YDI). *The Commonwealth Health Hub.* Retrieved from: https://www.thecommonwealth-healthhub.net/global-youth-development-index-ydi/

DFID CSO Youth Working Group. (2010). *Youth Participation in Development: A Guide for Development Agencies and Policy Makers.* Retrieved from: https://youtheconomicopportunities.org/sites/default/files/uploads/resource/6962_Yo uth_Participation_in_Development.pdf

Fukuda-Parr, S. (2011). Theory and Policy in International Development: Human Development and Capability Approach and the Millennium Development Goals. *International Studies Review, 13,* pp. 122–132. Retrieved from: http://sakikofukudaparr.net/wp-content/uploads/2016/06/Theory-and-Policy-in-International-Development-Humand-Development-Capability-Approach.pdf

Government of West Australia. (2021, March 19). *Youth Participation Kit: Young People Kit Resource 1.* Retrieved from: https://www.wa.gov.au/government/document-collections/youth-participation-kit

Hall, J. (2015, August 12). Developing Humans - Human Development: Young Voices; New Ideas. *Human Development Report Office.* Retrieved from: http://hdr.undp.org/en/content/developing-humans-human-development-young-voices-new-ideas

Horner, R. (2017). What is global development? *Global Development Institute Working Paper Series, 2017 (20)* pp. 1-24 Retrieved from: https://www.gdi.manchester.ac.uk/research/publications/gdi-working-papers/2017-020/

Horner, R. (2019). Towards a new paradigm of global development? Beyond the limits of international development. *Progress in Human Geography, 44(3)* pp. 415-436. Retrieved from: https://journals.sagepub.com/doi/10.1177/0309132519836158

Human Development Report Office Outreach. (2015). What is Human Development? *United Nations Development Program: Human Development Report Office.* Retrieved from: http://hdr.undp.org/en/content/what-human-development

Human Development Report Office. (2021). About Human Development. *United Nations Development Program: Human Development Report Office.* Retrieved from: http://hdr.undp.org/en/humandev

ILO & SIDA. (2019). *Young People not in Education, Employment, or Training.* Retrieved from: https://sustainabledevelopment.un.org/content/documents/26634NEET_Sida_brief.pdf

Inter-Agency Task Force on Financing for Development (IATF). (2016). *International development cooperation.* Retrieved from: https://www.un.org/esa/ffd/wp-content/uploads/2016/03/2016-IATF-Chapter2C.pdf

Khin, S. (2017). Youth Participation in Community Development: A Case Study of Youth in Takeo Province, Cambodia. *Victoria University of Wellington.* Retrieved from: https://researcharchive.vuw.ac.nz/xmlui/handle/10063/6715

Khor, M. (2016 May 16). China's boost to South-South Cooperation. *South Centre.* Retrieved from: https://www.southcentre.int/question/chinas-boost-to-south-south-cooperation/

Krajcik, J. S., & Blumenfeld, P. C. (2006). "Project Based Learning". In: Sawyer, R.K. (Ed), *The Cambridge Handbook of the Learning Sciences.* Cambridge University Press.

Kroenig, M. (2020, March). The Return of Great Power Rivalry: Democracy versus Autocracy from the Ancient World to the U.S. and China. *Oxford Scholarship Online.* DOI:10.1093/oso/9780190080242.003.0001

Lim, C., & Grant, A. (2014). Unleashing Youth in Asia: Solving for the "Triple-E" challenge of youth: Education, Employment and Engagement. *McKinsey Center for Government.* Retrieved from: https://www.mckinsey.com/~/media/mckinsey/dotcom/client_service/public%20sector /pdfs/unleashing_youth_in_asia.ashx

Lukman, R. Krajnc, D., & Glavic, P. (2009 April 27). Fostering collaboration between universities for sustainable development initiatives – the University of Maribor. *University of Maribor.* Retrieved from: https://www.researchgate.net/profile/Peter-Glavic/publication/245167954_Fostering_collaboration_between_universities_regardin g_regional_sustainability_initiatives_-_the_University_of_Maribor/links/5a42abcfaca272d29459068f/Fostering-collaboration-between-universities-regarding-regional-sustainability-initiatives-the-University-of-Maribor.pdf

MDG Achievement Fund. (2013). *Honduras: Human development for youth: overcoming the challenges of migration through employment.* Retrieved from: http://www.mdgfund.org/node/791

Meier, G. M., & Stiglitz, J. (2002). *Frontiers of Development Economics: The Future in Perspective.* Oxford University Press. Retrieved from: https://books.google.com.kh/books?hl=en&lr=&id=MT1Ev72eZLoC&oi=fnd&pg=PP9&d q=literature+on+development+economics&ots=zSRf5hc52k&sig=jBCSuNJXleUX-CfyCM8-ASRInq0&redir_esc=y#v=onepage&q=literature%20on%20development%20economics& f=false

Mounk, Y. (2021 July 7). We Might Have Reached Peak Populism. *The Atlantic.* Retrieved from: https://www.theatlantic.com/ideas/archive/2021/07/peak-populism/619368/

NEA. (2018). *Skills Shortage and Skills Gap in Cambodian Labor Market: Evidence from Employer Survey 2017.* Retrieved from: http://www.nea.gov.kh/images/survay/ESNS%202017--Final--05282018.pdf

OECD. (2014). Key Issues Affecting Youth in Cambodia. Retrieved from: https://www.oecd.org/countries/cambodia/youth-issues-in-cambodia.htm

OECD. (2018). *Better Policies for Better Youth Livelihoods: A Guidance Note for Development Practitioners.* Retrieved from: https://www.oecd.org/dev/inclusivesocietiesanddevelopment/Guidance_Note_2018.pdf

Plan International. (2020). Youth Economic Empowerment: Ensuring all children and young people have the knowledge, skills, and confidence they need to succeed. Retrieved from: https://plan-international.org/eu/Youth-Economic-Empowerment-Main

Population Division of the United Nations Department of Economic and Social Affairs. (2019). International Youth Days 12 August 2019. Retrieved from: https://www.un.org/development/desa/youth/wp-content/uploads/sites/21/2019/08/WYP2019_10-Key-Messages_GZ_8AUG19.pdf

Ranis, G., & Steward, F. (2000). Strategies for success in Human Development. *Journal for Human Development 1(1).* Retrieved from: http://www.econ.yale.edu/~granis/papers/cp0558.pdf

Ray, D. (1987). *Development Economics*. Princeton University Press. Retrieved from: https://books.google.com.kh/books?hl=en&lr=&id=GKr5RxWT4uAC&oi=fnd&pg=PP1&dq=literature+on+development+economics&ots=r7iKKmVrdr&sig=dwqgF8ALKS-doLFsL4FrSg4CeqA&redir_esc=y#v=onepage&q=literature%20on%20development%20economics&f=false

Robalino, D., Margolis, D., Rother, F., Newhouse, D., & Lundberg, M. (2013). Youth Employment: A Human Development Agenda for the Next Decade. *Social Protection and Labor Discussion Paper (1308).* Retrieved from: https://openknowledge.worldbank.org/bitstream/handle/10986/17620/839250NWP0P1450Box0382116B00PUBLIC0.pdf;sequence=1

Sany, J. & Sheedy, T. (2021 April 8). Sidestepping Great Power Rivalry: U.S.-China Competition in Africa. Can Washington challenge Beijing in Africa while also seeking cooperation that advances African interests? *United States Institute of Peace.* Retrieved from: https://www.usip.org/publications/2021/04/sidestepping-great-power-rivalry-us-china-competition-africa

Simmon, R., & Thompson, R. (2014). Engaging young people not in education, employment or training: The case for a Youth Resolution. *University and College Union.* Retrieved from: https://www.ucu.org.uk/media/6185/Engaging-young-people-not-in-education-employment-or-training-The-case-for-a-Youth-Resolution-Feb14/pdf/ucu_youthresolution_report_feb14.pdf

Singh, M. (2020). *Youth Peace and Development: The Need for Youth Participation in the Development of Social Integration.* Retrieved from: https://www.researchgate.net/publication/338969214_The_Need_for_Youth_Participation_in_the_Development_of_Social_Integration

The Economic Times. (2014). India has the world's largest youth population: UN report. *The Economic Times.* Retrieved from: https://economictimes.indiatimes.com/news/politics-and-nation/india-has-worlds-largest-youth-population-un-report/articleshow/45190294.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst

Todaro, M., P. & Smith, S., C. (2012). *Economic Development 11th Edition*. Pearson.

United Nations. (2020). *The Sustainable Development Goals Report 2020.* Retrieved from: https://unstats.un.org/sdgs/report/2020/The-Sustainable-Development-Goals-Report-2020.pdf

United Nations. (2021a). Goal 17: Revitalize the global partnership for sustainable development. *Sustainable Development Goals.* Retrieved from: https://www.un.org/sustainabledevelopment/globalpartnerships/

United Nations. (2021b). *Partnerships: Why they matter?* Retrieved from: https://www.un.org/sustainabledevelopment/wp-content/uploads/2019/07/17_Why-It-Matters-2020.pdf

United Nations Department of Economic and Social Affairs. (2013). *Definition of Youth.* Retrieved from: https://www.un.org/esa/socdev/documents/youth/fact-sheets/youth-definition.pdf

United Nations Development Program. (1990). *Human Development Report 1990: Concept and Measurement of Human Development.* Retrieved from: http://www.hdr.undp.org/en/reports/global/hdr1990

United Nations Development Program. (2021). *Goal 17: Partnerships for the goals.* Retrieved from: https://www.undp.org/content/undp/en/home/sustainable-development-goals/goal-17-partnerships-for-the-goals.html

United Nations Statistic Division. (2021). *Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development.* Retrieved from: https://unstats.un.org/sdgs/report/2020/goal-17/

University of Florida. (2012). *Involving Youth in Community Development.* Retrieved from: https://sfyl.ifas.ufl.edu/archive/hot_topics/families_and_consumers/youth_and_community_development.shtml

Vite, B., & Dibang-Achua, R., O. (2019). *Youth Engagement Literature.* Retrieved from: https://www.researchgate.net/publication/334454285_Youth_Engagement_Literature

Chapter 17 | Cambodia's Race to Marriage Equality and Inclusiveness for LGBTIQ Community

Soriya THEANG

Future Scenario

A Letter to My Late Grandma

20/May/2040

Dear Grandma,

How have you been, Grandma? I am doing fine. I don't know what would have happen to me if it was not for you pushing the LGBTIQ agenda in our country. I remember you saying: "I want to leave this world better than when I found it, for the sake of my kids, grandkids, and the next generation". Today, my partner and I get an official adoption letter for our son, Reaksmey. He is 5 months old. Oh, I haven't told you about my marriage yet. We got married one year after our country legalized marriage equality. That day was a memorable and unforgettable moment for us. This wouldn't be true if the Declaration of Family Relationships (DoFR) was not implemented nationwide, which paved the road for marriage equality.

I also want you to know that every year, Pride Week is celebrated with the involvement of our singers, actresses and actors, other celebrities, monks, and important people in the country. While some keep their identity private and among close friends, which we should respect, others come out to create visibility, which makes more people aware that LGBTIQ people are our friends, relatives, colleagues, and neighbors – and look the same as everybody else. This has long created an environment where differences and diversity are normalized.

However, you always said that a force of backlash would remain regardless, but now we have anti-discrimination laws in place to protect us. Also, our government introduced social protection policies for marginalized LGBTIQ people such as my partner. This is an as-good-as future for us. Grandma, I want you to know that we are so proud of you and others before us who have paved the road for the LGBTIQ struggle and created this future for us. Thank you so much, Grandma.

Love,
Sora

Introduction

Marriage equality is believed to be key to normalizing homosexuality and as a result can reduce stigma, poverty, self-harm, and other problems within the lesbian, gay, bisexual, transgender, intersex, or queer (LGBTIQ) community or queer community because "[i]t could bring the essence of gay life – a gay couple – into the heart of the traditional family (Sullivan, 1996, p. 184). Mainstream LGBTIQ communities are more likely to view marriage as central to achieving full equality, attributing this pattern to a desire to 'just be normal' by mimicking the historically heterosexual practices (Atkins, 2010). However, the LGBTIQ community is divided on this argument with others believing that this act of pursuing formal equality is just to blend in; marriage is an attempt to conform to heterosexual society (Jacobs, 2017). Another argument is that marriage equality rather than the celebration of difference became the main goal of LGBTIQ mainstream. For instance, in the Netherlands, where the initial public sentiment of marriage equality failed to embrace different forms of social categorization such as race, class, education, etc. (referred to as intersectionality), the country is again divided on the topic of homosexuality. The LGBTIQ Muslim community living in the Netherlands was oppressed as a result when the "Islamic community" were painted as illiberal and premodern by the Dutch's nationalist groups (Duyvendak, 2016).

Nevertheless, marriage equality particularly same-sex marriage, remains an important issue, both in Cambodia and around the world. By mid-2021, there were twenty-eight countries that had legalized same-sex marriage, of which Costa Rica was the latest in 2020 (CFR Staff, 2021). In Asia, Taiwan is the first and only country to legalize same-sex marriage and did so on 24 May 2019 (Steger, 2019). That means Cambodia has not yet done the same thing. Prime Minister Hun Sen said that "Cambodia is not ready yet to create legislation to allow same-sex marriages because the issue is still causing controversy in some countries" (Pech, 2019). However, is Cambodia really not ready to join this race towards equality? What could it take to make Cambodia ready for this future? What should Cambodia be looking at beyond marriage equality?

This chapter will explore these questions. The first section analyzes LGBTIQ discourse in Cambodian society, culture, religion, politics, and law, creating space for discussion in the next section. In the second part, the current status of the above dimensions is examined to produce strategic paths to realize inclusivity and equality as the goals of LGBTIQ movements. This chapter aims to contribute to the Cambodian LGBTIQ movement who have faced many obstacles in a race towards equality and inclusiveness while learning from their own experiences and others.

Context Analysis

LGBTIQ Discourse in Cambodian Society and Culture

Diverse practices in sexual orientation and gender have existed in Cambodia for a long time. These practices were an integral part of Cambodian history, including the colonial period and globalization of LGBTIQ identities, establishing complex and unique socio-cultural dynamics within the Cambodian LGBTIQ community. For example, during the Angkor Era, a Chinese observer who visited Cambodia between 1296 and 1297 noted that there were many pubescent boys involved in sexual relationships with older men. The boys would hang around every day in the market, trying to engage Chinese men in return for gifts (Daguan 2007). This shows that practices of sexual orientations and genders are not a foreign import. During the French colonial period however, a strict gender binary was imposed. Edwards (2007) notes that in the earlier 19th century, the hairstyles and clothing of Cambodian women and men were almost identical. Yet, such practices were subsequently gendered by the colonial efforts to define a national style. By the 1940s, a clear binary in male/female clothing and hairstyle emerged under the French Colonial Rule as the authentic Khmer Style.

The globalization of LGBTIQ identities through the advancement of communication technologies and pop culture has driven individuals to increasingly identify with and embrace LGBTIQ identities. The internet, social media, and smartphone technology have changed the landscape of the LGBTIQ community. There are increasing numbers of Cambodian youth networking on social media platforms such as Twitter and Facebook, with one LGBTIQ group containing over 31,600 members, and other sites offering rights-based information (Hoefinger and Srun, 2017). Social media networking can help to end some of the social isolation young LGBTIQ people often experience. Pop culture also contributes to this process, such as social campaigns, music, TV shows, books, fashions, and so on. Pride Week, for instance, has been celebrated in Cambodia since 2003 and started to explicitly champion equality, rights, and freedom of LGBTIQ people (RoCK, 2021).

However, the globalization of LGBTIQ identities has not resulted in a straightforward replacement of the 'local' by the 'global'. In rural areas where LGBTIQ people have had little or no exposure to globalized LGBTIQ discourse, they retain their unique way of articulating their gender, by just referring to each other using masculine/feminine familial terms such as bong/p'oun pros/p'oun srey (older/younger brother/sister), pou (uncle), ming (aunt), and taa (grandfather), or yeay (grandmother) (de Brun, 2019, p. 30). Similarly, one LGBTIQ activist noted during her Sexual Orientation and Gender Identity (SOGI) training in rural areas that "the older generation just says, 'I am a man', not a 'trans man', except for a couple of activists who have been around SOGI training for years" (p. 32). In this postcolonial context, the unequal power

relations between foreign development workers and educated, urban Cambodian activists on one hand, and rural Cambodians who have had little or no exposure to LGBTIQ discourse are witnessed. LGBTIQ people living in rural areas experience different lives, difficulties and thus have different needs from people in urban areas. From a young age, those who are seen to rebel against gender norms pay a high price in discrimination, bullying, and harassment in school (CCHR, 2015, p.22). In both urban and rural areas, accessible mental health services for LGBTIQ-identified individuals are extremely limited and usually cost-prohibitive. Beyond health-related needs, there is also a lack of attention to housing and homelessness, unemployment, and other social, economic, and emotional needs, such as hunger, poverty, family conflict, and mental health issues (UNDP, 2014). Additionally, the immediate family members of people in the LGBTIQ community are often those who cause the most difficulties such as forcing them to enter into heterosexual marriage; some decide to give in, conform and marry, or rebel and risk being cast out by family (CCHR, 2010, p.5) because they have been treated as "ill" or "other".

LGBTIQ Discourse in Cambodian Religion and Culture

Buddhism, as practiced in Cambodian culture, indirectly condemns homosexuality. For example, the Chbab Srey, a poem that lays out a traditional code of conduct for women, not only hinders progressive feminist causes in Cambodia but also influences LGBTIQ Cambodians. In the context of the Chbab Srey, a prescribed punishment for failing to adhere to the standards of a properly subservient Khmer wife is to be reincarnated as a khteuy — or gay in English. Verses 168 – 186 of Chbab Srey says:

"As for the 'enemy wife', she is [...] not afraid of her husband; if he gives her an order, she does nothing [...] Those who follow these ways and do not wish to reform when their lives are ended, they fall into the four hells, where they will endure misery and suffering. Delivered from there, they will be reincarnated as khtuey" (Jacobsen, n.d, p.21).

This negative invocation depicts people defined as 'khteuy' as the ultimate 'bad Khmer woman' who in the last life committed bad deeds and thus was reborn as "khteuy" due to that person's karma. In Buddhism's law of Karma, Karma has implications beyond one's current life; bad actions committed by a person in the current life can follow the person into the next life and punish that person as a result (BBC, n.d.). A survey conducted by Rainbow Community Kampuchea (RoCK) in 2015 found that 53 percent of 'straight' Cambodians believe (bad) karma from a previous life is responsible for people 'becoming LGBT' (RoCK, 2015, p.48). Such a belief is created as a disciplinary mechanism to ensure adherence to rigid and oppressive gender norms.

Religion is usually cited worldwide as one of the causes of homophobia, both social and internalized (Barnes and Meyer, 2012). Comparatively however, Western monotheisms including Catholicism, Protestantism, Judaism, and Islam exhibit more rejection of homosexuality than Eastern religions such as Buddhism and Hinduism (Larson, 2010). Despite non-consensus on the religion's views on homosexuality, the relative homosexual friendliness of Buddhism arguably reflects Buddhist's teachings on equality, proper interpretation of precepts, and the identification of essence and manifestation (Cheng, 2018). In the fourth step of Buddhism's philosophy of the Eightfold Path to enlightenment, which forbids unlawful sexual acts — rape, sexual harassment, molestation of children, and unfaithfulness to one's spouse, there is no distinction between homosexual or heterosexual behavior and mentioning of homosexual-specific prohibitions (CCHR, 2010).

Despite this, the Dalai Lama told BBC that "I am a Buddhist and, for a Buddhist, a relationship between two men is wrong. Some sexual conduct in marriage is also wrong" (BBC, n.d). On the other hand, some monks in Thailand hold a different stance. One monk said "Treating LGBT people badly goes against the Buddha's teachings. LGBT people are also humans, they are also Buddhists, and as a monk, I support and accept all Buddhist people, and aim to reduce their suffering" (Rina, 2020). Such positive support of homosexuality from Buddhist leaders has been shown in Cambodia as well. Since Pride 2012, Rainbow Community Kampuchea (RoCK) has organized Buddhist blessing ceremonies, in which large numbers of the queer community gather in a pagoda along with their partners and families. At the ceremonies, senior monks bless queer partnerships, generally accompanying the blessings with sermons on Theravada Buddhism's queer-friendliness (Meas, 2012).

LGBTIQ Discourse in Cambodian Politics

Since the introduction of the United National Transitional Authority for Cambodia (UNTAC) to Cambodia in 1992, there have been influxes of development aid along with international non-governmental organizations (INGOs) and a growing number of local non-governmental organizations (NGOs), making Cambodia one of the most NGO-dense states in the world (Hughes, 2009). This period marked the arrival of new approaches such as human rights and gender mainstreaming, brought by NGOs and INGOs (Frewer, 2013, p. 103). This coincided with attention being paid to the LGBTIQ community, especially when NGOs started to respond to Cambodia's HIV/AIDS epidemic at the time (de Brun, 2019). In the 2000s, NGOs working on HIV/AIDS began to adopt a more holistic approach to HIV prevention and eventually embraced an LGBTIQ rights-based approach as a key strategy to combat HIV infection (p.19). In contrast to earlier efforts by Pride Week that focused on HIV prevention, it was not until 2009 that a group of Cambodian NGO staff and foreign development volunteers came together to organize an inclusive Pride

celebration that explicitly spoke in terms of equality, rights, and freedom (p.20). During this period, LGBTIQ rights discourses rose to prominence in Cambodia "mov[ing] from being on the complete margin, or even absent, to the center of international development politics in the last decade" (Klapeer, 2018, p.3).

LGBTIQ rights became more visible among development partners in 2017 when Cambodia's Supreme Court dissolved what was at the time the country's only viable opposition party, the Cambodia National Rescue Party (CNRP). Donors, who have sought to remain engaged in Cambodia and maintained relations with the government, have looked to less sensitive human rights issues to support, of which LGBTIQ rights was one (de Brun, 2019, p.22).

Prior to 2017, the legalization of same-sex marriage had already become a hot topic among politicians. Several political parties had promised to legalize same-sex marriage if they won the 2018 election (Power, 2017). The largest non-ruling party the CNRP said it would run a referendum on the issue. Other parties said they would respect what the people wanted while the ruling Cambodian People's Party (CPP) said it had no plans to make marriage equal, but confirmed the government would consider the issue if a formal request was made to do so (Power, 2017).

Now that the CPP effectively dominates Cambodian politics, it is up to political elites to push this agenda forward. Notably, in 2004, the late King Norodom Sihanouk made a statement in support of same-sex marriage as did King Norodom Sihamoni (Pann and Hunt, 2017). Princess Norodom Soma also published a 2012 editorial in the Phnom Penh Post titled, Being Gay is Not Wrong. On the other hand, in 2007, Prime Minister Hun Sen disowned his adopted daughter for being a lesbian (Reuter Staff, 2007). Lately, however, in February 2019, Prime Minister Hun Sen said Cambodia was not ready to legalize same-sex marriages but appealed to the public to not discriminate against LGBTIQ people (Pech, 2019). In an interview about the introduction of a new life skills course covering topics such as sexual health, gender-based violence, gender identity, and combating discrimination against the LGBTIQ population into grades 10 and 11, a gender specialist from UNDP said: "key senior officials from the government … have been very supportive of LGBT people" (Maza, 2017). This progressive LGBTIQ discourse is also beginning to influence the legal sphere as well.

LGBTIQ Discourse in Cambodian Law

Legally, same-sex marriage is banned by the Constitution (Article 45) which states that "Marriage shall be conducted according to conditions determined by law based on the principle of mutual consent between one husband and one wife" and the Law on Marriage and Family (Article 3) which states that "A marriage is a solemn contract between a man and a woman in a spirit of

love in accordance with the provisions of law". In practice, however, many cohabiting same-sex couples or rainbow couples (an umbrella term used to describe couples with two partners of the same sex, or in which one or both partners identifies as transgender) across Cambodia already live as spouses, while some conduct unofficial wedding ceremonies (CCHR, 2017, p.vi). Among those couples, about one-fifth have received important legal recognition in the form of family books[1] by local authorities, where they were classified as husband and wife (39.13%) or siblings (21.74%), or one as the head of the family (13.04%) (CCHR, 2017, p.12). Notably, this has happened in a few locations while in other places such as Phnom Penh the practice does not exist.

In terms of adoption, the Cambodian Civil Code establishes that full adoption is only available to married couples, effectively denying full adoption rights to rainbow couples. In the case of same-sex couples, one member can adopt a child but this process leaves the family lacking essential legal protections. However, despite the lack of an enabling legal framework, Cambodia's Rainbow Families report (CCHR, 2017) showed that many currently co-habiting rainbow couples across Cambodia (32.71% of those interviewed) already have children in their care, of which 67.64 percent are based on simple adoption or informal agreements, with many couples stating that they have adopted family members such as nieces or nephews (40%) (p.27). Among rainbow couples who have adopted a child, a significant proportion (45.71%) had a family book, compared to couples who have not adopted a child (9.71%) (p.vi).

The example of adoption, in addition to revealing the significant disparities between real practices and supposed legality regarding the availability of family books, indicates the inconsistent interpretation and application of the law. This can however work to the advantage of the Cambodian LGBTIQ community because it opens up spaces for them to negotiate improvements to their lives beyond the narrow formalism of legal equality. This can explain why the Declaration of Family Relationship (DoFR) advocated by Rainbow Community Kampuchea (RoCK) has gained popularity. The Declaration of Family Relationship is "a private contract form that states about the love relationship and commitment of Cambodian LGBTIQ couples" (RoCK, 2018), just as marriage does for heterosexual couples. RoCK has helped introduce the DoFR to 50 communes in 15 provinces around Cambodia where it has been accepted and supported by local authorities (Power, 2018).

Positive steps have also been made by the Cambodian government lately. In June 2019, the Cambodian government accepted all nine SOGI-related recommendations made in the course of

---

[1] A document issued by local authorities used to identify members of the family with Khmer nationality and blood relationship of each family including spouse, their own blood children or adopted children (Royal Government of Cambodia, 1997)

its second Universal Periodic Review (UPR) at the Human Rights Council (HRC) in Geneva, including the adoption of a same-sex marriage law, a gender recognition law, and an anti-discrimination law (ILGA, 2020, p.285). Considering the nation currently holds to a rigidly defined gender binary, it is a move that may prove more palatable to the broader public in the short term while still falling far short of full acceptance of LGBTIQ marriage.

Policy Recommendations

- De-politicization of LGBTIQ rights:

These positive developments, however, raise concerns over the future of the movement when LGBTIQ rights are being made into a political struggle between political parties as well as between government and non-state actors. A Cambodian LGBTIQ activist said "…as more donors and NGOs focus on LGBT rights, the movement's narrative becomes more difficult to control: 'LGBT issues could become hot', i.e. politically sensitive in the eyes of the government and thus vulnerable to backlash and state repression" (de Brun, 2019, p.23). Considering this, Cambodian LGBTIQ activists must navigate this highly fraught landscape. A strategic path forwards should be "staying rooted in the communities through our membership, understanding local concerns in the provinces, and building trust with local authorities" (de Brun, 2019, p.23). Maintaining independence from all the political parties is necessary for progressing LGBTIQ activism including achieving the legalization of marriage equality. Sexual orientation and gender identity should not be made into a partisan political issue.

- Extension of DoFR for short-term interest:

Despite having escaped significant repression compared to other movement groups such as environmental issues or land disputes and having built up the movement to this level, queer politics is still vulnerable to co-option by political elites and also to pinkwashing following recent government positivity concerning LGBT rights. However, such a situation could turn the table to the advantage of LGBTIQ activism. In Thailand, which is known as "a tourist haven for same-sex couples" (Yongcharoenchai, 2013), the Thai government has employed an active "pinkwashing" strategy, in which LGBTIQ rights are deployed to gloss over other negative aspects of the current political regime and to serve as good international public relations. in line with this strategy, the Thai government introduced a draft bill in support of same-sex unions in an attempt to secure support for the election (Villadiego, 2018). This illustrates how the recognition of LGBTIQ rights can be used to further the political interests and motives of the regime in power which is similar to the situation in Cambodia. Thus, there may exist an opportunity to progress LGBTIQ discourse in Cambodia by first advocating for the nation-wide implementation of the Declaration of Family Relationships (DoFR) prior to taking a bigger step to legalize same-sex marriage and enact anti-discrimination laws. RoCK can continue to work with lawyers and other local authorities who

have not yet adopted the DoFR while seeking legal support for the initiative from the central government.

- Promotion of Respect and Acceptance of Diversity and Differences:

While it is important to create an environment which penalizes discrimination it is also critical to create a society which promotes respect and acceptance of diversity. Just as equality has become the goal of the LGBTIQ movement, the celebration of difference should be a main aim of this struggle as well. This could be done through the integration of Buddhism, one of the core values in Cambodian society, and the promotion of the "coming out" concept. Buddhism can play its part, using its wisdom to promote respect and acceptance of diversity, to establish itself as a progressive faith, especially in the context of a gradual erosion of the practice of Buddhism (U.S Department of State, 2021) due to recent scandals associated with some religious figures (Ben, 2015; Khy and O'Connell, 2016).

Pagodas can work with LGBTIQ activists to clarify the belief in Karma and "Khteuy" while also creating a body to explain the religious texts on homosexuality to the public better. This has been shown to be successful in Indonesia where the Youth Interfaith Forum on Sexuality is flourishing and some Indonesian Islamic and Protestants leaders continue to work with the Asia Pacific Coalition for Men's Sexual Health (APCOM) to have conversations on interpreting religious texts in a progressive manner (Rodriguez, 2015). In addition, creating an accepting environment becomes easier when more people are aware LGBTIQ people are friends, relatives, colleagues, and neighbors – and look as similar or different as anyone else. Thus, visibility is important, whether in the form of celebrations, public gatherings like Pride events, or on an everyday level in the school or workplace. Pride celebrations can involve people of influence such as local celebrities, monks, or important people in the country. These steps are vital for the normalization of LGBTIQ rights among the general public, first for the purpose of inclusiveness and second for changing public opinion and fostering a cultural transformation that will lead to marriage equality legalization. Transformation in state regulation and policy does not always occur alongside a total and cultural transformation (Yulius, 2018). Thus, the legal and social reforms should always go hand-in-hand to make legal transformation effective.

- Beyond Marriage Equality: Social Protection and Cultural Transformation

LGBTIQ rights are increasingly centered around the topic of formal equality— legalization of same-sex marriage and the enactment of anti-discrimination laws. Too often the popular term "LGBTIQ" assumes that those different identities share similar goals and concerns. However, will all LGBTIQ people gain the same benefits from this formal equality? Who would gain more from this development? Individuals from well-nourished socio-economic backgrounds might not find any difficulties in getting into formal employment. But, the ones at the bottom with limited

resources will be again left behind. Those people need not only legal recognition, but also structural reforms that enable them to access education, health, and social welfare. LGBTIQ living in urban areas, for example, have access to vastly more resources and support than those living in rural areas (CCHR, 2010). Looking at this, one should take into consideration the concept of intersectionality or how different forms of social categorization such as race, class, education, etc. intersect with gender and sexual identities. This can help to highlight the different needs even among the so-called LGBTIQ community and inform public policies to promote and protect LGBTIQ rights. The government should work with LGBTIQ activists to bridge these gaps to promote the financial and economic inclusion of the most disadvantaged individuals. Reforms to support resource distribution for the most marginalized members of the LGBTIQ community should be made. Social policies in the form of social assistance such as welfare and social services should be brought in, targeting vulnerable LGBTIQ individuals who experience multiple layers of discrimination (gender identity, economic class, education, or disability).

Conclusion

Just as marriage equality is significant to normalize homosexuality and reduce stigma, poverty, and other problems within the LGBTIQ community, celebration of diversity and differences is equally vital, given it can lessen discrimination and build an environment for cultural transformation. This race to marriage equality and inclusiveness around the world is ever changing and evolving; Cambodia is no exception. Different forces within and outside Cambodia — French colonization, globalization of LGBTIQ identities, religion, and political contestations — have shaped Cambodian LGBTIQ discourse throughout history. Not until recently had LGBTIQ rights has gained attention from Cambodian elites and political leaders who have declared their stand on the matter, but none have made a bold move towards the formal equality of LGBTIQ rights. Prime Minister Hun Sen said that Cambodia was not ready for same-sex marriage. However, we will never be ready unless we start to take a step forward, and it requires all stakeholders to walk on this road together. Several course of actions here should be considered. Firstly, staying rooted in the communities and maintaining independence from partisan politics can help the movement survive political contestations. In the meantime, it is important to create a culture where differences and diversity are celebrated through the integration of Buddhism and people of influence. These actions can build up momentum to ensure the goals of marriage equality can be confirmed by Cambodian laws.

References

Atkins, C. (2010). Queering Normal or Normalizing Queer? Marriage Equality and the Divisions Between the Queer and Mainstream Gay Movements in the Netherlands. Independent Study Project (ISP) Collection. Paper 842. Retrieved from: https://digitalcollections.sit.edu/isp_collection/842

Barnes, D, M. & Meyer, I.H. (2012). Religious affiliation, internalized homophobia, and mental health in lesbians, gay men, and bisexuals. *American Journal of Orthopsychiatry 82*, pp. 505–15.

BBC. (n.d). What does Buddhism say about homosexuality?. *BBC*. Retrieved from https://www.bbc.co.uk/bitesize/guides/z2w2fg8/revision/5

Ben, S. (2015). Monk Defrocked, Arrested for Rape of Minor. *Cambodia Daily.* https://english.cambodiadaily.com/news/monk-defrocked-arrested-for-rape-of-minor-94333/

CCHR. (2010). Coming Out in the Kingdom: Lesbian, Gay, Bisexual and Transgender People in Cambodia. Retrieved from https://cchrcambodia.org/index_old.php?url=project_page/project_page.php&p=report_deta il.php&reid=8&id=3

CCHR. (2015). LGBT Bullying in Cambodia's Schools. Retrieved from https://cchrcambodia.org/admin/media/report/report/english/2015_12_17_CCHR_REPORT_ LGBT_Bullying_in_Cam_School_(ENG).pdf

CCHR. (2017). Cambodia's Rainbow Families: Marriage, Adoption & Gender Recognition Rights in the Kingdom. Retrieved from: https://cchrcambodia.org/admin/media/report/report/english/2017-11-22-CCHR-Report-Cambodia-Rainbow-Families_ENG.pdf

Cheng, F. K. (2018). Being Different with Dignity: Buddhist Inclusiveness of Homosexuality. *Social Sciences*, 7(4), 51. MDPI AG. Retrieved from http://dx.doi.org/10.3390/socsci7040051

Council on Foreign Relations Staff. (2021). Marriage Equality: Global Comparisons. Retrieved from https://www.cfr.org/backgrounder/marriage-equality-global-comparisons

Daguan, Zhou. 2007. A Record of Cambodia: The Land and Its People. Seattle: University of Washington Press.

de Brun, P. (2019). Queering Kampuchea: LGBT Rights Discourse and Postcolonial Queer Subject Formation in Cambodian Queer Politics. Retrieved from https://www.wilsonllp.co.uk/wp-content/uploads/2016/08/Queering-Kampuchea-LGBT-rights-discourse-and-postcolonial-queer-subject-formation-in-Cambodian-queer-politics.pdf

Duyvendak, J. (2016). "The Pitfalls of Normalization: The Dutch Case and the Future of Equality." In Ball, C. (Ed.), *After Marriage Equality: The Future of LGBT Rights,*. New York, USA: New York University Press. https://doi.org/10.18574/9781479898794-012

Edwards, P. (2007). Cambodge: The Cultivation of a Nation 1860 – 1945. University of Hawai'i Press. http://www.jstor.org/stable/j.ctt6wr3pz

Frewer, T. (2013). Doing NGO Work: the politics of being 'civil society' and promoting 'good governance in Cambodia. *Australian Geographer*, *44*(1), 97-114, DOI: 10.1080/00049182.2013.765350

Hoefinger, H. & Srun, S. (2017). "At-Risk" or "Socially Deviant"? Conflicting Narratives and Grassroots Organizing of Sex/Entertainment Workers and LGBT Communities in Cambodia. *Social Sciences*, *6*(3), 93. MDPI AG. Retrieved from http://dx.doi.org/10.3390/socsci6030093

Hughes C. (2009). *Dependent Communities: Aid and Politics in Cambodia and East Timor*. Cornell University Press.

ILGA. (2020). State-sponsored Homophobia: Global Legislation Overview Update. Retrieved from: https://ilga.org/state-sponsored-homophobia-report-2020-global-legislation-overview

Jacobs, L. (2017). Regulating the Reguliers: How the Normalization of Gays and Lesbians in Dutch Society Impacts LGBTQ Nightlife. Independent Study Project (ISP) Collection. Retrieved from: https://digitalcollections.sit.edu/isp_collection/2651

Jacobsen T. (n.d). Misogyny, Malice, and Male Privilege in Cambodia: The Chbab Srei [c. 1800] Retrieved from: https://www.academia.edu/15042099/Misogyny_Malice_and_Male_Privilege_in_Camb odi a_The_Cbpab_Srei_c.1800.

Kingdom of Cambodia. (1993). Constitutions of the Kingdom of Cambodia. Retrieved from https://www.refworld.org/docid/3ae6b5a40.html

Klapeer, C. (2018). "LGBTIQ Rights, Development Aid and Queer Resistance." In Rutazibwa, O. and Shilliam, R. (Eds.) *Routledge Handbook of Postcolonial Politics.* London: Routledge.

Khy, S. & O'Connell, T. (2016). Pagoda Chief Gets 15 Years for Rape of Boys. *Cambodia Daily.* Retrieved from https://english.cambodiadaily.com/news/pagoda-chief-gets-15-years-for-rape-of-boys-113980/

Larson, P. (2010). "Homosexuality". In Leeming, D.A., Madden, K. and Marlan, S. (Eds) *Encyclopaedia of Psychology and Religion*. New York, USA: Springer Science + Business Media LLC.

Maza, C. (2017). Lessons in LGBT: Cambodia Brings Gay Rights into the Classroom. Retrieved from https://deeply.thenewhumanitarian.org/womenandgirls/articles/2017/06/28/lessons-in-lgbt-cambodia-brings-gay-rights-into-the-classroom

Meas, R. (2012). Pride closes with a Buddhist blessing. *Phnom Penh Post.* Retrieved from https://www.phnompenhpost.com/lifestyle/pride-closes-buddhist-blessing

National Assembly of the State of Cambodia. (1989). Law on Marriage and Family. Retrieved from https://www.ilo.org/dyn/natlex/docs/ELECTRONIC/86095/96933/F1861658608/KHM86095.pdf

Pann, M. & Hunt, L. (2017). Cambodia's Gays: Out of the Shadows? *The Diplomat*. Retrieved from https://thediplomat.com/2017/05/cambodias-gays-out-of-the-shadows/

Pech, S. (2019). Kingdom Not Yet Ready for LGBT Laws: Hun Sen. *Khmer Times.* Retrieved from https://www.khmertimeskh.com/580112/kingdom-not-yet-ready-for-lgbt-laws-hun-sen/

Power, S. (2017). Will Cambodia be the next Asian country to get same-sex marriage? *Gay Star News*. Retrieved from https://www.gaystarnews.com/article/will-cambodia-be-the-next-asian-country-to-get-same-sex-marriage/

Power, S. (2018). Same-sex couples tie the knot in Cambodia in a stunning public ceremony. *Gay Star News.* Retrieved from https://www.gaystarnews.com/article/same-sex-couples-tie-the-knot-in-cambodia-in-a-stunning-public-ceremony/

Reuter Staff. (2007). Cambodia PM slammed for disowning lesbian daughter. *Reuters*. Retrieved from https://www.reuters.com/article/us-cambodia-lesbian/cambodia-pm-slammed-for-disowning-lesbian-daughter-idUSBKK11415620071031

Rina, C. (2020). 'LGBT people are also humans': Thai Buddhist monk backs equality. *Reuters*. Retrieved from https://www.reuters.com/article/us-thailand-lgbt-religion-interview-trfn-idUSKBN25H0RZ

RoCK. (2015). *Research Report on Opinions, Attitudes, and Behaviour Toward the LGBT Population in Cambodia*. Retrieved from: https://www.academia.edu/21493512/TNS_Research_Report_on_Opinions_Attitudes_and_ Behavior_toward_the_LGBT_Population_in_Cambodia

RoCK. (2018). 'Declaration of Family Relationship (DoFR) Ceremony.' Retrieved from: https://rockcambodia.org/declaration-of-family-relationship-dofr-ceremony/

RoCK. (2021). Cambodian LGBTIQ see changes in Pride and IDAHOTB 2021 celebration. *Southeast Asia Globe*. Retrieved from: https://southeastasiaglobe.com/cambodian-lgbtiq-see-changes-in-pride-and-idahotb-2021-celebration/

Rodriguez, G. (2015). When sexuality meets faith, the Indonesian Youth Interfaith Forum on Sexuality. Retrieved from: https://www.academia.edu/31085697/When_sexuality_meets_faith_the_Indonesian_Youth_Interfaith_Forum_on_Sexuality

Royal Government of Cambodia. (1997). Anukrek On The Family Record Book. Retrieved from https://data.opendevelopmentmekong.net/laws_record/sub-decree-on-the-family-record-book

Steger, I. (2019). In a first for Asia: Taiwan legalized same-sex marriage—with caveats. Retrieved from https://qz.com/1621783/taiwan-becomes-first-country-in-asia-to-legalize-same-sex-marriage/

Sullivan, A. (1996). *Virtually normal: An argument about homosexuality*. Vintage.

UNDP. (2014). *Being LGBT in Asia: Cambodia Country Report*. Bangkok: UNDP/USAID

U.S Department of State. (2021). *2020 Report on International Religious Freedom: Cambodia.* Retrieved from https://www.state.gov/reports/2020-report-on-international-religious-freedom/cambodia/

Villadiego, L. (2018). Thailand leads on same-sex unions, so why the LGBT complaints?. Retrieved from https://www.scmp.com/week-asia/lifestyle-culture/article/2174312/thailand-leads-same-sex-unions-so-why-lgbt-complaints

Yulius, H. (2018). *Rethinking the Mobility (and Immobility) of Queer Rights in Southeast Asia: A Provocation*. Heinrich-Boll-Siftung. Retrieved from https://th.boell.org/en/2018/12/26/rethinking-mobility-and-immobility-queer-rights-southeast-asia-provocation

Yongcharoenchai, C. (2013). The two faces of Thai tolerance. *Bangkok Post*. Retrieved from https://www.bangkokpost.com/thailand/special-reports/368584/the-two-faces-of-thai-tolerance

Chapter 18 | A Female Leader and Gender Equality in Cambodia

Saren KEANG

Future Scenario

On August 20, 2038, a historic event occurred in Cambodia. The Women for Cambodian People Party (WCP) won the 2038 election, putting in place the first ever female Prime Minister of Cambodia. Chea Chan Rachana, the elected Prime Minister, was born in Siem Reap, completed her higher education in the US, and had worked for a while in the United Nations. She founded WCP in 2035 and became popular soon after due to her charismatic character and her realistic promises on how she would change Cambodia, particularly with respect to gender issues. In her campaign, she declared that if she got elected, Cambodia would become a gender-equal society where women leaders would be seen in all sectors including government offices, civil society organizations, and the private sector.

A month after she took the office, Prime Minister Rachana passed a law that required all Ministries, NGOs, companies, and other institutions to appoint two leaders (one male, one female) in their respective entities. She calls it the "Two for All" policy. From that day onward, no entity is allowed to have only one leader/director. This is to ensure that whatever decisions have to be made, it will come from the perspectives of both genders. Her rationale is that if it takes two opposite sexes to create a life, it must also take both of them to solve life's problems. She believes that when a male and a female leader, sharing equal power, work together, the world will become a better place.

Today, August 10, 2038, we see that every office in the whole country is led by two leaders (a male and female). With female leaders having equal power to their counterpart, new legislation and policies are being passed on a number of gender issues. One of them is the law on equal pay for men and women. Regardless of the type of job, women and men must be paid exactly the same amount of salary. Second, female economists have come up with a new development indicator called the Women Happiness Index. It measures the level of happiness of women as an indicator of development. A country is considered to be progressing only when their women are happy/satisfied. Third, higher education for girls is completely state-sponsored. No woman going to a university has to pay tuition fees. Finally, the provision of childcare is mandatory for all entities hiring female staff who are mothers of babies and small children.

Rachana's passion for gender equality has been nourished through her education in a single-sex university in the US and her work with the UN. She cultivated enough courage and dedication to start her own political party because she has had amazing female mentors who guided, motivated, and supported her to choose this path. That is why during press interviews, Rachana talks relentlessly about the importance of mentorship programs for women. However, her dream

would still not have become a reality if she hadn't received support from grassroots women organizations such as Cambodian Women Making Wave and Fund for Cambodian Women Politicians. These organizations are founded by Cambodian philanthropists themselves whose vision is to see more female leaders taking charge of their country.

The failure of the previous government to address major problems including poverty, corruption, and inequality started to fuel the Cambodian people to stop believing in male leaders alone. At the same time, the rise of social media played a role in making the Cambodian people aware about female leaders in other countries and their amazing work. Cambodians began to believe in the possibility of having a competent female Prime Minister in their own country. The political climate in Cambodia was also more friendly towards opposition parties, as the government received a lot of pressure from the UN and other key international players to open the political playing field. All of these changes made it possible for Rachana to start her party, to operate the campaigns successfully, and to finally get voted in as the first female Prime Minister of Cambodia.

If you watch the news about Cambodia today, you'll see an interviewer talking to two Ministers from the same ministry, the Ministry of Justice, at the same time. Co-Minister Dara and Co-Minister Rany are on the news a lot, sharing the progress of how gender roles and gender norms are gradually losing relevance and women leaders are making very impressive impacts on different spheres in the country.

Introduction

In this paper, I will argue that a female Prime Minister and the "Two for All" policy will bring about a more gender-equal and prosperous Cambodia. A female Prime Minister is important for Cambodia because she will bring a new/better type of leadership as women are "powerful agents of change" (Women Deliver, 2021) and they outscore men on most leadership competencies including taking initiative, building relationships, inspiring/motivating others, collaboration and teamwork, and problem solving and analytical skills (Zenger and Folkman, 2020). The "Two for All" policy (a man and a woman head of all departments) will enhance gender equality in the country by ensuring that decisions made at the top come from the perspectives of both men and women, which will ensure that the policies serve both genders. This is the first step for Cambodia to address gender issues. In the future, other genders (LGBTQ) will be included in the top offices as well. This paper will shed light on the status of gender equality in Cambodia, discuss key factors that can help women leaders across the world become successful, and propose policy solutions that can help Cambodia reach the goal of having a female Prime Minister and becoming more gender equal.

Context Analysis

Gender Status and Related Policies in Cambodia

Gender equality in Cambodia has a long way to go. Women's participation in public decision making and politics remains low. There has not been any female Prime Minister in Cambodia to date. The proportion of women elected to the National Assembly in 2018 was a mere 21.6% (27 out of 125 seats) and only 16.1% in the Senate (10 out of 62 seats) (IPU, 2021). In 2013, there was only one female deputy prime minister and women only made up 10.7% of the ministerial positions, 20.54% of Secretary of State appointees, and 17.60% of Under Secretary of State positions (ADB, 2014, p.3). There have been no woman governors at the capital or province level, and female members of sangkats (communes) was merely 17.8% in 2012 (ADB, 2014, p.3).

According to the Cambodian Constitution, article 35 states that "Khmer citizens of either sex shall be given the right to participate actively in the political economic, social and cultural life of nation" (The Constitution of the Kingdom of Cambodia, 1993). However, Cambodian people's perceptions are deeply influenced by the entrenched social and gender norms that make them view women as not as capable as men (Dim, n.d., p.223). As a result, women are not often encouraged to take on leadership positions.

The Cambodian government has been taking some initiatives to improve gender equality such as developing policies and strategies to mainstream gender into line ministries. However, they do not have a quota policy. Half of the countries of the world today uses some type of electoral quota for their parliament to ensure high representation from women (International IDEA, 2021). Quota systems can ensure that women constitute at least 30% or 40% in elective offices (International IDEA, 2021). Quota policies have been effective in countries like Rwanda, New Zealand, and Sweden where women's representation in the parliament are 61.3%, 48.3%, and 47% respectively (IPU, 2021). Cambodia does not have quota policies because the government "considers that it can be a form of discrimination against men" (Khourn, n.d.). They do, however, take any other measures including introducing other policies, for example: 1) one out of three members of a village committee should be a woman, or; 2) there should be at least one woman among provincial and district deputy governors (Khourn, n.d.).

The government has introduced several policies and strategies to mainstream gender and promote women to more senior positions. Those include:

1) **The National Strategic Development Plan 2019-2023 (NSDP)**: includes indicators relating to gender equality and puts emphasis on line ministries' roles in mainstreaming gender in their sectors.
2) **Neary Rattanak V (2019-2023):** Promotes the participation of women in decision-making at all levels through increasing the number of female civil servants and elected leaders, as well as strengthening their capacity and opportunities for promotion.

3) **National Action Plan to Prevent Violence Against Women (2019-2023):** aims to protect women from all forms of violence so that they can live full dignified lives and participate fully in society, including in political sphere.

These policies call for higher attention of different stakeholders to engage women in all sectors including political participation. However, in reality, the progress made is mostly around social and economic participation only. There are no clear action plans that help reduce barriers for women to enter the political sphere. As a result, women promoted into high political positions are very few. It would be helpful if Cambodia had quota policies to ensure a specific number or proportion of women were promoted in certain political offices.

Challenges of Women's Participation in Politics
Gender Norms
Traditional norms in Cambodia put more pressure on women to be in charge of domestic work and childcare, and discourage or even discriminate against women involved in the political sphere (Kem, 2016). The Cambodian political arena is a masculine model. Men "dominate the political arena, formulate the rules of the political game, and define the standards for evaluation" (Kem, 2016, p. 4). Women, on the other hand, bear the burden of housework and professional work, which puts them at a disadvantage in terms of available time to participate in anything else including politics (ADB, 2004). As a result, only a few women have the capacity and time available to engage in the political sphere. If the domestic burden for women is reduced, there is a high chance more women will be involved in politics.

Danger/threats for Women Involved in Politics
"Women involved in politics around the world are constrained not only by the proverbial glass ceiling, but also by the quiet threat of violence they face" (CFR, 2017).
A 2016 report found that worldwide "more than 44% of elected female representatives have been threatened in office, including threats of death, rape, beatings, or abductions" (CFR, 2017). For example, Jo Cox, a female British politician, was murdered by a misogynist in 2016; Indira Ghandi, India's third Prime Minister was assassinated in 1984 by two male Sikh bodyguards; Agathe Uwilingiyimana, Rwanda's first female Prime Minister was assassinated in 1994 (Batha and Zweynert, 2016). In Asia, particularly, female politicians receive a lot of threats and are at high risk. In Afghanistan, nearly all of the female candidates in the 2010 elections received threatening phone calls' (CFR, 2017). Although Cambodian female politicians have not been hurt, there are good enough reasons for them to be fearful of what could happen to them given examples from neighboring countries and threats for Cambodia women in other sphere such as journalism (Nhek and Teng, 2021).

Financial Support to Run Campaigns
"Poverty has a strong, negative impact on women's participation in politics" (Kem, 2016, p.5). Cambodian women do not always have the means to advance their political journey even if they want to. Many are still struggling with poverty and meeting the basic needs of their families. As

a result, they are not financially capable of investing in political campaigns and other related expenses. Involvement in politics is a huge investment, financially and time wise. Not many Cambodian women have those resources to make a political dream a reality. Financial support from outsiders would help them go a long way.

Women Leaders Across the World

Women leaders across the world have some common features regarding how they get to become leaders (President, Prime Minister, Chief Executive, etc.) in their respective country.

Education and training play a significant role in preparing everyone including women to be competent leaders. Leaders like Taiwan's Tsai Ing-wen, Liberia's Ellen Johnson Sirleaf, Thailand's Yingluck Shinawatra, and Hong Kong's Carrie Lam have all received higher education before they become leaders (Pletcher, 2021; The Editors of Encyclopaedia, 2021). There seems to be a trend that female leaders tend to have a strong educational background that prepares them intellectually to be competent leaders as well as convinces others to take them and their qualifications seriously. Interestingly, all four of the leaders above have studied at a University in the West. It is possible to argue that their advanced education in Europe and North America might have played a role in shaping them to be open-minded, confident, and ambitious enough to pursue a career in politics.

Countries that face conflicts also give rise to female leaders. Countries like Liberia and Rwanda have gone through conflicts and turmoil that propelled the citizens to start thinking of voting for or supporting female leaders. Before Sirleaf came to power, Liberia went through a disastrous civil war (UN, n.d.). Rwanda went through a horrific genocide that gravely divided the people. Soon after the genocide ended, more support for women to become leaders was demanded. Rwanda now has 61.3% female representation in the parliament, the highest proportion in the world (IPU, 2021). Across the African continent, people "needed women to help them transition from socialism to democracy or from conflict to peace" (Mikell, 2009, p.17) because women are more effective leaders both before and during a crisis (Zenger and Folkman, 2020).

Male leaders who fail to improve the economy also begin to lose trust from their people, which results in stronger support for female leaders instead (Phillips, 2016). Taiwan, for instance, is a good example showing this trend. Because the former president Ma Ying-jeou failed to boost the economy, Taiwanese people began to favor Tsai instead. Analysts shared that "growing public dissatisfaction with the outgoing KMT president, Ma Ying-jeou, and an economy that weakened dramatically last year, helped propel Tsai to victory" (Phillips, 2016). This example shows that female leaders will get more support in countries where the economy is struggling.

Support and mentorship from other female role models are also a factor that helps women to become successful leaders. A study about Sirleaf's success showed that "support from older role models and political leaders" is one of the key factors that helped her become President (Mikell, 2009, p. 22). Furthermore, Jacinda Ardern of New Zealand also cites Prime Minister Helen Clark as her political hero and mentor who helped her to be successful today (Wallenfeldt, 2020).

Without the mentorship and support from other female role models, these women leaders would not have been as accomplished as they have.

Support for women leaders is on the rise, especially in Africa. Burundi had their first female Prime Minister, Sylvie Kinigi, in 1993, Rwanda also had their first female Prime Minister, Agathe Uwilingiyimana, in 1993; Ethiopia had their first female Chief Justice, Meaza Ashenafi, in 2018; and Tanzania has its first female President, Samia Suluhu Hassan, in 2021 (UN Women, 2021). African people begin to lose confidence and trust in male leaders who mostly have failed to lead their country. For instance, Liberian people attribute Sirleaf's victory "to the fact that she is not a man"; and the African people across the continent start to believe that "it takes a woman to do politics right (Mikell, 2009, p. 17). The right polity interventions will help propel this sentiment to spread faster to other parts of the world too.

Policy Recommendations

"Two for All" Policy

The "Two for All" policy will help to bring about gender equality in Cambodia. The policy requires every office, institute or entity to appoint two leaders – one male and one female as the heads. This will be practiced countrywide. Many people in Cambodia still doubt the capability of women leaders and most men are not willing to give up power to women (Dim, n.d., p. 223). If we continue to insist on building women leaders to replace men, the men will not be on board. However, if we propose that women only share 50% of their power, there is a higher chance that men will join this effort. It is a win-win situation for both genders. Additionally, the two leaders will have each other to consult and discuss major issues they would face. Two brains are better than one, especially when it comes to having to make important decisions. There will be more ideas produced when two people work together, and better judgments will take place. Therefore, the "Two for All" policy will bring about co-existence, peace, and sustainable development because when men and women work together, they produce complementary collaboration and a better balance in the workplace (Reilly, 2014). For this policy to work, we need qualified women who are able to competently perform their leadership roles and duties, and education/programs to reduce prejudice/stereotypes from the male counterpart.

To produce competent female leaders who will be successful in politics and leadership positions, the following policies are needed:

Higher Education

Higher education for women is key to building competent leaders. It will help build qualifications and skills for women for various government positions and ultimately, the position of Prime Minister. Higher education will "enable individuals to expand their knowledge and skills, express their thoughts clearly in speech and in writing, grasp abstract concepts and theories, and increase their understanding of the world and their community" (Allen, 2020). Because higher education

is crucial to producing leaders in the country, relevant Ministries have to come up with policies that ensure its benefits are maximized. The Ministry of Education, Youth and Sport (MoEYS) should allocate a budget to improve the quality of the existing universities and build more universities in the provinces as well. Higher education for women should be state-funded. It should be free for all women so as to encourage the highest participation possible. The government can get the budget to fund this effort by increasing corporate taxes and cutting the budget for the military.

Women's Leadership Programs

Higher education can provide knowledge to students, but they will also need leadership skills that they will not necessarily learn in a school environment.

Leadership programs for women such as goal setting, public speaking, time management, job delegating, and emotional intelligence are crucial to help people become effective leaders (Courtney, 2015). The Cambodian government has two options to consider: 1) MoEYS can integrate these leadership skills at schools/universities by updating the current curriculum to incorporate as many leadership skills as possible; or 2) the government can work with NGOs/CSOs to implement and expand these leadership programs in different parts of the country at the local level. The government can support NGOs to apply for funding from international organizations such as the UN or the World Bank to fund these programs.

Mentorship Programs for Girls

As seen in the experience of the female leaders in Liberia and New Zealand, mentorship is pivotal for helping women become successful. Mentors help to "provide girls with the skills and knowledge they need to counter stereotypes and obstacles and achieve their goals" (Girls Inc., 2021). Mentorship helps girls "become confident, prepared, and assert themselves as active leaders" (Girls Inc., 2021). To build strong female leaders, this support system should be in place at a young age. Mentorship programs should be available for girls in high school or at an early stage in university. This will help them navigate the journey of completing their education as well as planning for their future career. Additionally, there should be a mentorship program for professionals as well. Women leaders need continual support and guidance as they take on leadership positions because the job can be challenging and complicated. Mentorship can help female leaders to feel supported and confident in taking on new challenges. The Cambodian government should support NGOs and CSOs to improve existing programs and expand them to girls and women countrywide.

Friendly political climate

To encourage qualified women to step into the political sphere, the political climate in the country needs to be welcoming and accommodating. To create that political climate, the National Assembly needs to pass a legislation that encourages and supports multiple parties for the election and encourages women to establish their own party and run for election. The

government should simplify the legal process of how to register a new party especially for the female-run parties and encourage each political party to run their campaigns freely in any form. Cambodian people should be made to feel comfortable to support the party of their choosing.

Funding from Grassroot Organizations

To run a successful campaign, a large budget is needed. Cambodia needs to start building its own national funding sources for female politicians. Grassroot organizations should come together to develop a funding package for rising female leaders. New political female leaders should be provided with a fair opportunity to apply for those funding so that they can fund their political campaigns. The application process should be simple and straightforward and it should prioritize women coming from a minority/disadvantaged background. With financial support in place, new competent female politicians will have a higher chance to successfully run the campaigns and win the election.

Conclusion

A female Prime Minister and the "Two for All '' policy will make a big difference in Cambodia especially in terms of bringing about gender equality in the country. When gender equality is improved, men and women will have an equal chance to participate fully in social, cultural, economic, and political spheres. When people of both genders receive equal opportunities, there is a lower risk of conflicts and people are able to coexist more peacefully. Where there is no conflict and disruption, a country will be able to develop faster. For Cambodians specifically, gender equality will mean that domestic violence is reduced, gender norms and stereotypes lose their importance, women are valued and respected by men and are given the chance to achieve their full potential, and equitable development will show its face.

References

ADB. (2004). *A Fair Share for Women: Cambodia Gender Assessment.*

> https://www.adb.org/sites/default/files/institutional-document/32228/cga-cambodia.pdf

ADB. (2014). Gender Analysis (Summary). *Country Partnership Strategy: Cambodia, 2014-2018.*

Allen, H. (2020, Aug 17). Why is Higher Education Important? *Crosswalk.com.*

> https://www.crosswalk.com/family/homeschool/why-is-higher-education-important-1367463.html

Courtney, F. (2015, October 16). 6 Big Benefits of Leadership Training. *eLearning Industry.* https://elearningindustry.com/6-big-benefits-of-leadership-training

CFR. (2017, July 11). *Violence Against Female Politicians. Council on Foreign Relations.* https://www.cfr.org/article/violence-against-female-politicians

Batha, E. and Zweynert, A. (2016, June 18). Ten Female Politicians Murdered Doing Their Job. *Jakarta Globe.* https://jakartaglobe.id/news/ten-female-politicians-murdered-job/

Dim, P. (n.d.). Cambodian Women's Roles in Education and Leadership: Empowerment. *Cambodian Journal. International.* Studies. 2, 217-231.

Girls Inc. (2021). What is the role of a mentor at Girls Inc.? https://girlsinc.org/girls-inc-mentors-support-girls-every-day/

IPU. (2021). Monthly ranking of women in national parliaments. https://data.ipu.org/women-ranking?month=6&year=2021

International IDEA. (2021). Gender Quotas Database. https://www.idea.int/data-tools/data/gender-quotas/quotas

Kem, K. ((2016). Progress of Women in Politics in Cambodia. *Parliamentary Institute of Cambodia.*

> *https://www.pic.org.kh/images/2016Research/20170523%20Progress%20of%20Women%20in%20Politics_Eng.pdf*

Khalil, S. (2018, February 7). E-commerce creates a change in the global economy. *Rawabet Center.* https://rawabetcenter.com/en/?p=5241

Khourn, C. (n.d.). Women's Participation in Politics in Cambodia. *Human Rights and Peace in Southeast Asia Series 5: Pushing the Boundaries.*

Mikell, G. (2009). A Woman You Can Trust: Ellen Johnson – Sirleaf and Political Leadership in

Sub-Saharan Africa. *Georgetown Journal of International Affairs, 10* (1), 17-25. https://www/jstor.org/stable/43134186

Nhek, S. & Teng, Y. (2021, May 6). Female Journalists Suffer Cyber Violence. *Cambodianess*.

https://cambodianess.com/article/female-journalists-suffer-cyber-violence

Pletcher, K. (2021, August 27). Tsai Ing-wen. *Britannica.*
https://www.britannica.com/biography/Tsai-Ing-wen

Pletcher, K. (2021, June 17). Yingluck Shinawatra. *Britannica.*
https://www.britannica.com/biography/Yingluck-Shinawatra

Phillips, T. (2016, January 16). Taiwan elects first female president. *The Guardian.*

https://www.theguardian.com/world/2016/jan/16/taiwan-elects-first-female-president

Reilly, G. O. (2014, September 07). United We Stand: Why Women and Men Need to Collaborate for Success. *Fast Company*. https://www.fastcompany.com/3032767/united-we-stand-why-women-and-men-need-to-collaborate-for-success

Resources for Women Worldwide. (2015). BackHer.
https://www.backher.com/toolbox/womens-foundations-organisations

The Constitution of the Kingdom of Cambodia. (1993).

https://cambodia.ohchr.org/~cambodiaohchr/sites/default/files/Constitution_ENG.pdf

The Editors of Encyclopaedia. (2021, March 26). Ellen Johnson Sirleaf. *Britannica.*
https://www.britannica.com/biography/Ellen-Johnson-Sirleaf

The Editors of Encyclopaedia. (2021, May 9). Carrie Lam. *Britannica.*
https://www.britannica.com/biography/Carrie-Lam

UN. (n.d.). Ellen Johnson Sirleaf.

https://www.un.org/en/conf/migration/assets/pdf/Ellen-Sirleaf-Bio.pdf

UN Women. (2021). *Ten African Women Leaders We Admire.*

https://africa.unwomen.org/en/news-and-events/stories/2021/03/ten-african-women-leaders-we-admire

Wallenfeldt, J. (2021). Jacinda Ardern: Prime Minister of New Zealand. Britannica.

https://www.britannica.com/biography/Jacinda-Ardern

Women Deliver. (2021). *Women in Leadership.* https://womendeliver.org/womensleadership/

Zenger, J. & Folkman, J. (2020, December 30). Research: Women Are Better Leaders During a Crisis. *Harvard Business Review*. https://hbr.org/2020/12/research-women-are-better-leaders-during-a-crisis

Chapter 19 | Adoption of MOOC in Cambodia for Workforce Development

Dara DAN

Future Scenario

Sovannarith recently changed career from technology consulting to business development. Since he graduated five years ago (in 2045) from the University of Phnom Penh with a bachelor's degree in business administration, he has been working at Deloitte. He loved consulting because it gave him opportunities to meet and learn from so many people. Since Cambodia became an upper middle-income country in 2034, it has attracted many new multinational corporations. Companies are now setting up local offices instead of just having regional branches in Thailand and Singapore. Sovannarith has led multiple projects for clients across different industries. The work always kept him engaged. More recently, he wanted to explore a different role. A client introduced Sovannarith to Sokna, who is the CEO of a new sparkling water startup based in Ta Khmao City. Sovannarith enjoys his new role as the Head of Business Development but frankly, he is struggling. He had anticipated that the new role would put him out of his depth, so a month prior to joining the company, he registered for a specialization in strategy planning on Coursera to better develop his skills and prepare for the new role. It is a six-month specialization, with certifications from both Coursera and the Cambodian Ministry of Education, Youth and Sport.

It is not easy managing his time between a full-time job and the online course, but he knows it is worth the challenge. The classes are subsidized for people who work in startups because the government wants to encourage more entrepreneurship. Every night after work, he spends an hour or two learning on his laptop. During his undergraduate studies and earlier career, Sovannarith did have some exposure to strategy planning, but it was so many years ago that he does not feel very confident about his skills, especially when he has to lead his team of 5 analysts. The online course is helping to fill some important knowledge gaps such as design thinking and marketing frameworks. He is certain that the knowledge he is gaining will greatly benefit him in his job since he needs to bring new innovative ideas to grow the startup.

Sovannarith loves learning on a Mass Open Online Course (MOOC) platform because the classes are curated by a renowned Harvard professor and Sovannarith gets to engage with students from all over the world in the comfort of his home. He could take similar classes at his alma mater on the weekend, but the content produced is not comparable to that of elite global universities. Cambodia is still developing local teaching talent. There is some appeal to in-person instruction,

but it would mean Sovannarith would not have time off at all. It would also require a longer time to complete a similar workload. With MOOC on the other hand, he can study at his own convenience. Moreover, MOOC is more affordable, helping him save money to purchase his first car in two years if all goes as planned.

Introduction

In Cambodia, there is a nationwide shortage of skilled employees and often limited access to quality education (Bruni et al., 2013). The country has grown economically in the last two decades driven primarily by garment exports and tourism, reaching lower middle-income status in 2015 (The World Bank, 2021). However, it is challenging for Cambodia to achieve upper middle-income status given its inadequately skilled labor force, particularly in the age of digital transformation. Two megatrends – technology changes and globalization – are changing the skills people need for their jobs and more importantly, redefining the jobs and where they will be needed (Kovács-Ondrejkovic et al., 2019).

It is inevitable that the workforce will need to upskill and reskill in order to stay relevant. The Future of Jobs Report identifies top skills of the future workforce, and some examples are: analytical thinking and innovation, active learning and learning strategies, complex problem-solving, critical thinking and analysis, and technology use (World Economic Forum, 2020). While the labor force in Cambodia is young, it is also poorly educated. Despite the steady increase in school enrollment rates over the years, the *Cambodia Socio-Economic Survey 2019-20* shows that only 13% of those aged between 25 and 34 years old have postsecondary education (National Institute of Statistics, 2020). This makes it harder for the workforce to be ready for the future of work. Moreover, Cambodia lags behind in regard to human capital. The World Economic Forum ranks Cambodia among the least competitive countries in ASEAN and in the world, placing the country 106th out of 141 countries in the Global Competitiveness Index 4.0, 2019 edition. In particular, Cambodia scores 40 out of 100 for 'critical thinking in teaching' which is an evaluation criterion for skills of the future workforce (Schwab, 2019). The National Employment Agency 2017 report finds that of those employers with recruitment difficulties, more than half state that it is due to a low number of applicants with the required skills and a lack of work experience or qualifications (Bruni et al., 2013).

With the goal to become a more digital society in the immediate future, Cambodia today is still very far behind. There are economic and social benefits to education, especially in the context of workforce development. However, the cost of higher education is rising. The rapid changes in pedagogy make it difficult for institutional facilities to keep up with teaching models and delivery systems to meet specific demands and needs of the private sector (APPA, 2013). For a developing economy that needs to advance and diversify beyond their current industries, Cambodia must

first and foremost acknowledge the urgency to develop a more skilled workforce through additional and more innovative educational approaches. Mass open online courses or, "MOOC", is an emerging global phenomenon that can address this challenge.

Context Analysis

There is no universally accepted definition of MOOC, but it is generally understood that an MOOC is an online course that normally requires no prior qualifications for entry, can be accessed by anyone with an internet connection, and includes a large number of learners from diverse backgrounds (edX, n.d.). Most importantly, courses are usually free if there is no certification given. Coined in 2008 by Dave Cormier and Bryan Alexander, the term MOOC referred to a course developed by Stephen Downes and George Siemens that intended to utilize online tools to have wider geographical interactions (Nova Southeastern University, 2020). Their course had over two thousand students from around the world joining remotely with 25 students attending the course on-campus at the University of Manitoba. Today, there are many available MOOC platforms serving millions of people everywhere. Among them, some of the most widely recognized names include edX, Coursera, Udemy, and Udacity.

MOOC is at a nascent phase of development but already this new pedagogy is beginning to tackle some of the most challenging issues facing the traditional model of education and workforce development today. Gulatee and Nilsook (2015) find that the most important benefits of MOOC are affordability and accessibility. The recent popularity of this distance learning method is due to the easier access for those who are located remotely from universities, who are working or who have other constraints or commitments that prevent them from attending traditional higher education institutions. MOOC can accommodate higher numbers of students and a wider audience, covering an expansive geographical spread (Hollands and Trithali, 2014). It gives an opportunity to connect openly on a global scale with learners across the world. Moreover, compared with a classroom model, MOOC has little to no participation fee. By reducing the financial barrier, MOOC can increase access to education and provide opportunities for many people. MOOC offers high productivity, lower cost, and better utilization of technology (Kumar and Mishra, 2015).

Additionally, MOOC is a great resource for individuals to develop professionally and learn new skills. Hamori (2018) shares that companies in practice pay little attention to training their employees which is a missed opportunity to harness staff development to contribute even more meaningfully to organizational goals. MOOC provides a new and important way of offering opportunities at scale for skills development. With an increasing number of partnered institutions, MOOC consistently offers quality and relevant content according to current market needs. Hamori (2018) surveyed over a thousand employed learners and to find that many acquire

work-related skills through MOOC. Even those with formal degrees invest in additional learning with MOOC as a means to upskill in a competitive job market fueled by the growth and increased prevalence of technology; they consider MOOC as a complementary mechanism through which they can bridge their skills gap (Calonge & Shah, 2016). A study of MOOC in Australia suggests "MOOCs are currently or could be utilized by employees to upgrade their skills and competencies in a constantly changing environment and by professional associations to offer recognized continuing professional development options to their members" (Calonge et al., 2019).

Due to MOOC being relatively new, existing literature examining it in the context of developing countries is still limited. Garrido and Koepke (2016) find that MOOC in developing countries tends to attract younger and more diverse educational backgrounds than their counterparts in developed countries. The study examined three developing countries – Colombia, the Philippines, and South Africa and found that MOOC in developing contexts are utilized by students for gaining specific skills to perform better in their job, obtaining professional certification, preparing for additional education, and finding a new job. They learn computer sciences, languages, and business and management. For developing countries that have limited resources – human and financial – MOOC has the potential to impact the workforce significantly, creating a positive outlook for the future of work. In a world that is in need of upskilling, MOOC helps platform participants learn something new. For business topics in particular, MOOC "can essentially serve as boosters for professionals who are looking to make the most out of an education-focused period of their career" (Driscoll, 2021).

While there is some awareness of this new pedagogy of distance learning, utilizing MOOC is not yet explored fully and critically. Education researchers and policymakers are still trying to understand elements associated with MOOC to determine the benefits and the impacts. Michael Trucano, a Policy Specialist at the World Bank expresses that:

There are basically two ways for policymakers to view opportunities to utilize MOOCs: they can essentially (and passively) participate in the 'MOOC phenomenon' as a consumer of things produced elsewhere, or they can use participation in MOOCs as a strategic opportunity to help develop related local capacities. Both options are legitimate, but the latter option, while much more difficult to pursue, may be worth serious consideration (Trucano, 2013, Section 5).

However, there are fundamental concerns facing MOOC in developing countries. Access to digital technologies goes beyond having a device and internet coverage. It is "embedded in a complex array of factors encompassing physical, digital, human and social resources and relationship" (Warschauer, 2004, p.6). In Cambodia, the two main areas of concern are the lack of technology infrastructure and the language barrier; the two are intertwined with one another and related to other factors such as the divide between urban and rural populations. 90% of youth between the

ages of 15 and 30 own a smartphone, but the number is only at 75% for those living in rural areas. Computer ownership rate is much lower, at 35% for high school students and 69% for working youth (UNDP, 2020, p.7-8). The annual English Proficiency Index by Education First ranked Cambodia 94th out of 100 countries included in the study, which is in part due to low internet penetration (Senase, 2019). These are undoubtedly major challenges to learners. However, rather than dismissing MOOC and its potential, these challenges should prompt further discussion among different stakeholders. The MOOC market is projected to grow significantly in the next couple of years, so it is apparent that MOOC is gaining traction. Therefore, policymakers must not passively observe but actively embrace the MOOC phenomenon, working with public, private and development partners to seize this opportunity.

Policy Analysis

The Royal Government of Cambodia (RGC) understands the importance and the necessity of digital technology for Cambodia to realize its long-term ambition to become a developed country by 2050. A key policy priority is to develop human resources with quality, capacity, and ethics as highlighted in the *Rectangular Strategy Phase IV* (Royal Government of Cambodia, 2018). In the Sixth Legislature of the National Assembly, the government reaffirms the focus on strengthening the quality of education, science, and technology sectors. At the ministerial level, the Ministry of Education, Youth and Sport (MoEYS), introduced two overarching medium-term policies, one of which is to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all. In particular, the *Education Strategic Plan 2019 – 2023* promotes digital education, proposing to integrate information and communication technology (ICT) into a tool for teaching and learning, and to share knowledge across the whole education sector. This strategic reform is designed to equip students with knowledge and skills on ICT to facilitate a transition into more competitive employment. To complement ICT for education, MoEYS also focuses on developing English and other foreign languages in the subsector focus of secondary and technical education, aiming to improve access, retention, and quality of learning (MoEYS, 2019). This plan is intended to advance ICT infrastructure in Cambodia and to develop the workforce.

In parallel with improving the quality of education for the future of work, the government also formally adopted the *National Employment Policy 2015 – 2025* aiming to achieve the following goals: increase decent and productive employment opportunities; enhance skills and human resources development; strengthen labor market governance (International Labour Organization, 2015). There is yet to be a comprehensive progress report detailing the progress and impact of the policy on the labor market.

Moreover, the government collaborates closely with other stakeholders such as private sector actors and development partners. For instance, MoEYS organized a labor market forum to provide career advice for young people to discuss their technical and soft skills development (MoEYS, 2019, p.1). Khmer Enterprise, the implementation unit of the Entrepreneurship Development Fund established under the Ministry of Economy and Finance, supports a UNDP project to promote decent youth employment in the context of the changing landscape of Industry 4.0, which is expected to bring widespread technological advancements to all sectors of the economy (UNDP, n.d.). More recently, the discussion has expanded from digital skills for the future Cambodian workforce to include the need for human skills such as social and emotional intelligence (Ukthaun, 2020). McKinsey projects that by 2030, demand for technological, social and emotional, and higher cognitive skills are expected to rise hand in hand with automation (Bughin et al., 2018).

It is important to recognize these tremendous efforts, but there are challenges that still need to be addressed to ensure Cambodia's workforce remains competitive. Most pressing is that education in Cambodia, particularly higher education, cannot fully respond to the labor market demands and rising regional and global standards. The current focus for human resource development heavily emphasizes aspects relevant to primary and secondary education, and insufficient attention is placed on higher education when it comes to educational policy. Cambodia has seen an increase in the number of higher education institutions and student enrollment. In 2006, there were 50 higher education institutions and by 2016, the number jumped to 118 (Hang, 2018, pp. 401 – 402). However, much more is needed to solve the mismatch between skills and labor market needs than just opening new institutions. A study of Cambodian higher education finds that the quality of education quality is still lacking. Many lecturers have not published papers and while there is a library at each university, resources like study materials are not up-to-date and inadequate. Moreover, interaction between lecturers and students is limited or nearly nonexistent outside the standard classroom time. 90% of the lecturers never have a technical discussion or meeting (Chen et al., 2007). Policy priorities and actions moving forward need to include assessment of new and emerging pedagogies, both digital and traditional, that could enhance the quality of education with respect to the changing market landscape.

Policy Recommendations

To achieve the ambitions for workforce development and enhance the quality of education in Cambodia, a more coherent policy framework is needed. Cambodia has only recently begun to formulate policies addressing the intersection between education, technology, and workforce – for example, the promotion of digital education in response to the future of work in the age of technology. While the sentiment is there, many shortcomings remain to be addressed within the

policies and their implementation. There is a heavy focus within current policy on improving existing institutions and programs. While that is important as the government plans for the years to come, there needs to also be more conversations around new approaches. Moreover, the government needs to move more aggressively. Technology is changing faster and faster given the scale and complexity of the world today, causing a wider gap for developing countries from the global benchmark.

MOOC provides a unique opportunity for Cambodia to address its challenges with education and workforce development. These courses would not replace the traditional formal education, but rather could be an essential supplement. MOOC as a new digital pedagogy is well aligned with the Education Strategic Plan 2019 – 2023. MOOC equips students and young professionals with knowledge and relevant skills, which are very critical for the future workforce. MOOC takes advantage of technology to access international teaching resources. Studies have shown that social interactions in MOOC fosters quality learning because it has the unique ability to bring diverse learners together into one space (Askeroth and Richardson, 2019). Cambodia needs to view MOOC as an opportunity and fully embrace the tool to prepare its workforce for a digital economy. Some policy recommendations are provided below which will help to successfully integrate MOOC into the education system in Cambodia. Ultimately, the government, represented by MoEYS, needs to promote the use of the alternative pedagogical approach enabled by MOOC to improve learning outcomes. Some immediate actions include:

Research and knowledge: MOOC should support higher education students and professionals in their learning within and beyond the existing academic institutions. MOOC will not replace the traditional pedagogy in a classroom setting but rather, provide an additional learning tool. MoEYS should establish a working group comprising different stakeholders including education researchers and practitioners, relevant ministries, development partners, emerging private sector leaders, and most importantly, MOOC students. The objective of this group is to closely follow MOOC at the global level and discuss the fit of this pedagogy for the Cambodian context. MOOC is reinventing and reimagining education in the 21st century. It provides another way to learn new skills, advance careers, and deliver a high quality educational experience. However, MOOC is new. There is still limited information about MOOC, particularly in developing countries, so it is important to evaluate the pedagogy on a regular basis to identify areas of improvement.

Quality assurance framework: MOOC's popularity has been due to its ability to offer very recent, relevant, and abundant educational content. However, having too many options could also be very confusing for interested candidates. They might find it overwhelming to navigate the resources. Instead of allowing and accepting all courses for accreditation, MoEYS will need to develop the means to assess and filter only selected courses. For greater effectiveness, MoEYS should engage public and private higher education institutions to shortlist courses that fit well

with the courses currently offered from their institutions. The immediate benefit is clear – students will be able to take courses previously unavailable. It is therefore important to introduce a way to confirm and validate course completion to assure a certain level of effort and standard of learning. With courses mostly self-directed with no teacher, a randomized quality audit may be a necessary policy. Another way to address this concern could be to require participants to come in for in-person exams administered by proctors. This more hybrid approach might be an easier transition for participants, so courses are not completely and immediately online. Moreover, the government should issue some form of recognition for the MOOC such as pre-approved specializations for young professionals. It also helps to prioritize courses that respond more to the market needs. For instance, MoEYS could offer a social media marketing specialization that requires participants to take a certain number of courses that the ministry finds relevant for the selected track. All in all, quality assurance is incredibly important as it helps the government clearly measure output quality and benchmark against regional and international standards.

Investment for engagement: Affordability of MOOC is not a big concern for participants given that MOOC is generally free or low cost compared to other types of online distance learning. However, the government should develop a fund to provide other benefits and incentives for recruitment and retention of students. Firstly, the government needs to identify multiple channels of communication to reach potential participants of MOOC. With the incredibly high percentage of youth in Cambodia, the government should leverage social media networks to target younger individuals who might be more receptive to new technologies. This outreach could be done in partnership with formal educational institutions, employment agencies, and community organizations in Phnom Penh and other provinces. Moreover, the government should encourage a community support team that works on helping prospective and current MOOC participants with any other barriers to participation and successful completion of courses such as tutoring services. The group could function as both a learning and career center. This is a critical step because having such a community could help retain participants much longer. Instead of providing scholarships, the government can offer a rebate system in which students pay the fee upfront but could get reimbursement following course completion. This initiative could also be easily linked with private sector partners to encourage training and development by having companies offer sponsorships to their employees.

Strategic partnership with existing platforms: The creation of a local MOOC platform in Cambodia would be made difficult by both the financial feasibility and human capacity. Developing such a platform for the Cambodian market alone would require a great deal of time and effort. Even with foreign direct investment, it is not worthwhile to create a new platform for such a small population size. Strategically utilizing existing MOOC platforms is a much more practical option. For example, the government could partner with the Commonwealth of

Learning, an intergovernmental organization working collaboratively to promote the use of open learning and distance education knowledge, resources, and technologies (https://www.col.org/). Together, the two entities should foster a partnership to discuss effective adoption strategies of MOOC and best practices for developing countries. The Cambodian Government should ask to obtain data from MOOC platforms for a more thorough study. There is a potentially useful application of big data from MOOC platforms to provide insightful learner analytics. Moreover, the government could work with nongovernmental organizations in bringing relevant skills to facilitate cross-cultural learning opportunities.

Research and development: The government should consider their objectives for the education sector and rigorously evaluate the role of MOOC to achieve them. Relevant ministries such as the MoEYS, Ministry of Posts and Telecommunications, and Ministry of Labor and Vocational Training, and Ministry of Industry, Science, Technology, and Innovation should collaborate with research institutions to assess the impact of a blended approach to learning, applying MOOC alongside in-class methods. This will require the deployment of pre- and post-assessments of knowledge and skills, and comparisons of the outcomes of face-to-face or other online courses. This research should also study the motivations and cultural aspects of alternative learning strategies for future dialogues. These same ministries should collaborate with development partners such as UNDP, which has done extensive work in similar areas in many countries and could offer substantial support and experience. Having that as a foundation, MoEYS needs to develop an evidence-based approach to study the potential impacts, both positive and negative, of MOOC in the Cambodian context.

Moreover, improvement of English language capacity in Cambodia should be encouraged to achieve these recommendations. The government needs to strengthen foreign language capability while simultaneously improving the quality of Khmer language education. MoEYS could introduce second language options in primary schools to prepare students as early as possible. Bilingualism should be promoted and emphasized for employability. People increasingly need to be able to interact with the rest of the world. With connectivity and everything becoming global, it is almost impossible to engage without knowing English.

Lastly, there needs to be a bigger push for more digital infrastructure. Preparing the population to effectively immerse themselves in a digital economy is a must. However, digital infrastructure is not just about having mobile phones and nationwide internet coverage. Digital literacy matters greatly because it promotes student learning. The government should invest more in deepening ICT integration in the education system especially in secondary schools and more importantly, bridge the urban and rural divide. The government needs to equip schools with more computers and advanced programs and tools.

Conclusion

It is widely recognized that education plays an important role in the development of a country, especially in terms of human resources. A skilled workforce is the foundation of a strong digital economy, which Cambodia is striving to achieve. For a digital society to function well, it requires people to have certain capabilities and skills. However, Cambodia is still a developing country today, struggling to develop its workforce because the quality of its education system is yet to improve significantly by regional and global standards. With many jobs likely to be replaced by machines in the future of work, it is critical for Cambodia to better prepare its people for digital integration. Currently, Cambodia's education system is unfit to deliver the necessary reforms that will make Cambodia a knowledge-based society, particularly in the current era of technological advancement. This is exactly why the government should adopt more technological tools. Technology is here to stay, and it is best embraced. To continue the quest to reskill and upskill the young Cambodian population, mass open online courses present a unique opportunity. If the government adopts this new pedagogy more formally in the education system, MOOC has the potential to impact Cambodia positively. MOOC can provide access to quality learning and skill development opportunities at scale and affordably. The choice is apparent - the government should strategically integrate MOOC within the national quality assurance framework to enable the recognition and accreditation of qualifications on this platform. Together with existing pedagogies and program improvement initiatives, MOOC can bring Cambodia closer to its goal of becoming a developed country by 2050.

MOOC presents a strategic opportunity for government programs and education institutions to support and develop related local capacities, filling skills gaps more immediately and effectively. MOOC provides an affordable and flexible way to learn new skills, advance careers, and deliver quality educational experiences at scale. By integrating MOOC within national quality assurance frameworks, it allows for recognition and accreditation of qualifications. Adopting MOOC as a tool for workforce development has the potential to play a significant part in improving economic growth. Together with formal education, MOOC could help increase the quality of education in Cambodia in the longer run, making the country more competitive regionally and internationally.

References

APPA. (2013). The rising cost of higher education. Retrieved from
https://files.eric.ed.gov/fulltext/ED547781.pdf

Askeroth, J.H., & Richardson, J.C. (2019). Instructor perceptions of quality learning in MOOCs
they teach. *Online Learning*, 23(4), 135-159. doi:10.24059/olj.v23i4.2043

Bruni, M., Luch, L., & Kuoch, S. (2013, November). Skills shortages and skills gaps in the
Cambodian labour market: Evidence from employer skills needs survey. *International
Labour Organization*. Retrieved from https://www.ilo.org/wcmsp5/groups/public/---
asia/---ro- bangkok/documents/publication/wcms_231862.pdf

Bughin, J., Hazan, E., Lund, S., Dahstrom, P., Wiesinger, A. & Subramaniam, A. (2018, May 23).
Skill shift: Automation and the future of the workforce. *McKinsey Global Institute*.
Retrieved from https://www.mckinsey.com/featured-insights/future-of-work/skill-shift-
automation-and-the-future-of-the-workforce

Calonge, D.S. & Shah, M.A. (2016, September). MOOCs, graduate skills gaps, and employability:
A qualitative systematic review of the literature. *International Review of Research in
Open and Distributed Learning*. 17(5). Retrieved from
https://files.eric.ed.gov/fulltext/EJ1117375.pdf

Calonge, D.S., Shah, M.A., Riggs, K. & Connor, M. (2019, November). MOOCs and upskilling in
Australia: A qualitative literature study. *Cogent Education*, 6(1), DOI:
10.1080/2331186X.2019.1687392

Chen, C., Sok, P. and Sok, K. (2007). Benchmarking potential factors leading to education
quality: A study of Cambodian higher education, *Quality Assurance in Education*, 15(2),
128-148. https://doi.org/10.1108/09684880710748901

Driscoll, D. (2021, February 16). Preparing for the future of work: What can MOOCs do for you?
University of Virginia. https://blogs.darden.virginia.edu/executive-
education/2021/02/16/preparing-for-the-future-of-work-what-can-moocs-do-for-you/

edX. (n.d.) About MOOCs. https://www.mooc.org/

Garrido, M. & Koepke, L. (2016). *The advancing MOOCs for development initiative: An
examination of MOOC usage for professional workforce development outcomes in
Colombia, the Philippines, & South Africa*. University of Washington. Retrieved from
https://digital.lib.washington.edu/researchworks/bitstream/handle/1773/35647/Advanc
ing_MOOCs_for_Development_Final_Report_2016_Final.pdf?sequence=4&isAllowed=y

Gulatee, Y. & Nilsook, P. (2015, January). *MOOC's barriers and enables*. Retrieved from https://www.researchgate.net/publication/274066052_Mook%27s_Barriers_and_Enables

Hamori, M. (2018). Can MOOCs solve your training problem? *Harvard Business Review*.
        https://hbr.org/2018/01/can-moocs-solve-your-training-problem

Hang, N. (2018). *Education reform in Cambodia: Towards a knowledge-based society and shared Prosperity*. Sipar Publishing.

Hollands, F.M. & Tirthali, D. (2014, May). *MOOCs: expectations and reality*. Columbia University. Retrieved from https://files.eric.ed.gov/fulltext/ED547237.pdf

International Labour Organization. (2015, October 22). ILO welcomes Cambodian National Employment Policy. Retrieved from https://www.ilo.org/asia/media-centre/news/WCMS_418173/lang--en/index.htm

Kovács-Ondrejkovic, O., Strack, R., Antebi, P., Gobernado, A., Lyle, E. (2019). Decoding global trends in upskilling and reskilling. *BCG*. https://www.bcg.com/publications/2019/decoding-global-trends-upskilling-reskilling

Kumar, S., & Mishra, A. (2015) MOOCs: A new pedagogy of online digital learning. *International Journal of Scientific & Innovative Research Studies*. *3*(4).

Ministry of Education, Youth and Sport (MoEYS). (2019, June). *Education Strategic Plan 2019 – 2023*. Retrieved from https://drive.google.com/file/d/1kdtxQD1F4Pym1_h056hzoJqQHy7C7CqZ/view

National Institute of Statistics (2020). *Report of Cambodia Socio-Economic Survey 2019/20*. *Ministry of Planning*. Retrieved from https://www.nis.gov.kh/nis/CSES/Final Report of Cambodia Socio-Economic Survey 2019-20_EN.pdf

Nova Southeast University (2020). Massive online open courses (MOOC): History of MOOC. Retrieved from https://nsufl.libguides.com/c.php?g=112312&p=725994

Royal Government of Cambodia. (2018). *Rectangular Strategy for Growth, Employment, Equity and Efficiency: Building the Foundation toward Realizing the Cambodia Vision 2050 (Phase IV).* Retrieved from http://cnv.org.kh/wp-content/uploads/2012/10/Rectangular-Strategy-Phase-IV-of-the-Royal-Government-of-Cambodia-of-the-Sixth-Legislature-of-the-National-Assembly20182013.pdf

Schwab, K. (2019). The Global Competitiveness Report. *World Economic Forum*. Retrieved from http://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf

Senase, J.R. (2019, November 14). Cambodia lagging in English proficiency index. *Khmer Times*. Retrieved from https://www.khmertimeskh.com/659171/cambodia-lagging-in-english-proficiency-index/

The World Bank. (2021). Cambodia overview. The World Bank. https://www.worldbank.org/en/country/cambodia/overview

Trucano, M. (2013, December 11). More about MOOCs and developing countries. *World Bank Blogs*. https://blogs.worldbank.org/edutech/moocs-developing-countries

Ukthaun, P. (2020, November 13). Bridge the gap: Reshaping tomorrow for the young Cambodian workforce. *Southeast Asia Globe*. https://southeastasiaglobe.com/industry-4-0-cambodian-workforce/

UNDP. (2020, September). Digital literacy for employability and entrepreneurship among Cambodian youth. Retrieved from http://online.anyflip.com/qcffd/bhfx/mobile/index.html

UNDP Cambodia. (n.d.). Equipping Cambodia's youth for the arrival of industry 4.0. Retrieved from https://www.kh.undp.org/content/cambodia/en/home/projects/equipping-cambodias-youth-for-the-arrival-of-industry-4-0.html

Warschauer, M. (2004). *Technology and social inclusion: Rethinking the digital divide.* The MIT Press.

World Economic Forum. (2000). *The future of jobs report 2020*. Retrieved from http://www3.weforum.org/docs/WEF_Future_of_Jobs_2020.pdf.