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# Enhancing City-level Management and Urban Health Resilience: Multi-Sectoral Approach to Managing Mosquito-Borne Diseases in Phnom Penh through the One Health Framework



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# LIST OF ACRONYMES

CSGs	Civil Society Groups
COVID-19	Coronavirus Disease 2019
D&D Reform	De-Concentration & Decentralization Reform
DM Fund	District Municipal Fund
H-EQIP	Health Equity and Quality Improvement
HEF	Health Equity Fund
HPAI	Highly Pathogenic Avian Influenza
HSP	Health Strategic Plan
IDPoor	Poor Households
IOs	International Organizations
KII	Key informant interviews
LMICs	Low- and Middle-income Countries
MBDs	Mosquito-borne diseases
MoH	Ministry of Health
MSA	Multi-sectoral approach
OHA	One Health Approach
PPCH	Phnom Penh Capital Hall
PPPs	Public-private partnerships
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UN-Habitat	United Nations Human Settlements Programme
VBDs	Vector-Borne Diseases
WB	World Bank
WHO	World Health Organization

# EXECUTIVE SUMMARY

While the city offers economic, education, social and cultural opportunities to support residents' well-being, the fast-paced urbanization faces global environmental issues, such as climate vulnerability that contribute to the pattern of infectious diseases, causing more health risks to its populations. This phenomenon is increasingly observed in many developing cities, including Phnom Penh. In response, as the health management of infectious diseases, in the urban context cannot be solved by one sector alone, a multi-sectoral approach (MSA), especially One Health, is essential for achieving sustainable and equitable health outcomes. This approach has particularly gained interest among cities in the aftermath of COVID-19 pandemic. Therefore, it is crucial to analyze how a city, mainly Phnom Penh, can implement the One Health approach (OHA) for effective and sustainable city-level health management.

In this regard, this report provides a summary of key issues related to interaction between urbanization and mosquito-borne diseases (MBDs) in Phnom Penh, its One Health implementation and challenges, and the policy guidance. Chapter one provides general background and literature review of existing studies worldwide about correlation between urban health crisis, MBDs and rapid urbanization, and opportunities and challenges of implementing a MSA, particularly OHA. Chapter two describes the report's objectives, research questions, and methodology conducted to address the existing research gap.

Chapter three analyzes the overall context of health and urbanization in Phnom Penh and certain determinants of health. The study found that Phnom Penh faces environmental burdens that are exacerbated by climate change and rapid urbanization, causing more climate-sensitive diseases and other health risks. Moreover, its cultural aspects of traditional medicines and norms in seeking help from the unprofessional still play an important role in the country's health practices. The study also highlighted the spatial difference in urban environmental conditions that contribute to health and

inequalities – stemming from households’ conditions, unequal access to healthcare, social and economic inequality.

Chapter four provides context on institutional and financial arrangements, urban planning and vulnerabilities. In brief, while administration of Cambodia's public health system used to be centralized at the Health Ministry's sole responsibility, the De-concentration and Decentralization (D&D) reform was conducted, giving the Phnom Penh municipal governance more autonomy, financial and asset management in improving urban health.

Chapter five highlights the OHA's application and its challenges faced by Phnom Penh. The research found the strong commitment and interest of the Cambodian government in integrating OHA into its policy and practices. However, we have noticed that the approach is mostly convened at the national level, and have not extended fully to respond against MBDs or purely at the city-level. The study further found five challenges that Phnom Penh has faced during the One Health implementation: the lack of clarity of roles and responsibilities between national and city level, limitation of political leadership and proper shared visions, the capacity gap within the institutions, the unsustainable financial mechanism for institutional support, and the overreliance on public-private partnerships and donors that affect the local ownership.

Lastly, chapter six concludes with the policy guidance in both short-term and long-term measures for the effective and sustainable implementation of the OHA within the city-level management, aiming to improve the capacities of prevention and response to public health threats in Phnom Penh.

For short-term measures, the report proposes to have:

- All relevant stakeholder mapping and analysis in public, private and non-state sectors;
- The data surveillance tool to observe public health implications between urbanization and city-wide health status;

- Improving capacity and inclusive planning for inter- and intra-sectoral governance to sustain health-related initiatives and lead all engaging stakeholders to meet the common goals; and
- Promotion of inclusive community engagement and awareness

For long-term measures, the study recommends creating the One Health Unit (Steering Committee) to be composed and chaired by representatives of both national, including Deputy Prime Minister, and city levels. This committee, with political, legal and financial support, aims to combine political representation and technical expertise to coordinate and sustain One Health initiatives while creating preventative measures against infectious diseases, particularly MBDs, at the city-level. The One Health Unit will further create the technical workgroup, adopt all relevant One Health policies, and create an accountability framework for evaluation and monitoring. Meanwhile, it is important for the UN-Habitat and other international organizations (IOs) to continuously provide capital and technical assistance for capacity-development with no hidden political agendas and prioritize the support of community engagement throughout the whole process. The report also concludes with the system analysis illustration to showcase different roles of all stakeholders

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# INTRODUCTION

The World Health Organization (WHO) estimated that in 2050, 68% of the global population will live in urban areas (UN, 2018). Rapid and unplanned urbanization could cause multiple unintended consequences impacting the health of the population, such as the increase of health risks and the spread of infectious diseases (WHO, 2021a; De Sa et al., 2021). Such a phenomenon is increasingly observed in many developing countries, especially in Southeast Asia, where fast-growing urban cities are subject to intensifying climate conditions and ever-expanding populations. Urban settings are then the target of multiple vulnerabilities, especially when inadequately prepared to face emerging diseases due to lack of adequate infrastructures and by being at the forefront of response efforts (WHO, 2021a). Evidently, the COVID-19 pandemic further revealed how urban settings are disease transmission hubs, which gave a policy window and new opportunities for policymakers (WHO, 2021a).

There is a growing consensus that health management goes beyond the responsibility of traditional healthcare providers and must not only be addressed by one governmental level, nor one sector alone (WHO, 2021b). In the age of rapid urbanization, health management of infectious diseases could include urban local bodies. As cities are in a better position to manage their resources and respond to local needs, they are in a unique situation to implement a MSA for the management of health, such as the OHA. The WHO *Multisectoral Preparedness Coordination Framework* (2020a) mentions how a “*holistic, multisectoral approach is needed for addressing gaps and advancing coordination for health preparedness and emergencies*”. In practice, MSA is mainly implemented in response to public health emergencies and is attributed to specific diseases for the duration of the emergency (WHO, 2020a). However, the implementation of such an approach should be enlarged beyond more than emergency situations.

Therefore, this research will identify in the first chapter, the gaps in the literature on the implementation of a MSA (more precisely the OHA), with its opportunities and

challenges for urban local bodies. This will provide tools to further examine the capacity of urban local bodies in health management. The second chapter addresses the report's objectives, research questions and the employed methodology to respond to the identified gaps in the literature. The third chapter addresses the overall findings about the context of health and urbanization in the selected city of Phnom Penh, and the determinants of health that shape the health of the urban populations (environmental, physical setting, cultural and social determinants). The fourth chapter provides context on the government structure of Cambodia and its capital, and its existing urban health policies. The fifth chapter highlights the OHA and the challenges that the city may face. The last chapter concludes with context-specific recommendations and a policy guidance for the effective and sustainable implementation of the OHA within the city-level health management of Phnom Penh. This aims to improve the capacities of prevention and response to public health threats in Phnom Penh, with special regards to the management of zoonotic diseases, and thus MBDs.

This report is neither prescriptive-based, nor does it offer a one-size fit-all approach and solutions to the subject at hand for other cities. It rather intends to emphasize the needs for context-specific approach, based on geopolitical, cultural, socioeconomic, and environmental factors.

# CHAPTER 1 : Background And Literature Review

## I. Mosquito-Borne Diseases and Rapid Urbanization

MBDs are one branch of vector-borne diseases (VBDs) that are transmitted to humans through the bites of infected mosquitoes (vectors), encompassing a range of illnesses caused by viruses or parasites that they carry (WHO, 2020c). Examples include malaria, dengue fever, Zika virus, yellow fever, and chikungunya, which pose a significant global health threat, affecting millions of people yearly (WMP, 2018). The consequences of these diseases can range from mild, flu-like symptoms to life-threatening disabilities in children due to their infection during fetus (WMP, 2018). The current trend of MBDs transmission is influenced by various factors, including rapid and unplanned urbanization, population growth, travel, and climate change.

Fast-paced urbanization profoundly impacts many stages of VBDs – outbreak, sustained transmission (human-to-animal and human-to-human), potential epidemics, and immunity acquisition (Uddin & Acter, 2021). On one hand, the typical demographic characteristics of high density and large population in urban settings increase the risk of disease transmissibility due to higher mobility and frequent contact of people. On the other side, the fast-changing rural demography in the wake of burgeoning urbanization manifolds the chances of zoonotic threats, such as human-mosquito interactions (Alirol et al., 2011). Furthermore, inadequate sanitation, improper waste management, and stagnant water, often brought by lacking basic infrastructure and overcrowded settlements to match with fast-paced urbanization, create ideal breeding grounds for zoonosis (Alirol et al., 2011; Neiderud, 2015; UN, 2021). Hence, rapid and unplanned urbanization poses the risk of disease outbreaks, amplifies the spread of MBDs within communities, and further increases the vulnerability of urban populations. Urbanization also adversely contributes to the breeding of mosquitoes and thus the transmission of diseases by restricting the access to clean water, inadequate housing, and physical spaces (Hii et al., 2009; Neiderud, 2015).

## **II. Health Management at the City-Level**

The notion of city-level infectious disease management is not new. For instance, in 1854, John Snow successfully traced the origin of cholera endemic to water contamination in London and introduced an improved sewage-draining system, which consequently vastly reduced the prevalence of many other waterborne diseases (Tulchinsky, 2018). This intervention suggests that not only the introduction and control of basic infrastructure could mitigate the existing infectious diseases, but also the high potential of such practices at the local level. Further city-led health governing processes are observable in “European healthy urban planning”, which began in the 1990s to accelerate overall health promotion in urban social and political agendas (Barton et al., 2009; Tsouros, 2015). Although the criteria listed are systematic and precondition functioning health systems in place, this project demonstrates the opportunity to impact ground-level health decision-making from a regional initiative (Barton et al., 2009; Harpham et al., 2001). Moreover, some literature suggests the utilization of urban characteristics to tackle communicable diseases. Owing to density advantage and its closer assessment of the local needs, the city could reach a larger population, better implement effective surveillance and public knowledge projects, and efficiently allocate resources by more directly responding to local health necessities (Katz et al., 2012; Neiderud, 2015; WHO & UN-Habitat, 2016). Nevertheless, Boyce et al. and Keil & Ali reveal the reality that national-level strategy for preparedness and response is prioritized over that of the local level, especially in the times of public health emergencies.

## **III. Urban Planning and Urban Health**

The WHO and UN-Habitat has recently highlighted the need to include health in all phases of urban planning. Proper urban planning can promote healthy cities and provide adequate standards of living, work, economic growth, social development, equity, environmental sustainability, community resilience and connectivity (D’Onofrio, 2023). It can indeed be employed as a preventative medicine tool to achieve health equity (D’Onofrio, 2023). Health assessment impacts concluded that urban planning affects health outcomes, as it leads to a reduction of risk factors of health and the promotion of healthy lifestyles. (Shojaei et al., 2014; D’Onofrio, 2023).

A call for the integration of multiple sectors of urban governance is promoted as a preventative measure to address future health risk factors (D’Onofrio, 2023). In fact, the "New Urban Agenda" provides a framework that calls for strong partnership and multi program approach (WHO, 2022). According to an urban health and social determinants of health expert at the WHO, the objective is to make the case for the relevance of urban health from economical, sociological and epidemiological standpoints (Röbbel, interview communication, June 16, 2023). The 2023 sourcebook on *Integrating health in urban and territorial planning* further underlines the two crucial elements to build habitable cities: development of human settlement (“urban and territorial planning”), and concern for human health, well-being and health equity at all levels and sectors (WHO and UN-Habitat, 2023). For instance, initiatives such as land use plans, public space design and housing projects can affect health outcomes (D’Onofrio, 2023). Furthermore, green and blue spaces have been proven to increase groundwater condition, improve water quality, reduce soil erosion and boost biodiversity, thus indirectly benefiting human health (Röbbel, n.d.; WHO, 2021c).

#### **IV. Multi-Sectoral Approach**

When the prevention of infectious diseases in the urban context is complex and cannot be solved by the health sector alone, MSA is essential for achieving sustainable and equitable health outcomes for urban populations and disease preparedness and prevention (Egid et al., 2022; Gimenez et al., 2016; Fouque et al., 2020; WHO, 2023). The WHO defines MSA as an integrated approach that includes the collaboration and coordination of multiple stakeholders and sectors to jointly develop strategies (WHO, n.d). In detail, MSA focuses on addressing social, economic, and environmental determinants of health, such as overpopulation, lack of access to clean water, and sanitation that contribute to the increase of zoonosis (Salunke & Lal, 2017). There are three widely recognized approaches in the MSA, namely, Health in All Policies (HiAP), Healthy Cities, and One Health (Amri et al., 2022). In the aftermath of the COVID-19 pandemic outbreak, more attention has been paid to the OHA's relevance and impact.

#### **4.1 One Health Approach**

One Health is an interdisciplinary approach that recognizes the intricate interconnectedness and mutual affection of human, animal, and environmental health (Mackenzie & Jeggo, 2019). The concept of One Health is not recent, dating back to the early 19th century when scientists recognized the shared diseases between humans and animals (Lerner & Berg, 2015). However, it gained prominence in the 21st century with the epidemics of zoonotic diseases, such as avian influenza and Ebola – it is necessary to recognize the environment and animal health in disease transmission as complex ecological systems to tackle the root causes of zoonosis outbreak (Machalaba et al., 2021). OHA emphasizes the need for cooperation between researchers and practitioners of relevant areas, policymakers, and governments to promote public health (WHO, n.d.). By designing and adopting a holistic perspective, they cannot only develop comprehensive strategies and legislations for disease prevention and surveillance, but also enable early detection and rapid response to emerging diseases, reducing the risk of pandemics, and promoting effective interventions and research (Lerner & Berg, 2015).

#### **4.2 Opportunities of Multi-Sectoral Approach and One Health Approach**

There is a substantial amount of research on the MSA, particularly OHA, for urban health. First, one of its most acknowledged advantages is the optimization of resources and maximization synergy through the sharing of human, infrastructure, and financial resources (WHO, 2020b; Salunke & Lal, 2017). Second, the OHA can enhance surveillance, research and effective interventions to prevent and mitigate health risks by complementing expertise from human health, veterinary medicine, entomology, urban planning, and environmental science. For example, the case study in Georgetown (Guyana) showed the positive impact of the multi-sectoral collaboration between water and sanitation sector and health sector in successfully decreasing the prevalence of lymphatic filariasis (Tristao, 2015). Third, many studies acknowledged the OHA's capability in increasing research data and coherence between strategies and policies (Munyua et al., 2019; Goryoka et al., 2021). For instance, the Economic Community of West African States used a regional OHA to successfully prioritize seven zoonotic diseases for the region (Goryoka et al., 2021). Lastly, the approach can empower the affected communities. The evidence from five-year research of “*Aedes aegypti* control” in Havana (Cuba) showed that the integrated multi-sectoral



interventions did not only result in the direct elimination of the transmission, but also led to empowered and capacitated community while promoting behavioral changes (Pérez et al., 2007).

### **4.3 Challenges of One Health Approach**

Nevertheless, many researchers found the limitations to maximize the OHA's potential. First, the lack of proper governance continuity and political leadership is an issue (WHO, 2018). A study in the Southern Nations, Nationalities, and Peoples' Region (Ethiopia) showed that the lack of proper governance failed to maintain inclusivity to accomplish the agreed joint plan (Ali et al., 2020). The lack of policy commitment and designed strategies for institutionalizing the approach at subnational level also remains a barrier in Africa and Southeast Asia (Amri et al., 2022; Munyua et al., 2019; Okello, Bardosh, Smith, & Welburn, 2014). Second, the lack of shared vision and capacity-development is the barrier (Dos et al., 2019; Guglielmin et al., 2018 as cited in Amri et al., 2022). From the Netherlands case, the municipal governments chose not to follow the inefficient physical activity guidelines to develop health policy despite the mandated instruction (Leone & Pesce, 2017). Third, funding is another issue. The literature showed that the lack of funding has failed to sustain the approach (Amri et al., 2022) while strong reliance on donor's aids affects local ownership (Aftab et al., 2020; Naing et al., 2018). Lastly, the lack of community-based organization is a challenge. WHO analyzed how the lack of community participation and engagement in project design and implementation results in ineffective disease management, disconnecting with other local stakeholders (WHO, 2020b). The case study on Paynesville showed that the waste removal program failed due to the lack of its residents' support (Egid et al., 2022).

## **V. Gaps in the Current Literature**

Most existing research draws evidence of the city-level health management and governance of multisectoral collaborations in high-income countries, and only limited sources are available for low- and middle-income countries (LMICs) context – different and specific challenges faced by them are barely reflected (Katz et al., 2012; Tsouros, 2015; Amri et al., 2022). Even within some existing studies on LMICs, they tend to be conducted on state-led, disease-specific cases and limited to no underlined conceptual frameworks (WHO, 2018). Furthermore, only vaguely nuanced interventions, guidance, and policies to adopt the MSA and city-level health management are offered, rather than the bottom-up, urban context-based strategy (Keil & Ali, 2007; Shiffman, 2006; WHO & UN-Habitat, 2016). This tendency signals that zoonotic disease control relies heavily on response and treatment of the infection at the national level by solely health domains, instead of prevention and preparation in the municipality, multisectoral engagement context. In addition, while many studies acknowledge the effectiveness of the MSA, including OHA, there are limited studies on how to define and evaluate the impact of multisectoral actions on outcomes, and sustain the approach for long-term benefits (Amri et al., 2022). Finally, local authorities' clear operational structure, responsibilities for tackling health inequalities, and explicit policy suggestions for required capacity development and resource allocation are limited. Therefore, more studies must be done to apply global frameworks to municipal context and location-specific policymaking while focusing on the LMICs' unique challenges, cultural aspects, and city-level management tactics, especially in the fast-developing areas of Southeast Asia.

# CHAPTER 2: Objectives, Research Questions and Methodology

## I. Objectives

This research aspires to fill-in the research gaps on the application of a MSA within urban local bodies to tackle the prevention, preparedness and responses of infectious diseases. Best practices drawn from this research contribute to future studies in adopting an OHA, and mapping exercises for the location-specific policy making in other cities.

Thus, this research aspires to:

1. Analyze the context, i.e. determinants of health, governance structure, and existing policies of city-level health management, to understand the intersection of MBDs' emergence, transmission, and prevention.
2. Explore the efforts of urban local bodies in practice, for the immediate responses and prevention measures of MBDs in urban contexts.
3. Provide policy guidance for the city-level management of Phnom Penh by:
  - 3.1. Implementing OHA for the short-term and long-term preventative measures against MBDs
  - 3.2. Promoting capacity-development amongst urban local bodies and communities to promote community resilience in the management of MBDs.

## II. Research Questions

The research questions of this project aim to reflect and answer to the objectives described above. Thus, this research projects aspires to answer the following questions:

1. Determinants of health
  - 1.1. How can determinants of health impact health outcomes and the prevalence of MBDs in Phnom Penh?
  - 1.2. How can urban planning improve urban health by helping prevent and control MBDs?
2. Urban settings and governance structure
  - 2.1. What are the roles, responsibilities and current involvement of the national and municipal systems to improve urban health management?
3. Implementation of OHA at the city-level health management

- 3.1. How has Cambodia, particularly Phnom Penh, implemented an OHA to address the public health crisis? What are the challenges faced during the implementation?
- 3.2. How to plan, design and realistically implement OHA in Phnom Penh?

### **III. Methodology**

#### **3.1 Data Collection Tools and Method of Analysis**

The research has followed a qualitative research methodology. Data collection tools included key informant interviews (KII), narrative literature reviews, and case study methodology, based-on one selected city – Phnom Penh (Cambodia).

The selection criterias included: decentralized governance structure, unplanned, rapid urbanization phase, and the prevalence rate of zoonotic diseases, particularly MBDs. Moreover, as cities of Southeast Asia were found to be less studied, we aimed to address this literature gap, and point out the unique challenges faced by Phnom Penh and its public health crises, which reflects its desire to further implement the OHA. The case study analysis provided the basis to present a policy guidance, based on its governance structure, existing policies, and capabilities in the implementation of OHA for both short-term and long-term measures at the city-level.

The KII included all relevant experts national and local government officials, UN-Habitat officers and other IOs' experts on One Health, zoonoses, urban planning, city-level management, prevention of infectious diseases and on Health Emergency preparedness and Response (See Appendix I for interviewee list).

The narrative literature reviews explored the available policy documents and academic journals. In addition to the program documents of WHO and UN-Habitat, Google Scholar and other platforms were used. Finally, the 2020 WHO's "Multisectoral approach to the prevention and control of vector-borne diseases: a conceptual framework" and "Multisectoral preparedness coordination framework" were used as the analytical frameworks for conceptualizing the intersection between environmental, cultural, and socio-economic determinants, with health.

#### **IV. Limitations and Challenges**

This study faces various challenges. Firstly, since Phnom Penh is an understudied city, there is limited reliable research and secondary data available online. This makes it difficult to compare, navigate, and map the findings based on diverse knowledge. In addition, due to time constraints and timeline of the research project done within the academic calendar, the practical field study could not be conducted, making the research solely rely on literature review and KII data. Therefore, having both offline and online KIIs that might result in subjective qualitative data interpretation, and cognitive bias, is another challenge. Moreover, as certain interviews were conducted in Khmer, Cambodia's native language, the unofficial translation and interpretation might result in misinterpretation, inaccuracy and incompleteness of the data. Additionally, without the quantitative research methodology, we could not draw a data-based cost analysis and measurable impact of the OHA implementation for health management in urban contexts.

#### **V. Ethical Considerations**

The ethical form, followed by the Geneva Graduate Institute (IHEID)'s guideline, has been shared with each interviewee, making aware of their rights to give consent free from coercion or any undue pressure, the rights to keep their identity anonymous, as well as the right to refuse to participate without fear of penalization or victimization. The request letter for interview, issued by both the IHEID and UN-Habitat, were also sent to the government entities of the selected case study for ethical approval. The interview request was granted by both the Ministry of Health (MoH) of Cambodia and the Phnom Penh Capital Hall (PPCH).

# CHAPTER 3: Phnom Penh And Its Determinants Of Health

## I. City Overview

Phnom Penh is the capital city of Cambodia, with a population of 2.28 million at an area of 679 km<sup>2</sup> – 14.7 percent of the national population lives in 0.37 percent of national land (National Institute of Statistics & Ministry of Planning, 2020). The city also marks an annual population growth rate of 4.9 percent (National Institute of Statistics & Ministry of Planning, 2020). Regarding geography and climate, Phnom Penh locates in the south-central region of Cambodia, and the municipality is on the banks of three rivers – Tonlé Sap, Mekong, and Bassac (PPCH, n.d.b). The city and the surrounding areas consist of a typical floodplain region, and although Phnom Penh is 11.89m above the river, monsoon season (typically June to November) brings flooding due to the river overflowing its bank (PPCH, n.d.b). Its climate is characterized by hot year-round with only minor differences, typical temperature ranging from 22 to 38 degrees Celsius.

Due to the above-described conditions, Phnom Penh is highly exposed to MBDs, including dengue fever, Zika virus, and chikungunya (National Institute of Statistics & Ministry of Planning, 2020). These diseases are primarily transmitted by the Aedes mosquito, which breeds in stagnant water sources commonly found in urban areas. The city's warm and humid climate provides favorable conditions for mosquito breeding, posing significant health risks to the population.

## II. Determinants of Health

The WHO's holistic definition of health has progressively integrated the concept of ‘social and environmental determinants of health’, which refers to “psychological aspects, environmental, climate and living conditions, and working, economic, social and cultural life” (WHO, n.d.; D’Onofrio, 2023). The aggregate measurement of health, combined with external and contextual indicators, help determine together one’s health status and the determinants-affecting health inequalities (Flacke et al., 2016). Traditional health impact assessments often employ broad mortality and morbidity data to inform policies, without



any clear understanding of cultural context and external factors that influence individual and societal behaviors. Thus, this part highlights the key determinants of health (environmental, physical setting, cultural practices and social determinants) affecting the urban population of Phnom Penh, which provides context-specific information, and therefore leads to a better assessment of the key intervention areas.

## **2.1 Environmental Determinant**

The WHO defines this contextual determinant of health as “all the physical, chemical and biological factors external to a person, and all related behaviors” (Prüss-Üstün et al., 2016). Healthy environments can indeed better improve health conditions. They include, for instance, the pollution of air, water and soil, built environments, man-made climate and ecosystem changes, and behavior related environmental factors (availability of safe water or physical activities) (Prüss-Üstün et.al., 2016).

The Southeast Asian region is considered to be one of the most vulnerable to health impacts of climate change, as a consequence of a combination of large populations, high rates of poverty, and existing high burdens of climate-sensitive diseases (McIver et al., 2016). In Cambodia, the average temperature has risen over the last years, as well as the frequency of extreme weather events, including droughts, floods and heatwaves (WHO, 2021b; Bicknell et al., 2009). In addition to an increase of heavy rain, hail and thunderstorms during the rainy season, the city's near location to the Mekong River makes the city even more prone to heavy floods (Bicknell et al., 2009; WHO, 2021b).

Indeed, environmental burdens are exacerbated by climate change and thus aggravate environmental health hazards (Shrestha et al., 2016). For instance, in Cambodia, the increase of rainfall, floods, and consequently inadequate drainage, that result in stagnant water, are preconditions for the rise of MBDs, such as malaria and dengue (Bicknell et al., 2009; Webb, 2021). As vector species require specific climatic conditions (high temperature and humidity) to incubate and maintain transmission, MBDs are more likely to occur and spread to humans (Bicknell et al., 2009). Moreover, the geographical range of mosquitoes has consequently spread, which now affects populations that are not immune to MBDs, including the Phnom Penh’s population (Mishra et al., 2021). Rapid urbanization has led to several factors that contributed to the MBDs transmission. For

instance, Phnom Penh's population rapid expansion led to the close proximity of individuals, which provides ideal conditions for transmission of zoonotic diseases, such as dengue, zika virus and chikungunya (National Institute of Statistics & Ministry of Planning, 2020). Hence, climate change, combined with rapid urbanization and inconsistent policies for wildlife management, increases the risk of interaction between disease vectors, such as MBDs (WHO, 2023). Finally, the interconnectedness of urban planning, animals, climate setting, and human health is valuable, thus only seeing the issue of MBDs transmission from the purely health aspect is insufficient.

## **2.2 Physical (Spatial) Setting**

The environmental determinant also includes physical settings, which mainly regards the physical and social construct of urban communities. The concept of environmental theory suggests that multiple diseases are originating from toxins within the environment, as well as the physical environment in which people live (Duhl et al., 1999). As mentioned by a WHO social determinant of health expert, the mapping of environmental inequalities of urban areas is essential to reduce intra-urban inequalities (Röbbel, interview communication, June 16, 2023). Depending on their living and housing conditions, households from the outer zone of Phnom Penh have experienced more health inequalities, leading to poor health and healthcare access (Soeung et al., 2012; WFP, 2019). Numerous studies portray the challenges faced by people living in the urban poor communities of Phnom Penh, such as limited housing quality, infrastructure gaps, and lack of land tenure (WFP, 2019; UN-Habitat Cambodia, 2023).

In addition, with increasing migration from rural areas to the city, informal settlements continue to grow. They are allowed in practice but not legally recognized, making upgrading and investments projects to be difficult (World Habitat, 2020). Consequently, the development of the informal settlements has been poorly controlled over the years, thus leading them to be vulnerable to floods, building collapses, severe droughts, storms, erosion, etc. (World Habitat, 2020). Poor quality of living conditions and built environment and infrastructures, such as roads, housing, safe water supplies, waste and wastewater management systems, directly impacts the health of urban populations (Flacke et al., 2016). Additionally, urban expansion and construction activities in Phnom Penh

create numerous breeding sites for mosquitoes, notably the accumulation of stagnant water, discarded containers and improperly managed sewage systems. Thus, according to Global Health experts, housing policies are crucial for the prevention of health risks, as they can regulate construction norms, use of materials, localization, and improve housing conditions (Robbél, interview communication, June 16th, 2023; Global Health expert, interview communication, June 2nd, 2023).

According to a study based on qualitative interviews conducted with local communities of Phnom Penh, “health security” did not only refer the inability to afford healthcare services, but also to the poor access to water and sanitation, and the absence of mechanisms for the waste management (Seong et al., 2012). Indeed, most illnesses were attributed to lack of sanitation, standing water and mosquitoes (Seong et al., 2012).

### **2.3 Cultural Practices**

Culture has a prominent impact on health conceptions, and consequently on health practices. It impacts the perceptions of health, illness and death, the beliefs about causes and treatment of diseases, and the way patients seek healthcare. Hence, this section will explore the cultural practices and beliefs in both Phnom Penh and Cambodia as a whole.

Firstly, it is noteworthy to acknowledge the usage of traditional medicines and supernaturalistic treatments in several slum areas in Phnom Penh and Cambodia. According to a study, some elderly Cambodian poor households still prefer traditional medicines today based on their past practices rooted since the French colonial period (Ros et al., 2017). The Kru Khmer, known as traditional healers, also play an important role in keeping alive the common use of the supernaturalistic treatments that are believed to be caused by spirits (Lim et al., 2022). Based on the document of AFP News Agency, the usage of traditional medicines is still crucial within the community due to concerns about chemical substances in modern medicines and the emergence of counterfeit products (AFP News Agency, 2013). Traditional medicines are further promoted on commonly used social media platforms in Cambodia, including YouTube where the news on using leaves with the claim to effectively cure malaria are spread (YouTube, 2021). This was also employed during the COVID-19 pandemic (VOD, 2022). However, there have been certain cases

where professional workers remain concerned on heavy reliance of traditional medicines without certified prescriptions that could worsen the health condition and affect in the long run (VOD, 2022; AFP News Agency, 2013). Hence, while acknowledging the important role of the traditional medicines in preserving Cambodian identity, it is crucial for the Cambodia National Center of Traditional Medicine to continuously research and develop the safety guidelines for integrating the products into the health care delivery system.

Secondly, the practical norms in seeking help from unprofessional workers remain common for many Cambodians. According to the interview with an UN-Habitat officer in Cambodia, many urban poor still seek treatment from their close relatives or nearby pharmacies regardless of whether being certified or not. Some articles also showed the common use of self-treatment and private clinics due to better accessibility and cheaper price (Soeung et al., 2012; Khorn, 2019). Many citizens, especially those in the slum areas, were also unaware of the basic preventive healthcare or the free treatment services. This could pose several concerns where patients' health conditions got worsened and sometimes led to death. For instance, several reasons why some patients in Phnom Penh and provinces faced death from dengue fever were due to their common practices in seeking help from unprofessional trained doctors in private clinics with the lack of medical equipments (Khorn, 2019) and self-treatment with non-prescription medication such as paracetamol and aspirin (Deth & Chan, 2021). This highlights the necessity of health policies to reflect the particular beliefs, and practical norms.

## **2.4 Social Determinants**

Social determinants of health are non-medical factors that influence health outcomes, such as living conditions, income and social protection, education, food insecurity, housing, and structural systems (WHO, 2023). Studies portray how the social, economic and political challenges of the rapidly changing environment, such as rapid urbanization and globalization, have created unique social challenges that demand multi and cross sectorial solutions (WHO, 2020a; Magee, 2003).

In Phnom Penh, intra-urban inequalities can be identified through two primary classifications: Poor Households (IDPoor), and urban poor. IDPoor is a national poverty

assessment methodology that identifies poor households (WFP, 2019). For instance, in 2001, 180,000 people were living in low-income settlements within Phnom Penh's seven municipal districts (Seong et al., 2012). Health outcomes and healthcare access are contextualized and associated with households' conditions, which depends on environmental and social insecurity conditions. A study suggests that low education rates, poor living conditions, low incomes, and high food costs, result in a cycle of disadvantages and health inequalities (Soeung et al., 2012).

The Report on *Urban Vulnerabilities in Phnom Penh* (2019) indicates that 47% of IDPoor population, located in the outer zone of the city, pay for health services (WFP, 2019). Despite the fact that such treatments should be covered under the Health Equity Fund, households still need to pay for health services and treatments at great expenses (WFP, 2019; Soeung et al., 2012). The National Immunization Programme concluded in 2005 that up to 16 percent of communities in Phnom Penh are at-risk for higher disease transmission, of vaccine-preventable diseases, due to low coverage of services (Seong et al., 2012). Rapid urbanization often outpaces the provision of basic services such as clean water supply, but also healthcare coverage and access. Thus, factors such as everyday living conditions, social and economic inequality, access to healthcare and environmental conditions put poor communities at health disadvantages.

# CHAPTER 4: Governance Structure And Urban Health Projects

## I. Cambodian Governance Structure

### 1.1 Ministry of Health

Cambodia has a diverse healthcare system where the MoH oversees the main health infrastructure and public healthcare, while the private sector primarily handles outpatient curative care (WHO, 2015). Under the Sub-Decree 67 ANKr.MK of Cambodia on Organization and Function of MoH, the MoH was institutionalized to be the only actor made responsible for all healthcare aspects, ranging from strategic plans development, the delivery and evaluation of public health services in Cambodia. The Ministry has three levels of responsibilities, namely at the central ministry, provincial and operational district level for the delivery of government health services and administering of health programs (Ministry of Health of Cambodia, n.d; more details in Annex I).

### 1.2 The Phnom Penh Municipal Structure with De-Concentration and the Decentralization Reform

Although the aforementioned sub-decree allows the administration of the public health system in Cambodia to be centralized at the national level, the National Strategic Framework De-concentration and Decentralization reform was adopted in 2005. This has given more autonomy to the municipal government. Based on the implementation of the National Program for Sub-National Democratic Development 2010-2019, the focus has been shifted on transferring functional responsibilities to the Sub-national administrations, involving municipal, districts, capital and provincial-level governments for providing better and responsive service delivery to citizens (WBG, 2017). For instance, the Ministry of Environment has transferred financial capabilities and responsibility to the district level on urban solid waste management. Similarly, urban health promotion has been shifting to the district level (MoH officer, interview communication, May 25, 2023).

Regarding the Phnom Penh municipal government, the management structure has been divided into two layers: municipal council and the governing committee. The council



is in charge of approving the city's budget, development plan and other matters, and consists of 21 elected members by the Ministry of Interior (WBG, 2017). The council has four other sub-committees or commissions for different aspects of the activities (PPCH, n.d.a; more details in Annex II). For the governing committee as the executive body, the committee consists of the Governor and six Deputy Governors, all appointed by the Ministry of Interior (PPCH, n.d.a).

Understanding the financial arrangements is also crucial to analyze the effectiveness of the governance and the feasibility of OHA implementation. The Law on Financial Regime and Asset Management of Subnational Administrations passed in 2011 specifies the revenues and expenditures for the city, while allowing the municipality to check the financial and asset management for fulfilling its obligations and providing services in its territory (WBG, 2017).

Under the D&D reform, the Commune/Sangkat Fund offers funds to every Commune/Sangkat (local level) for community-prioritized infrastructures and service investments that are mostly based on the overall need and used for road and drainage improvements in Phnom Penh. The fund allocation formula is solely based on the population in the Commune/Sangkat in which there is no targeting mechanism for additional funds allocation to those communes that perhaps have bigger needs, such as higher poverty rate (WBG, 2017). In addition, there is the proportion of the District Municipal Fund (DM) to be distributed to the Districts/Khans for better service delivery. Based on the decentralization reform program, the DM fund expected to increase from 8% of the national revenue in 2016 to 1% in 2017 (WBG, 2017). In addition, each Commune/Sangkat can keep 30% of the collected property taxes (WBG, 2017). This financial reform will allow the local governors to have more autonomy and capability to be more responsive to the citizens' needs.

## **II. Existing Policies and Projects for Urban Health Improvements**

### **2.1 Adopted Policies for Health**

The first part of this section will explore the Cambodian government's policies to enhance health improvement. Up until 2020, the government has increased the health expenditure of its GDP to around 7.51 percent, with \$331.58 per capita, while managing to decrease the out-of-pocket expenditure to the level of 60.6 percent in 2020 (World Bank Data, 2023).

With this improved health financing reforms, the government has adopted various policies to enhance the health quality outcomes. Among them are the three series of the Health Strategic Plans (HSP) from 2003 until 2020 as the strategic management tool for the MoH. The latest version of the HSP3 2016-2020 was conducted with four main goals, including morbidity and mortality from infectious diseases and increased accessibility and affordability of equitable healthcare services (MoH of Cambodia, 2016). Moreover, the HSP4 2021-2030 has been drafted with the vision for realizing sustainable goals for health (WHO, 2021d).

In addition, Cambodia has taken a significant step towards promoting health equity with the adoption of the Health Equity Fund (HEF)(Cambodia Health Equity Fund, n.d). The HEF is a financial mechanism designed to ensure that the most marginalized populations (those living in poverty, urban and rural communities, ethnic minorities and other disadvantaged groups) have access to essential healthcare services by providing them financial assistance (Ly & HYDER, 2021; Jithitikulchai et al., 2020).

In line with this, the Health Equity and Quality Improvement (H-EQIP) was also implemented in its first phase with the support of other IOs including the World Bank (WB). During its initial stage, the primary emphasis of the Cambodian H-EQIP focused on supporting major health system initiatives, including the HEF and Service Delivery Grants to various health facilities, for the implementation of the National Quality Enhancement Management System listed in all HSPs. The H-EQIP has provided subsidized healthcare support to more than 2.6 million poor citizens, including those in the urban areas (Sok, 2022). The second phase H-EQIP II was further launched in 2022 to increase awareness, reduce barriers and improve health information systems with a more shift to management

and accountability at the sub-national level (WBG, 2022). This will allow the municipal government to have more decision-making authority and autonomy to design effective policies, reflecting the needs of their citizens.

## **2.2 Collective Responsibilities on Urban Health Planning at Both National and Sub-National Levels**

In Cambodia, various national and sub-national administrative levels have different responsibilities for urban, health, spatial and land use planning. The National Committee on Land Management and Urban Planning is in charge at the national level while the Capital/Provincial Committee on Land Management and Urban Planning coordinates with the Capital/Provincial Council at the capital and provincial level (WBG, 2017). In addition, the District/Khan Committee has responsibilities at the respective level while the lowest level is managed by the Commune/Sangkat Council with the technical support from the District/Khan Committee (WBG, 2017). Regarding the policy, although there is not a specific urban development policy at the national level, the National Urban Development Strategy Framework was adopted to provide assistance and support to relevant stakeholders while guiding the urban development and processes at the national and sub-national levels in line with the D&D reforms.

At the city level, the Phnom Penh Master Plan 2035 has been adopted under the Sub-Decree No. 181 SD.E.. According to Mr. Cheam, Deputy Director of Land Use Strategies and Master Plan Department of the PPCH, the Master Plan is amended every five years (Cheam, interview communication, June 20, 2023). The document was set out to be a strategic framework with a broad land use map, and have certain priorities: (1) the rehabilitation and development of physical infrastructure; (2) the preparation of city-wide urbanization plan; and (3) special heritage zones and green conservation in which one of the main focus is management of water treatment, reservoir and waste landfill (WBG, 2017).

## **2.3 Implemented Urban Health-Related Projects**

Although there are adopted policies and framework of planning process, the lack of financial assets, capacity-development and technical support remains an issue for the municipal government to lead their own projects. Hence, many projects for urban planning

in Phnom Penh were made in the form of cooperation between the government and donors, including IOs and other specialized agencies. For instance, the Waste Management Strategy and Action Plan of Phnom Penh 2018-2035 was conducted by the Phnom Penh municipal government in 2018 with the help from UNEP and other stakeholders to help promote the waste disposal system, enhancing the urban health outcomes (PPCA et al., 2018).

In addition, one of the most engaged partners in urban planning is the UN-Habitat, in which many projects have been implemented with the support from donors like Cities Alliance, Asian Development Bank, UNDP, Japan and more. The finished projects include, inter alia, Phnom Penh Urban Poverty Reduction, Slum Upgrading, Wastewater Treatment Systems and Sanitation Services, Enhancing for WASH Governance (UN-Habitat Cambodia, 2023). Moreover, the UN-Habitat has organized the community-raising awareness training on the COVID-19, focusing on the effective handwashing techniques, physical distancing, proper mask wearing, hygiene promotion and behavior change (UN-Habitat, 2020).

#### **2.4 Urban Vulnerabilities**

Despite having projects for urban health in Phnom Penh, the urban population continues to face various challenges on their public health and lifestyles. The city still has drainage issues, sewerage and wastewater treatment vulnerability, solid waste collection difficulties, unstable water and electricity supply, transportation and traffic issues (WBG, 2017). These issues contribute to the MBDs and negatively affect health care delivery, services, and the overall health outcomes as described in the previous section.

# CHAPTER 5: One Health Approach – Application And Challenges

## I. The Application of the One Health Approach in Cambodia

Since the COVID-19 pandemic, the Phnom Penh and Cambodian government has gained interest and recognized the importance of the OHA implementation. According to Dr. Yi Sengdoeurn, MoH's Deputy Director for Communicable Disease Control Department, the OHA is at the heart of Cambodia's policies for strengthening public health, particularly in managing infectious diseases, such as MBDs. For example, OHA has been implemented during the fight against HPAI & H5N1 through an inter-ministerial committee composed of the Agriculture, Health and Environment ministries, Provincial/Municipal Committee, National Committee for Disaster Management and more. The Memorandum of Understanding was also created between Health and Agriculture ministries in 2012, to collaborate on animal and human health. The joint research and monthly meetings were conducted with other stakeholders, including the Ministry of Environment, and the Provincial and Municipal governments, to develop technical guidelines, coordinate joint outbreak investigations and responses, share surveillance information, develop capacity-strengthening programs, and improve mechanisms for early detection and responses. Moreover, other implemented One Health activities in Cambodia included Avian Influenza simulation exercises, World Rabies Day and Antibiotics Awareness Week, and more (Tum, 2019). Dr. Yi also provided the best practices of Cambodia's responses to the COVID-19 through OHA – such as, information sharing, complementary expertise, effective communication, and collaboration not only within ministries, but also with specialized committee known as Cambodian COVID-19 Committee, provincial and municipal committees, and other international stakeholders (Yi, interview communication, June 03, 2023).

The National Committee for Disaster Management is another important actor for mitigating risk disaster harms and negative impacts on health. Among other policies, the National Strategic Plan on Disaster Risk Management for Health 2020-2024 was conducted as the guided framework to improve and enhance emergency management of health risks,

due to natural hazards that could cause diarrhea, dengue fever and other injuries, potentially lead to morbidity and mortality (MoH of Cambodia, 2020). The document highlighted the practice of OHA, as it stresses the importance of having collaboration with relevant ministries, institutions and partnerships to identify disaster risk as the cross-sectorial issue for reducing all health risks. Furthermore, Cambodia has developed the first Multi-Sectoral Action Plan on Antimicrobial Resistance 2019-2023 for a more robust approach that contributes to benefits of different sectors, including human and veterinary medicine, agriculture, food, financing, and environment, as well as consumers. The project has targeted a broad range of stakeholders, including policymakers, researchers, academic community and more, although it does not directly target municipal and provincial governments.

At the Phnom Penh city level, COVID-19 response paved the pathway to further the implementation of multisectoral engagement and the OHA. According to Mr. Tang Bunkhim, Provincial Health Department officer of the PPCH, cooperation between public and private organizations and other embassies occurred for the timely prevention, responses, and treatment efforts amid the pandemic (Tang, interview communication, June 20, 2023). The prevention program included the awareness raising effort towards citizens by the dissemination of “3 dos and 3 don’ts” – three dos: to wear a mask, wash hands regularly, and maintain physical distancing; three don’ts: avoid confined and enclosed spaces, crowded spaces, and physical contact. With support from international actors, preparation for isolation facilities and food donations for the infected and suspicious cases were provided (Tang, interview communication, June 20, 2023). Furthermore, disease controls and COVID-19 tests were conducted by the Municipal Department of Health, in cooperation with Samdech Techo Voluntary Youth Doctor Association, to identify infection and provide care for patients. From all these collaboration efforts, all patients received free treatment and adequate food in the hospital and treatment centers (Tang, interview communication, June 20, 2023). Finally, close communication was established between citizens, authorities, hospitals, and local departments.

Therefore, we have seen the strong commitment and interest of the Cambodian government in integrating the OHA into policies. However the approach is mostly led by the MoH and other relevant ministries, and not fully extended at the city level, nor to respond against MBDs – portraying the lack of ownership of the provincial and municipal governments. Hence, the next section will identify the challenges of OHA in Phnom Penh.

## **II. Challenges of One Health Application**

Although Cambodia has recognized the significance of adopting OHA for combating infectious diseases, there remain certain challenges during the implementation, particularly at the city-level.

First, the clarity of roles and responsibilities between national and city-level is still limited. As previously discussed, the Phnom Penh municipal government gained greater levels of political and financial autonomy. However, the WB report showed that the roles, responsibilities and overall relationships between each ministry, institution and department within the PPCH remains unclear due to the delay in shifting authority and function from key national ministries to sub-national level (WBG, 2017). The changing of staffs' management from ministry-level to provincial and municipal levels also took time to adapt to the new functions and responsibilities. In addition, despite the D&D reform, there is no clarity over reporting lines, financing and responsibilities on the urban development plans and investments. While the development project of less than 3,000 m<sup>2</sup> in total floor area can be approved by the PPCH, the larger project has to be approved by the Ministry of Land Management, Urban Planning and Construction (WBG, 2017). This shows that the approval by the Ministry can be done without consultation at the municipal level, leaving PPCH to have small authority and involvement for guiding the project and ensuring it does not negatively affect the citizens' public health in its jurisdiction.

Second, there is lack of political leadership and proper shared visions to help institutionalize the OHA against vector-borne and MBDs. As there is no committee for One Health with strong political representatives to coordinate adequate consultation in planning and appropriate tools or guidelines to ensure effective implementation, the cooperation and collaboration between both levels are still limited (Yi, interview

communication, June 3, 2023). Dr. Yi also mentioned that diverging interests and work priorities of each ministry and local department led to the failure of reaching an agreed joint plan and policy design for tackling infectious diseases to be directly and efficiently implemented at the sub-national level (Yi, interview communication, June 3, 2023). Similarly, PPCH's Provincial Health Department officer stated that there is currently no direct and close cooperation between Phnom Penh office and the Ministry of Environment or Agriculture, as the health-related guideline is mostly done through the MoH (Tang, interview communication, June 20, 2023). Lack of such direct collaboration, which could provide timely reports and notifications on potential environmental health risk factors and zoonotic diseases, can hinder One Health implementation. While PPCH's Deputy Director of Urban Planning acknowledges the importance of public health as the key element in urban planning, including public space and green space for tackling infectious diseases and health uncertainties, there seems to have a lack of coordination and understanding between the work vision of urban planning and public health departments (Cheam, interview communication, June 20, 2023). This could also affect long-term commitment and sectoral coordination to implement and sustain health-related initiatives (WHO, 2020b).

Third, OHA might not be effective when there remains challenges to the implementation of plans and limited capacity of the agencies. According to a UN-Habitat officer in Cambodia, there is still a capacity gap in governance structure, as it is more focused on administration and management sectors, rather than specialized sectors, particularly in health management (UN-Habitat officer, interview communication, May 23, 2023). The WB report also noted how local level agencies are often understaffed, under-equipped, and limited in capacity despite the shifting responsibilities and financial support from the municipal level to the commune and district levels (WBG, 2017). This could further lead to difficulties in resource mobilization and uncoordinated power struggles to manage current and future public health crises. In addition, while the Phnom Penh Master Plan was adopted, it is still a broad-level guideline with no enforcement details on spatial growth and land use in the city without considering public health. This allows the development to proceed without aligning to a vision of land use and infrastructure improvement with the population's health (WBG, 2017). When the Master Plan is to be



regularly revised every five years, a concrete plan and consultation with all levels is required to properly integrate public health implications with careful consideration of the language and cultural sensitivity of each community.

Fourth, the unsustainable financial mechanism is another challenge for a successful OHA implementation. Mr. Tang stated that the state-led financial mechanism within the institution for implementing OHA for urban health development is needed, showing the lack of funding for institutional support (Tang, interview communication, June 20, 2023). In addition, resources for urban planning, services, and infrastructure development in Phnom Penh are mostly driven by foreign aid and private investments (WBG, 2017). Mr. Cheam further mentioned that most of the projects for environment and urban planning were supported by international cooperation and private investments, including the Build4people project by Germany, and the Steung Meanchey Community Onsite Upgrading Project by civil society groups (CSGs) (Cheam, interview communication, June 20, 2023). Such strong reliance on donor funding or assistance poses challenges to local ownership when external funding takes place (Aftab et al., 2020; Naing et al., 2018). Without properly addressed, the continuous absence of national financial resources and over-reliance on aid can result in inefficient technical assistance and capacity-development, affecting the initiative surveillance (Dos et al., 2019; Amri et al., 2022).

Lastly, although Public-Private Partnership (PPPs) is crucial for successful OHA implementation, heavily relying on it could pose challenges in the long run. For example, while the Phnom Penh Waste Management Authority has the main authority and role, the operations and services on solid waste management are provided by three private companies for collection, transporting, storage, recycling and dumping (Pheakdey et al., 2022). However, a recent study showed that the current solid waste management has little cooperation from the private sector in addition to the current weak law enforcement on implementing the 3Rs (Reuse, Reduce and Recycle) (Pheakdey et al., 2022). There is also lack of quality control, infrastructures, technology, and standardization on calculation of the waste collection fees without consultation with the community, which results in some residents not willing to pay the fee (Pheakdey et al., 2022). This affects the profit and

service coverage of the private sectors. When proper solid waste management is important for reducing the risk of spreading diseases, the current system might result in more negative implications on urban health. Hence, the over-reliance on PPPs, particularly in the solid waste management, is another concern for sustaining public health development.

# CHAPTER 6: Discussion And Recommendations – Policy Guidance

In line with the findings, some recommendations are provided within two levels of a timeline - short-term (five years) and long-term (ten years+) measures - in order to achieve the overarching aim of the creation of the One Health Unit in 2035. The year 2035 is selected specifically due to the termination of the current Phnom Penh Urban Planning Master Plan, and thus the new version can include the building of the One Health Unit as one of its main pillars. Also, from the findings, it was apparent that Phnom Penh city with the current government capacity and coordination dynamics is not sufficient to have a functioning unit right away. The policy recommendations place emphasis on preventative measures for health implications, promoting community participation, capacity development and awareness raising among authorities at all levels and the population, for the preparation of the realistic implementation of the One Health Unit. Finally, the guidelines aim to further promote decentralized approach by giving more autonomy (city-led initiative) and strengthening decision-making power at the city-level, which could better respond, prepare, and manage the MBDs and overall health security of Phnom Penh in the long run. (See Annex III)

## **I. Short Term Measures (~ Five years)**

### **1.1 Stakeholder Mapping and Analysis**

Based on a transparent and methodical process with clearly defined criteria, it is essential to identify all relevant stakeholders in public, private and non-state sectors for the One Health implementation. The analysis of each selected stakeholder is also required to identify their needs and contributions to add their most values and responsibilities.

### **1.2. Data Surveillance Tools**

Although some data is collected regarding the population's health status at the national level and urban planning measures monitoring at the city level, more direct public health implications in correlation with urbanization and city-wide health status need to be gathered. First, it is necessary to strengthen data collection tools. As the local government

has limited capacity and budget to conduct comprehensive data collection, more engagement with academic institutions and the private sector is encouraged. Thus, through strengthened data collection tools, the following information should be collected: 1) the identification of high-risk areas for MBDs, including vulnerable areas and populations, 2) MBDs transmission trend and possible outbreak, and 3) clear impact assessment on physical infrastructure building and water/waste management. This will allow better prioritization of measures and local needs, resource allocation, and more effective preparation and surveillance for future pandemic.

### **1.3. Improving Capacity and Inclusive Planning for Inter and Intra-Sectoral Governance**

It is essential to strengthen the institutional capacity and maintain the coordinated efforts and political leadership at both national and local levels for sustaining the initiatives and leading all engaging stakeholders to meet the common goals. With decentralized governance structure, it is necessary to develop capacity, especially at the local level, to have more clarity in roles, responsibilities, functions and effective communication system between various ministries and PPCH. When it is crucial to set the joint regulatory frameworks and policies, the government shall further ensure that each level of the institution is capacitated and equipped with adequate technical support within their mandates. In addition, it is essential to conduct an inclusive planning at intra- and inter-sectoral levels, with adequate financial resources and more incorporation of health implications in urban planning master plan in a transparent and accessible manner. The planning can further establish proper guidelines for ensuring all PPPs meet the expected outcomes with strict regulation enforcement and quality control from the specialized city-level authorities.

### **1.4. Promotion of Inclusive Community Participation and Awareness**

Community participation initiatives have been portrayed as “critical enablers” for the disease control in LMICs, leading to community resilience, effective behavioral changes, and overall health outcomes (Questa et al., 2020). Hence, it is essential for both national and municipal levels to actively engage with the community, reflecting their particular needs into the joint plan. The regular consultative sessions and platforms shall

be made available to everyone in the public for integrating their suggestions and feedback in the next update of all urban policies, including the Phnom Penh Master Plan.

In addition, the community-based initiatives and campaigns are required to raise the public awareness of existing platforms and access to HEF, the importance of One Health and guidelines on WASH. The involvement of education in the prevention of infectious diseases is also essential. For the local actors closest to the community, the municipal government needs to ensure that all health-related trainings for health professionals are conducted based on the cultural sensitivity of the community, making sure that all medical advice and advocating languages are jargon-free and accessible to everyone, leaving no one behind.

## **II. Long-Term Measures (Ten Years +)**

### *Application of a Steering Committee - One Health Unit*

#### **2.1 Composition and Purpose**

The long-term recommendations lead to the creation and implementation of a steering committee, the One Health Unit. It is composed and chaired by representatives of both national (Deputy Prime Minister and any relevant ministries) and local levels (any relevant divisions and specialized departments from PPCH). This unit should convene once every quarter, or more, if necessary.

By including high-level political support, this provides leadership with a strong official mandate and ensures acceptance, commitment, and accountability across the diverse engaged sectors. Its purpose is to combine political representation and technical expertise to address strategic, technical, and managerial aspects of the coordination of the OHA implementation and leading to preventative measures to ensure health security and the management of infectious diseases (MBDs) at the city-level.

In addition, the efficient and sustainable legal and financial support is needed from government authorities, for facilitating the adoption of the OHA. In particular, the financial support under the guidance of both national and local levels needs to access the earmark budget and determine a certain proportion of overall national health budget for

implementing One Health-related activities. This follows by considering the budget allocations to different sectors while engaging all parties involved both internally and externally to discuss health-related interventions in a more holistic way. Lastly, the legal legitimization from the Parliament is crucial to review and approve the budget proposal. By having the political, legal and financial support, this will give the full legitimization for the One Health Committee in adopting the One Health policies. Local actors will be empowered to plan, implement, and coordinate quality services to the public, in a more participatory manner.

## **2.2. Mandate**

Its mandate consists of being responsible for the adoption, monitoring and coordination of the OHA, related to the management of zoonotic diseases, and more precisely MBDs, at the city-level. This includes the creation of a Technical Working Group, the implementation of relevant policies and the implementation of an accountability framework.

### **2.2.1 Creation of the Technical Working Group**

The steering committee of the One Health Unit will also create the Technical Working Group, composed by all other relevant stakeholders identified in the short-term measure's recommendations. This working group includes representatives from different sectors of both national and local governments, as well as relevant experts, including physicians, epidemiologists, veterinarians, urban planners, political scientists, environmentalists, sociologists, economists, from professional associations, engaged PPPs, CSGs, IOs, community leaders, and research institutes. This helps build transparency and community engagement.

The Technical Working Group's mandate is to jointly share and collect data and knowledge on health risks and threats, and to identify gaps and needs. This allows adequate risk and vulnerability mapping through different levels and sectors, but mainly enables exchange of knowledge, experience, information, data and perspectives, including on more vulnerable populations. It thus leads to an opportunity to redefine priorities, financing allocations and objectives, based on diverse perspectives and needs. Doing so will also

support the expansion of evidence-based approaches that include research from the humanities and social sciences, with specific focus on mixed-methods research on the social and cultural drivers, determinants of health, and well-being. Finally, the group increases the capacity for working intersectionality, ensuring to introduce the well-being, socioeconomic, environmental and cultural elements to health, and essentially the OHA.

### 2.2.2 Implementation of Relevant Policies

The One Health Unit (steering committee) is also responsible for the adoption of relevant policies through a OHA, to manage both immediate responses and preventative measures for zoonotic diseases and MBDs' threats. Policies are supported and based on data and knowledge collected from the Technical Working Group. The diversity of shared knowledge will transpire through new adopted policies, which will not only revolve around a health-oriented approach or solely biological determinants. It should include other sectors, such as the improvement of poverty reduction, sustainable urban infrastructures facilities, wildlife management, waste and water management, etc. To include other influential factors and sectors leads to the avoidance of frequent disconnection between evidence, social needs and health policies. It is also important to ensure inclusive urbanization through the processes, as urban inequality threatens sustainability and leads to further social divisions.

### 2.2.3 Accountability Framework

Finally, an accountability framework should be integrated for the steering committee and the Technical Working Group to ensure the implementation of an independent evaluation and monitoring body for the adopted policies. Such framework enhances the OHA's quality in preparedness and coordination, and strengthens governance mechanisms (WHO, 2020a). It will also identify ethical dilemmas and considerations that should be respected and approached.

### **III. UN-Habitat's Role and Participation**

As UN-Habitat aims to promote socially and environmentally sustainable towns and cities, its involvement is highly relevant for this policy. It can serve as a bridge between the governments, other UN agencies, and CSGs, specialized for urban and human development and security. Therefore, UN-Habitat should continue to work closely with the Cambodian government to advocate, develop guidelines and conceptual framework, mobilize resources, and enact global policies. In this case, UN-Habitat can provide technical support for potential projects related with the One Health Unit, especially on requested areas of intervention, such as urban poor settlements, urban planning and management, affordable housing, wastewater management (UN-Habitat Cambodia, 2023). Moreover, UN-Habitat should further prioritize the support of vulnerable population and community participation.

### **IV. System Analysis**

In order to better understand the recommendations, a system analysis can be useful to illustrate and map the different government levels' roles, as well as other stakeholders in the process of OHA implementation. (See Annex IV).



# CONCLUSION

This report looked at the case of Phnom Penh to suggest the implementation of the OHA to tackle prevailing MBDs. To do so, we first looked at the existing literature on the relationship between urban planning, urban health, and MBDs, and opportunities and challenges for the implementation of MSA projects. Here, we found the understudied nature of city-led management on infectious diseases, especially in Southeast Asia, and yet limited implementation of the OHAs. For the aim of giving concrete policy recommendations for Phnom Penh city and the Cambodian national government, we then 1) analyzed the context of the city and determinants of health, 2) explored governance structure and existing urban health policies, and 3) examined the One Health application and challenges. In doing so, we particularly found the current limitation in the city-level capacity and resources for implementing the OHA despite its growing interest for the approach, remained disconnection between health and non-health domains, and lacking clarity in national- and city-level roles and responsibilities on public health emergencies management and surveillance even with progressing decentralized governance structure. From all these analyses, we suggested the overarching aim of the creation of the One Health Unit in 2035 at the sub-national level. This allows the capacity sharing and development at the national and city level while strengthening decision-making power at the city level to better respond, prepare, and manage the MBDs and overall health security of Phnom Penh.

This report attempted to emphasize the need for a context-specific approach, based on political, cultural, socioeconomic, and environmental factors when providing public health preventative guidance – a one-size-fits-all approach is inadequate. Nonetheless, lacking quantitative research methodology – which allows more concrete data-based cost analysis and measurable impact of the implementation of One Health as an MSA for health management in urban contexts – limited the scope of analysis and concrete recommendations. Moreover, narrowing infectious diseases into solely MBDs does not bring a comprehensive understanding of how to mitigate the risk of other zoonoses entirely. Thus, future study is needed to provide guidelines for the city with limited resources to

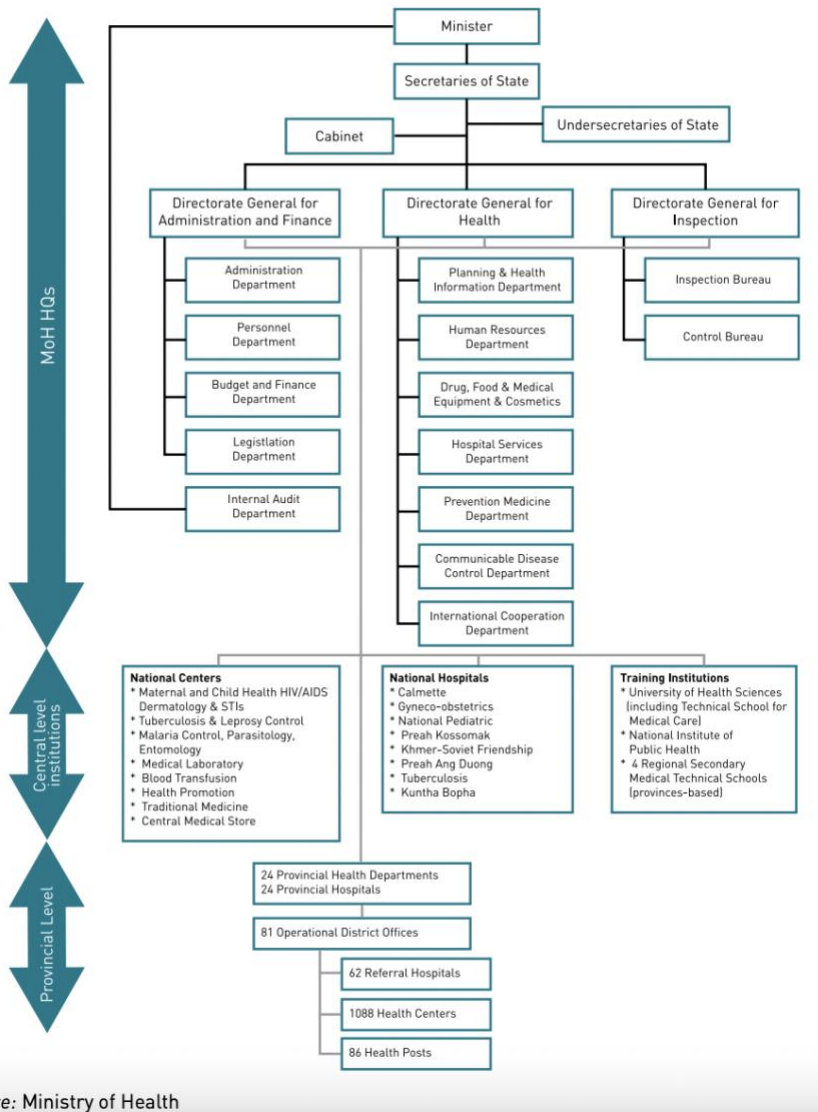
more effectively allocate financial resources within internal and external entities, as well as how to expand the OHA for the management of infectious diseases as a whole in ever-enlarging urban contexts. Nevertheless, we believe our research that focused on the analysis of the intersection within and between each factor of the urbanization process and determinants of health, as well as the implementation of the OHA in rapidly growing Southeast Asian city's health management will contribute to future studies in adopting MSA and location-specific policymaking in other cities.

The COVID-19 pandemic revealed the urgency of incorporating non-health domains for public health emergency management and prevention. Furthermore, in the era of rapid urbanization and population expansion, public health strengthening efforts have to be shared and gradually shifted to city-level initiatives. The world now cannot disregard the implementation of MSA, particularly the OHA in the urban context. As the global society is now undergoing a post-pandemic era, the serious consideration towards health security strengthening in the long run at the city level, as well as the emphasis on preventative measures have to be prioritized. This will make the world be better prepared for the next pandemics and prevent unequal, insufficient, and passive responses to the health emergencies.

# ANNEX

## Annex I : Cambodian Ministry of Health's Structure

**Figure 2.1 Organization of the Ministry of Health and affiliated institutions**

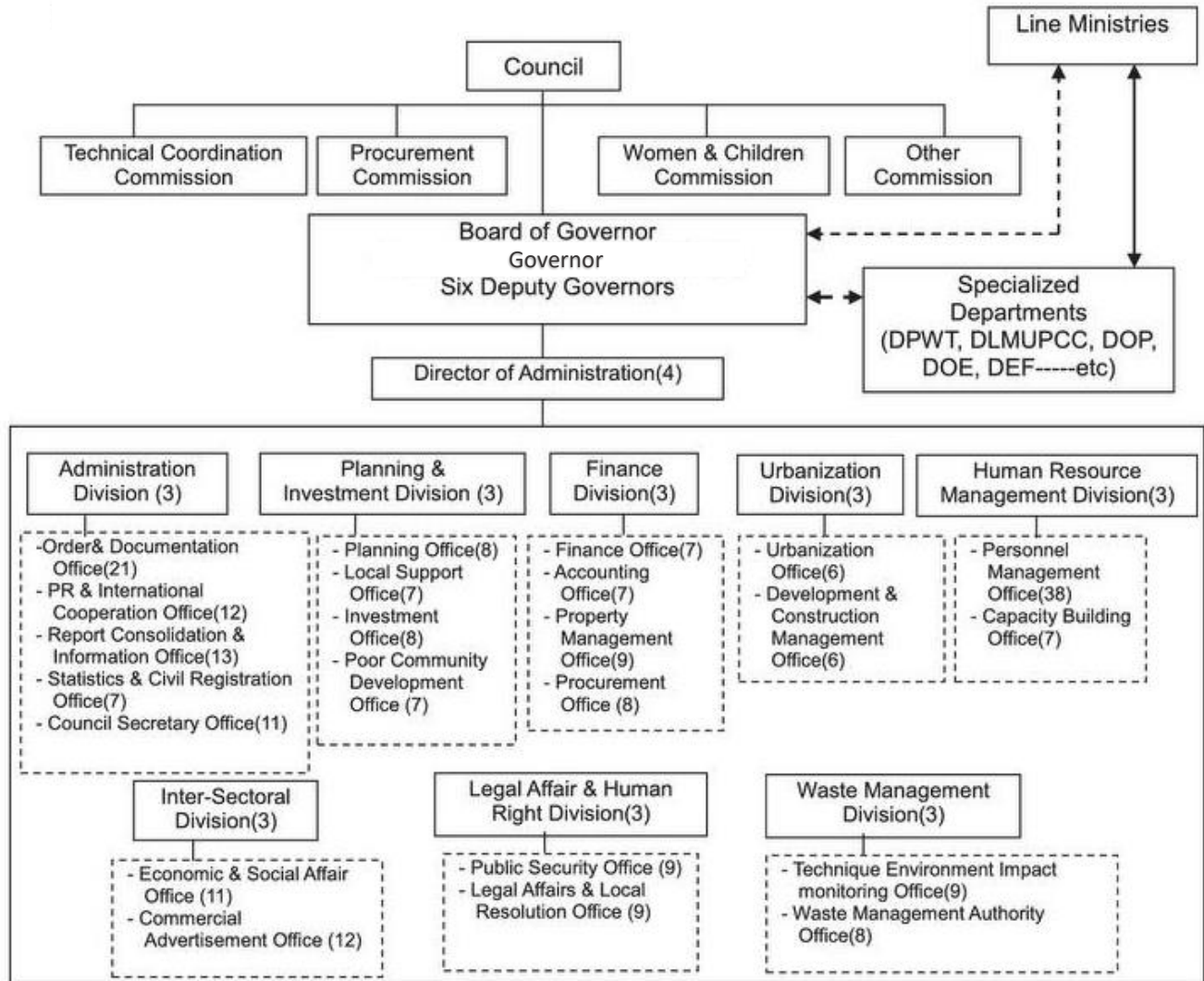


Source: Ministry of Health

- Central Ministry has six main roles, which are to (1) develops policies, legislation and strategic plans; (2) Responsible for resource mobilization and allocation, (3) Responsible for monitoring, evaluation, research, (4) Maintains the national Health Information System, (5) Provides training, support to provinces and districts; and Coordinates with other ministries and external aid.
- Provincial Level that are administered by an MOH Provincial Health Department has four main roles, which are to (1) links the central Ministry with MOH health Operational Districts; (2) Implement the Health Strategic Plan via Annual Operational Plans; (3) Responsible for the equitable distribution and effective use of available resources; (4) Supports the development of health Operational Districts. Regarding the municipal level, there are 25 provincial health centers that follow the mandated instruction from the central level.
- Operational District Level that are administered by an MoH Operational District Office has two main roles, which are to (1) responsible for effective, efficient and comprehensive health-service delivery, and (2) interprets, disseminates and implements national policies and provincial health strategies. This structure is the lowest and closest to the citizens.

Source: Ministry of Health (Chart taken from) World Health Organization. (2015). The Kingdom of Cambodia health system review. *WHO Regional Office for the Western Pacific*.

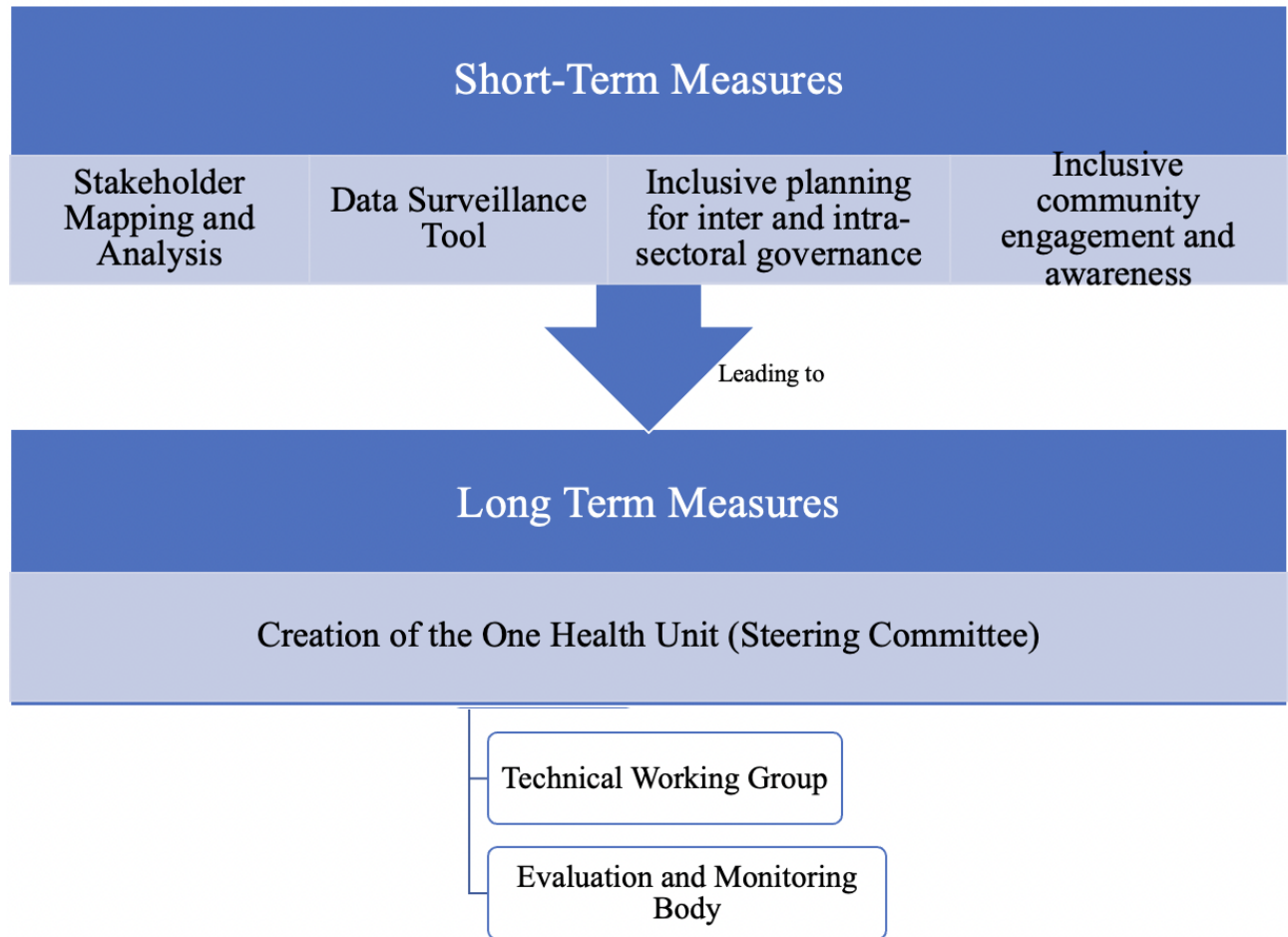
## Annex II: Phnom Penh Capital Hall Structure



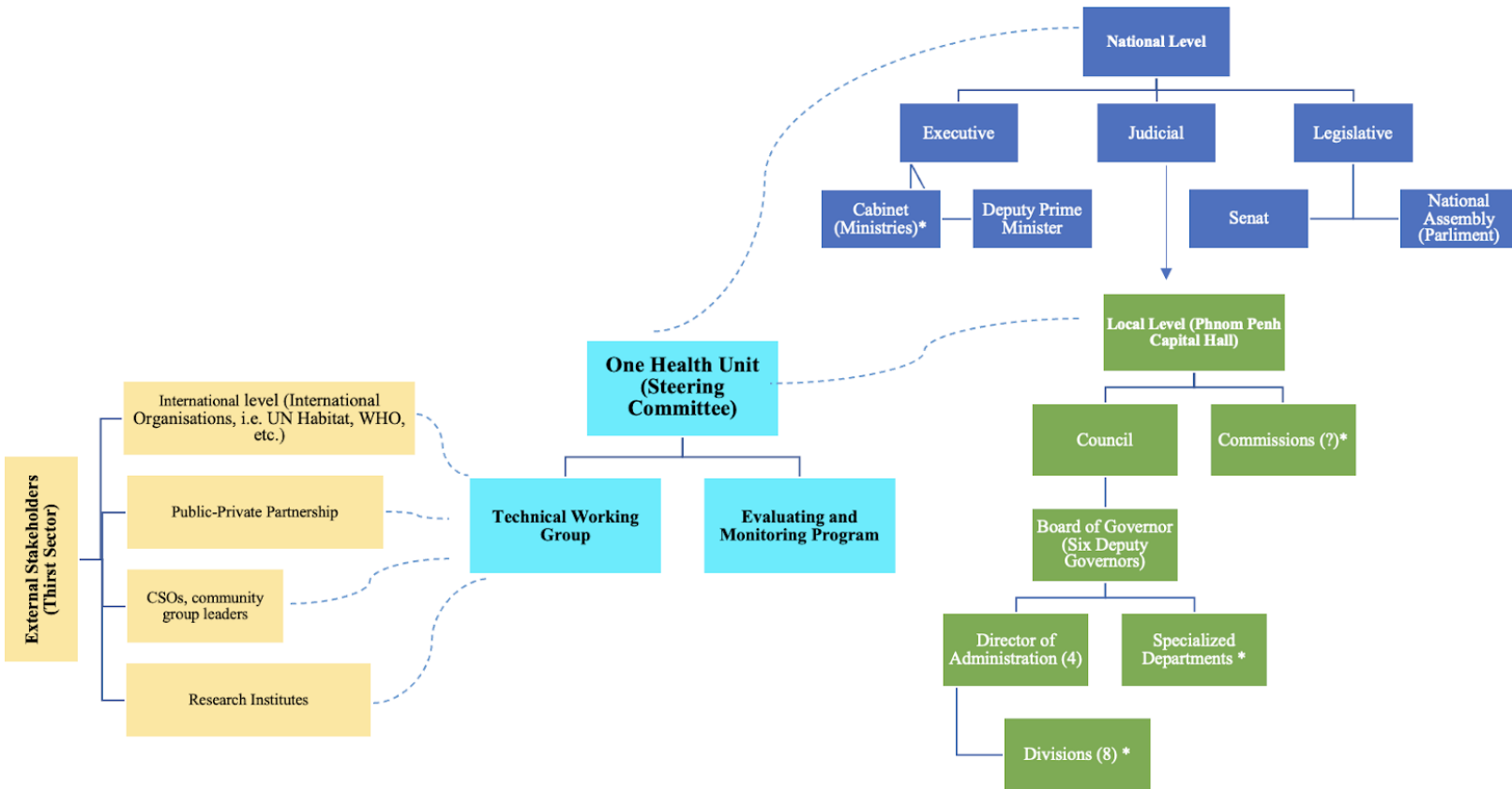
N.B. Please note that this version is from 2010

Source: Phnom Penh Capital Hall Officer Cheam Phanin (Cheam, interview communication, June 20<sup>th</sup>, 2023)

### Annex III: Illustrative Scheme of the Policy Guidance



## Annex IV: System Analysis of the Policy Guidance (Structure Surrounding the One Health Unit Steering Committee)



\*Different relevant bodies to the One Health Unit (non-exhaustive list):

- National Level:
  - **Ministries:** Ministry of Interior; Ministry of Economy and Finance; Ministry of Foreign Affairs; Ministry of Agriculture, Forestry and Fishes; Ministry of Rural Development; Ministry of Commerce; Ministry of Mines and Energy; Ministry of Planning; Ministry of Education, Youth and Sport; Ministry of Social Affairs, Veterans and Youth Rehabilitation; Ministry of Land Management, Urban Planning and Construction; Ministry of Environment, Ministry of Water Resources and Meteorology; Ministry of Information; Ministry of Post and Telecommunication; Ministry of Health, Ministry of Public Work and Transport; Ministry of Culture and Fine Art; Ministry of Cults and Religions; Ministry of Women Affairs; Ministry of Labor and Vocational Training; Ministry of Industry, Science, Technology and Innovation; National Bank of Cambodia; etc.
- Local Level:
  - **Commissions:** Technical Coordination Commission; Procurement Commission; Women & Children Commission; etc.
  - **Specialized Departments:** Department of Public Health; Department of Finance; Department of Environment; Department of Land Municipal Urban Planning; etc.
  - **Divisions:** Administration Division; Planning and Investment Division; Finance Division; Urbanization Division; Human Resources Management Division; Inter-Sectoral Division; Legal Affairs and Human Rights Division; Waste Management Division.

# APPENDIX

## Appendix I: Interview List and Schedule

Name / Title	Interview schedule	Format of interview
UN-Habitat Officer in Cambodia	23rd of May, 2023	Online (videoconference)
Cambodian Health Officer	25th of May, 2023	In presence (UN Headquarters in Geneva)
Dr. Yi Sengdoeurn, Deputy Director of the Communicable Disease Control Department of Ministry of Health (MoH)	3rd of June, 2023	Online (videoconference)
Mr. Cheam Phanin, Deputy Director of Land Use Strategies and Master Plan Department of the PPCH	20th of June, 2023	Online (videoconference)
Mr. Tang Bunkhim, Provincial Health Department officer of the PPCH	20th of June, 2023	Written Responses
Global Health Expert	2nd of June, 2023	Online (videoconference)
Dr. Nathalie Röbbel, WHO Unit Head of Urban Health and Determinant of Health	16th of June, 2023	Online (videoconference)
Dr. Landry Ndriko Mayigane, WHO Technical Officer with the Country Simulation Exercises & Review Unit under the Health Security Preparedness Department	1st of June, 2023	In presence (WHO Headquarters in Geneva)

Please note that per our ethical guideline, we respect the request of anonymity from certain experts that we interviewed, and their names and information remain concealed.



## Appendix II: Ethical Consent Form



### CONSENT AND INFORMATION FORM UN Habitat, Graduate Institute of Geneva Applied Research Project

The Graduate Institute of Geneva (the Global Health Department) partnered with UN Habitat, under the guidance of Dr. Graham Alabaster, to conduct research about “Multi-sectoral urban health approaches, for city-level management, and resilience for infectious diseases.”

Students from the Master in International and Development Studies (MINT), Ariane Fouché-Lemieux, Chanbormey Ouk and Erika Shinabargar have been assigned this project and will fill-in the research gaps on the application of a multi-sectoral approach within urban local bodies, to tackle the prevention of infectious diseases.

This project aims to explore city-level efforts in practice for the prevention of infectious diseases in urban contexts. Through a policy guide, the researchers will portray the capacities of urban local bodies and community-based organization in their management of infectious diseases.

To fill in the research gaps on the application of a multi-sectoral approach within urban local bodies to tackle the prevention of infectious diseases, the researchers aims to conduct literature review and key informant interviews.

This consent form aims to ensure complete transparency and ethical considerations from the interviews.

In this process, the interviewee \_\_\_\_\_ accepts to:

- Be interviewed by the three students mentioned above
- Be recorded during the interview
- Be mentioned by name in the final report
- Be directly quoted (by name) in the final report

Any variation of the conditions above will only occur with your further explicit approval.

Name of interviewee \_\_\_\_\_

Signature of interviewee \_\_\_\_\_

Date: / / 2023



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