KINGDOM OF CAMBODIA

NATION RELIGION KING

NATIONAL STRATEGIC PLAN TO END **TUBERCULOSIS** IN CAMBODIA 2021- 2030

January 2021

National Centre for Tuberculosis and Leprosy Control (CENAT)

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CONTENT

PREFACE

The National Strategic Plan to END Tuberculosis in Cambodia 2021- 2030 marks a milestone in our nation's response to the disease. It is a core document to guide the National TB Program to reach the global of ending TB by 2035.

This National Strategic Plan is geared for success, reflects the insights and expertise of all stakeholders, and is owned by everyone who will need to work together to achieve its goals and objectives. This robust and forward-looking strategy reflects the collective wisdom to attaining our vision of a TB-free Cambodia.

The National Strategic Plan recognizes the need for a comprehensive and focussed response to the epidemic. It focuses on prevention, treatment, coverage, adherence, and ending stigmatization amongst all but specifically those disproportionately affected. More importantly, the National Strategic Plan is inclusive and places people at the center of all its strategies and interventions.

On the same note, we must endeavour to put together our synergistic efforts and pull in the same direction to deliver our national constitution that envisages access to our people's highest attainable standard of health.

The Ministry of Health endorses and supports this National Strategic Plan to END Tuberculosis in Cambodia 2021- 2030 and believes that all development partners will collaborate and help to ensure the successful implementation and monitoring of this strategic plan.

Phnom Penh, ...06.....September, 2021

Minister of Health

Prof. MAM BUNHENG

ACKNOWLEDGEMENT

The National Strategic Plan (NSP) to END Tuberculosis in Cambodia 2021- 2030 represents the leadership and commitment of the Ministry of Health, Cambodia. This national strategic plan has been birthed through a robust country dialogue, which brought together various stakeholders, including the national and provincial health departments, bilateral and multilateral development partners, non-governmental organizations, civil society organizations, and key affected population representatives, among others.

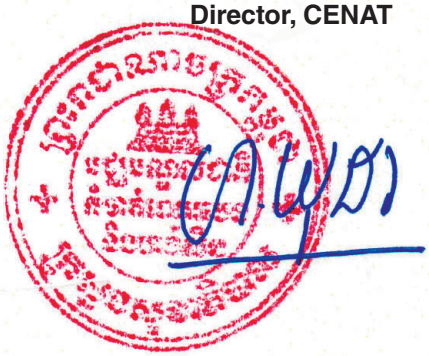
The strategic plan is based on epidemiological analysis of the burden of these diseases and information gleaned from the Joint program review 2019. The plan is aligned to the Cambodia National Development plan and also the END TB strategy of the WHO. It promotes strategic interventions which have the greatest impact for case notification, drug resistant tuberculosis, and TB HIV.

The National Centre for Tuberculosis and Leprosy (CENAT) wishes to acknowledge the contributions by all stakeholders especially the long-term partners of the national TB Programme: National Centre for HIV/AIDS, Dermatology and STDs (NCHADS), World Health Organization's country and regional offices, the Global Fund, USAID, and the NGO partners of the national TB programme. This multi-sectoral and partnership approach ensured that the NSP represents the collective best thinking of a broad range of stakeholders.

The CENAT is grateful for the financial support from the USAID through KHANA, the Global Fund, and CHAI which enabled the numerous stakeholder meetings and workshops for developing and printing this NSP.

Phnom Penh, ...06.....September, 2021

Director, CENAT



Dr Huot Chan Yuda

ACRONYMS

ACF	active case finding
ART	antiretroviral treatment
BCTB	bacteriologically confirmed TB
Bdq	Bedaquiline
CATA	Cambodian Anti-TB Association
CCTBR	Cambodia Committee for TB Research
CD	clinically diagnosed
C-DOTS	community DOTS
CENAT	National Centre for Tuberculosis and Leprosy Control
CHAI	Clinton Health Access Initiative
CI	confidence interval/contact investigation
Cfz	Clofazimine
CHC	Cambodia Health Committee
CPT	co-trimoxazole preventive therapy
CXR	chest X-ray
CSO	Civil Society Organization
DHS	demographic and health survey
DM	diabetes mellitus
Dlm	Delamanid
DOTS	directly observed treatment short course
DR-TB	Drug-Resistant Tuberculosis
DST	drug susceptibility testing
EP	extra pulmonary
EPTB	extra pulmonary tuberculosis
EQA	external quality assurance
FDC	fixed-dose combination
FLD	First Line Drugs
FTPB	Find - Treat - Prevent - Build, Strengthen and Sustain
GDF	Global Drug Facility
GDP	gross domestic product
GF	Global Fund
GX	GeneXpert
HC	health centre
HCMC	Health Centre Management Committee
HCW	health-care worker
HEF	Health Equity Fund
HL	hospital linkage
HIV	human immunodeficiency virus
HR	human resources
IC	infection control
ICC	Interagency Coordinating Committee
ID	Identification
IMR	infant mortality rate
IPC	Infection Prevention and Control
IPT	isoniazid preventive therapy
IPD	Inpatient Department
JPR	joint programme review
LF-LAM	Lateral Flow Lipoarabinomannan Assay
LPA	Line Probe Assay (Hain Test)
LTBI	Latent TB infection
Lzd	Linezolid
MAF	multi-sectoral accountability framework
MC	Microscopy Centres
MCH	maternal and child health
MEF	Ministry of Economy and Finance
MDR-TB	Multidrug-resistant tuberculosis
M&E	Monitoring and evaluation
MNCH	Maternal, neonatal and child health
MoEYS	Ministry of Education, Youth and Sports
MoH	Ministry of Health
MoI	Ministry of Interior
MoLVT	Ministry of Labour and Vocational Training
MoSVY	Ministry of Social Affairs, Veterans and Youth Rehabilitation
MTB/RIF	Mycobacterium Tuberculosis/Rifampicin
NA	National Assembly
NCD	non communicable disease
NCHADS	National Centre for HIV/AIDS, Dermatology and STDs
NGO	Non -governmental organization
NQEMT	National Quality Enhancing Monitoring Tools
NSDP	National Strategic Development Plan
NSPPF	National Social Protection Policy Framework
NSSF	National Social Security Fund
NTRL	National Tuberculosis Reference Laboratory
NTP	The National Tuberculosis Programme
OD	operational district
OOP	out-of-pocket (expenditure on health)
OPD	outpatient department
PCA	Payment Certification Agency
PLHIV	people living with HIV
PMDT	Programmatic management of drug-resistant tuberculosis
PT	proficiency testing
PPM	Public Private Mix
RH	Referral Hospital
RR	Rifampicin-Resistant
RR/MDR-TB	Rifampicin or Multidrug-Resistant TB
RS	Rectangular Strategy
SDG	Sustainable Development Goals
SLD	Second Line Drug
SOP	standard operating procedure
TB	Tuberculosis
TPT	Tuberculosis preventive treatment
TB-MIS	Tuberculosis-Management Information System
ToR	Term of Reference
UHC	universal health coverage
TWG	Technical Working Group
UNHLM	United Nations High Level meeting (on TB)
URC	University Research Corporation
USAID	United States Agency for International Development
VHSG	village health support group
WDR	WHO Rapid Test for Diagnostic
WHO	World Health Organization

EXECUTIVE SUMMARY

BACKGROUND

The National Strategic Plan (NSP) to End TB 2021-2030 sets out the directions and key initiatives that the National Centre for Tuberculosis and Leprosy Control (CENAT) Ministry of Health and partners will undertake during the plan period to work towards achieving the goal of ending TB by 2035[1] in Cambodia. We have seen tremendous commitment and the progress achieved over the last NSP period 2014-2020, yet much more needs to be done to accelerate the nation's progress towards a TB free Cambodia.

Cambodia achieved Millennium Development Goals (MDGs) four years before the target date. More than 500,000 TB patients were treated and cured, and 400,000[2] deaths have been averted since 2000. WHO's estimated TB incidence in Cambodia has declined from 575 in 2000 to 423 in 2011, and 302 per 100,000 population in 2018. The country achieved an impressive 38% decline in prevalence of smear positive TB over a 9-year period (2002-2011) - an average of 4.2 % per year. However, the rate of decline has been slower since 2015, and innovative solutions are required to address this epidemic.

The treatment success rates remain high, 94% for drug-sensitive TB (2016 cohort) amongst the best in the world, and 71% for Multidrug-Resistant Tuberculosis (MDR-TB) (2015 cohort). TB/HIV co-infection and drug-resistant TB do not contribute much to the burden in Cambodia. TB services are available in all public health facilities. There is hard evidence of progress through two consecutive national prevalence surveys 2002 and 2011 that TB prevalence in Cambodia is declining. Hence, the foundations to meet the Sustainable Develop Goals (SDG) TB targets through actions expected in Moscow Declaration and United Nations High Level Meeting (on TB) (UNHLM) are in place.

However, Cambodia remains one of the 30 high burden countries. More than one-third of TB patients are undetected or unreported and still infectious because they have no symptoms or have poor access to health care facilities. An estimated 49,000 people fell ill with TB in 2018, and an estimated 3,500 people died due to TB. TB contribute to the losses to the national economy. Under-nutrition, smoking, alcohol, diabetes and HIV contribute to driving the TB epidemic.

There are major constraints limiting progress including the current levels of finances that are insufficient; TB response is largely limited to the health sector; Limited access to X-ray and WHO recommended rapid diagnostics such Xpert machine; Active case finding (ACF) is not yet scaled up to the entire country; Private providers are not engaged and hospital involvement is incomplete; TB notification is not mandatory; Engagement of partners is confined to time-bound and resource-limited projects; there is limited geographic coverage of some innovative and successful initiatives; and about a third of TB patients and their affected families may face catastrophic costs due to medical and non-medical expenses and income loss related to TB .

THE NSP to END TB IN CAMBODIA 2021 -2030

The NSP 2021-30 is a directional framework to guide the activities of all stakeholders including the all-level governments, development partners, civil society organizations, international agencies, research institutions,

[1] Achieving the END TB Targets

[2] WHO data

private sector, and many others towards the goal of ending TB in Cambodia. It articulates the bold and innovative steps required to move towards TB elimination. It is a ten-year strategic plan with first five-year detailed interventions and activities costed that provides goals and strategies for Cambodia's response to TB from 2021 to 2030. It aims to direct the efforts of all stakeholders on the most important interventions or activities that will bring significant change in the TB incidence, prevalence and mortality. These strategies and interventions build on the ongoing activities for TB control in the country. This NSP replaces previous strategies and will inform and guide the technical and operational guidelines revisions and associated programme strategic directions and activities.

Cambodia is moving towards rapidly ending the epidemic of TB. This needs a paradigm shift in approach and strategy. The plan's overall goal is to accelerate the reduction of TB incidence by 80% and mortality by 90% by 2030 compared to 2015, in line with SDG.

The five-year cost to achieve the overall goal of TB control in Cambodia is calculated at around **USD 177 million** as the total need. It involves the treatment of **155,000 all cases of TB** and **1000 MDR-TB cases** and the provision of TB Preventive Therapy (TPT) **to about 66,500 people.**

This NSP addresses requirements for achieving the UNLHM, SDG and End TB targets for the country and is guided by the **"FIND–TREAT – PREVENT – BUILD, STRENGTHEN, AND SUSTAIN" (FTPB)** approach with a particular focus on **ADDRESSING PROGRAMME PRIORITIES AND SPECIFIC NEEDS.** The thrust is on early diagnosis of all TB patients by more sensitive diagnostic tools, reducing transmission and treating those best at the first interface with the right drugs and regimens, and suitable patient support systems. It is supplemented by prevention strategies, including Latent TB Infection (LTBI) management for risk groups and infection control. All these are supported by creating an enabling environment with adequate finances and resources, and a robust **PROGRAMMATIC SURVEILLANCE, MONITORING AND EVALUATION SYSTEM as well as RESEARCH.**

The development of this NSP has been a collaborative effort of all the stakeholders, including national and provincial governments, development partners, civil society organizations, community-based organizations and the private sector in Cambodia. It was led by the CENAT and the insights in the plan have emerged from a series of workshops and consultations with the stakeholders, learning's from the implementation of the past NSP, findings and recommendations of the joint programme review, and evidence generated from the pilots, models and approaches tested over the last NSP period as well as the alignment with the overall national health strategic plan and national Development plan

Table 1: Impact indicators Cambodia: NSP 2021 2030

IMPACT INDICATORS	2015 Baseline	2020	2025	2030
1. To reduce estimated TB Incidence rate (per 100,000)	367	261	146	77
2. To reduce estimated mortality due to TB (per 100,000)	21	16	9	3
3. To achieve zero catastrophic cost for affected families due to TB	Not available	0	0	0

MAJOR ACTIONS OVER THE NEXT DECADE

1. **TB case notification to be made mandatory: Legislative and regulatory mechanisms to be put in place to ensure notifications from every sector.** In addition, the The National Tubercosis Programme (NTP) will facilitate the regulation of all anti-TB medicines in the context of the **Anti-Microbial Resistance (AMR) country action plan**.

2. **To secure and sustain enhanced funding to End TB in Cambodia:** Current financing is only half of what is required to meet committed targets. Future levels of funding are expected to gradually close the current financing gap.
3. **The End TB interventions will be aligned with the broader Universal Health Coverage (UHC) movement,** considering the future decline of external support for TB care and prevention. The alignment with the broader UHC movement including **Health Equity Fund and Social Protection framework**, and integration and collaboration with other public health programmes and initiatives will become increasingly crucial for the sustainable TB response.
4. **A high-level mechanism for coordinated national multisectoral approaches to End TB to be set-up:** Ending TB requires the highest level of political commitment. There is a need to set and align country targets to the UNHLM, SDG, and End TB Strategy and ensure accountability according to **WHO's multi sectoral accountability framework. To address the drivers of the TB epidemic**, which requires inputs from multiple sectors beyond health. Most importantly, **setting up a high-level mechanism**, will give a significant push to the national END TB efforts.
5. **Provide universal access to quality chest X-ray and rapid tests** for LTBI and TB case detection. Introduction of Artificial Intelligence (AI) and Deep Learning tools to rule out CXR abnormalities and thus address the capacity and capability issues to study X-rays in a timely manner.
6. **Engage private care providers and strengthen involvement of hospitals:** Nearly two thirds of presumptive TB patients first approach a private provider. Private providers and hospitals can contribute substantially to early TB case finding.
7. **Ensure social protection for people with TB and their families:** TB patients and their affected families bear a substantial financial burden due to TB care especially non-medical costs (such as transport expenses, income loss). Health Equity Fund (HEF) benefit packages are currently available to poor TB patients only. Offering benefit packages to all TB patients is under consideration and will be a major support for TB elimination in the country.
8. **Address special need of migrants, both cross country and internal migrants and cross-border issues which is projected to increase.**

TO CONCLUDE

The NSP period 2021 – 2030 is a time of immense potential with the hopes of seeing new drugs, regimens, diagnostics and vaccines. Wider application of digital tools and health financing strategies carry with it a promise for a stronger and accelerated response to the TB epidemic. The national programme is alive to these possibilities and will suitably modify the NSP and the consequent national and subnational level annual operational plans to incorporate these new tools.

To conclude, the ultimate impact of this NSP will ensure transformational improvements in the elimination efforts of TB from Cambodia thereby contributing to the health and wellbeing of its citizens. While NTP awaits new prevention, diagnostic and treatment tools to increase the rate of the present TB incidence decline, the programme will continue to be agile to rapidly incorporate such developments.

The programme strives for coverage and quality improvements as well as efficiency benefits contributing to significant cost savings. By taking a **FIND – TREAT – PREVENT – BUILD STRENGTHEN AND SUSTAIN approach to ADDRESS PROGRAMME SPECIFIC NEEDS AND PRIORITIES** supported by an enabling environment for the NSP interventions to succeed, the national TB programme can achieve significant results, accelerating towards a TB free Cambodia and make a significant difference in the lives of the many people it serves, thus contributing to achieving SDG by 2030

CHAPTER 1

INTRODUCTION

1.1. THE PURPOSE OF THE NATIONAL STRATEGIC PLAN TO END TB IN CAMBODIA

This document provides the new strategic direction of the National Centre for TB and Leprosy Control (CENAT), Ministry of Health (MoH), Royal Government of Cambodia in its response to end Tuberculosis (TB) during the period 2021-2030.

Whereas the previous National Strategic Plan (NSP), which covered the years 2014 – 2020, was the right one for its time having incorporated most of the elements of the End TB strategy; this new NSP takes a longer-term view. Hence the policies, strategies and activities look beyond the present and build on the strong foundations already in place, for ending TB in Cambodia. While most of the fundamental epidemiological, economic analysis and several strategic directions of recent years remain valid, there are issues and new evidence-based developments that have progressively increased in importance and will be adequately addressed in this new NSP.

The NSP framework requires a long-term strategic approach that focuses not only on specific health interventions related to TB, but also on other key determinants of TB including economic and social development in the fast-growing economy of Cambodia. Many of these needs, by their very nature, to be addressed through consistent and sustained policy implementation over many years. Some have exceptionally long lead times, for example, the investment in the treatment of Latent tuberculosis infection to provide eventual but long-lasting economic and social returns.

In addition, rather than the broad and all-inclusive approach used for the last NSP and its predecessors, this plan focuses on a limited number of uniquely national or whole of government priorities, with action in other supporting areas being required of incorporating in other government institutions' plans. For instance, with the assistance of the Ministry of Economy and Finance (MEF), actions from other ministry's will be leveraged to focus on the areas in which they can develop outcomes and outputs that can influence NTP interventions which will contribute to the achievement of the national vision and goals.

1.2 COUNTRY DEVELOPMENT PRIORITIES AND ALIGNMENT OF NSP TO THE COUNTRY DEVELOPMENT STRATEGY

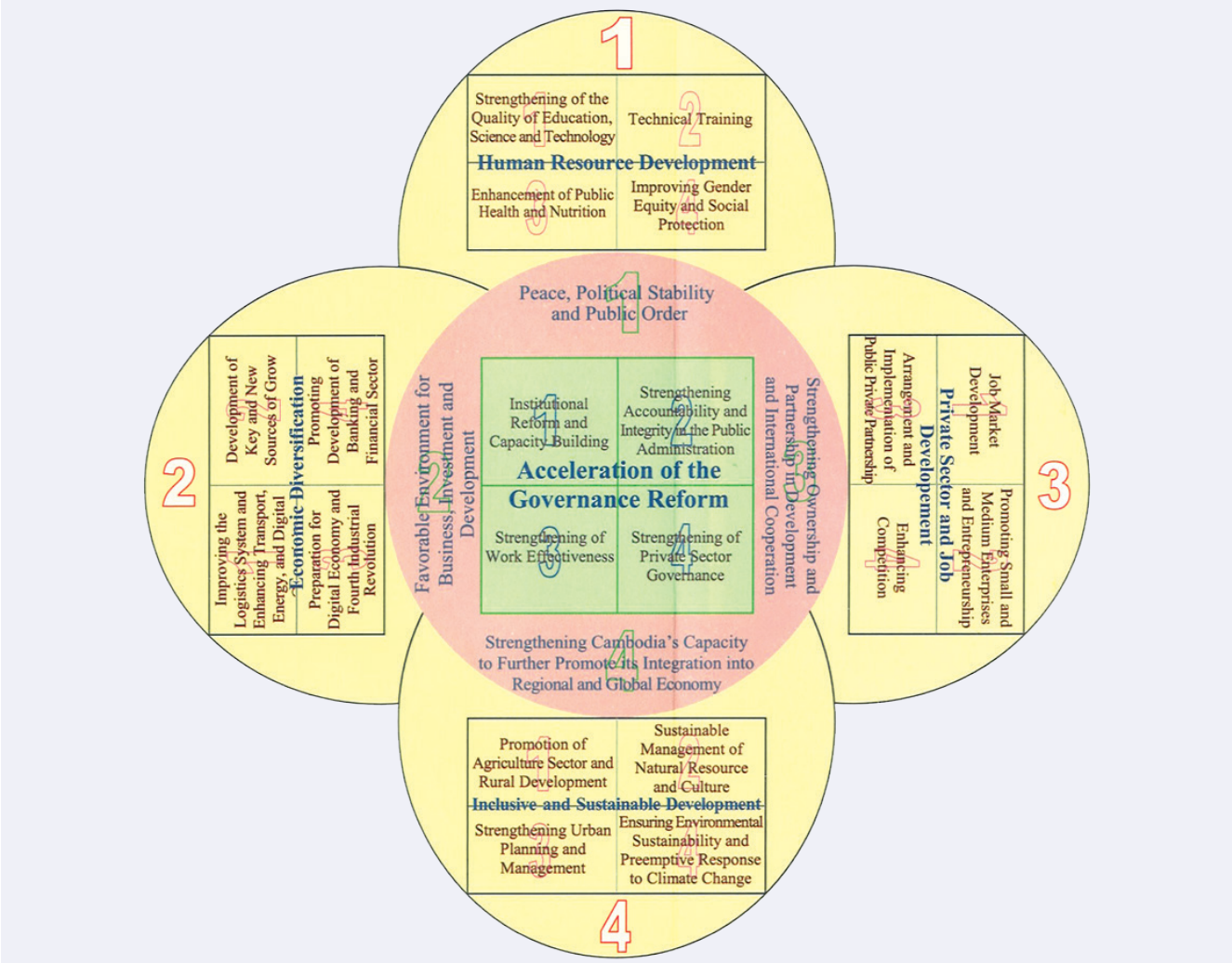
The Government has articulated the country's development objectives in the National Strategic Development Plan (NSDP) 2019-2023; long-term development aims are expressed by the Government's Vision 2030, a roadmap towards upper middle-income status. The Rectangular Strategy (RS) for Growth, Employment, Equity and Efficiency Phase IV (RS-IV 2019–2023)[3] , places good governance centre-stage and prioritizes human resource development (HRD), economic diversification, private sector employment, and inclusive and sustainable development. This agenda is made operational through the NSDP, which integrates the Sustainable Development Goals[4] and long-term development aims articulated in the Government's Vision 2030,[5] a roadmap towards upper middle-income status, and Vision 2050, when Cambodia aspires to become a high-income country.

[3] Available at http://cnv.org.kh/wp-content/uploads/2012/10/Rectangular-Strategy-Phase-IV-of-the-Royal-Government-ofCambodia-of-the-Sixth-Legislature-of-the-National-Assembly-2018-2023.pdf.

[4] Rapid integrated assessment (RIA) 2016; mainstreaming, acceleration, policy support (MAPS) report 2016

[5] Vision 2030 and Vision 2050 remain unpublished but are referenced in speeches by the Prime Minister: http://cnv.org.kh/selected-impromptu-comments-at-thegraduation-and-diploma-presenting-ceremony-of-the-royal-university-of-phnom-penh/#more-4239.

The Rectangular Strategies IV (RS-IV) 2019–2023 emphasizes that economic growth should be inclusive in reducing poverty, increasing gender equity and developing human resources (this includes improving public health, nutrition, the quality of education and social protection). The Cambodia NSP to END TB 2021 – 2030 aligns itself with the overall Heath Strategic Plan and wider national development strategy specifically by focussing on enhancing the quality of its services, partnering with the growing private health care sector, strengthening ownership and accountability, and linking TB patients with the social protection schemes.



1.3 GLOBAL DIRECTIONS TO END TB

In addition to the National development agenda, this NSP also takes into account the Global Development Goals, Global direction to END TB as is enunciated in the Global END TB strategy in line with SDG, the Regional Framework for Action on Implementation of the End TB Strategy in the Western Pacific, 2016–2020, and the United Nations High Level Meeting (UNHLM) on TB.

1.3.1 The global end TB

WHO End TB Strategy 2016-2035, adopted by the World Health Assembly in 2014, aims to end the global TB epidemic as part of the Sustainable Development Goals. In line with SDG, it serves as a blueprint for countries to reduce TB incidence by 80% and TB deaths by 90% by 2030 with an additional aim to eliminate catastrophic costs for TB-affected households by 2020 and sustain it after that. The Strategy is not a "one size fits all" approach and its success depends on adaptation for diverse country settings. Cambodia, was amongst the early adopters of the END TB strategy and continues to build upon the global framework and has adapted it since the previous NSP 2014-2020 and more particularly for this NSP 2021 2030 as it covers and fits well with the last 10 years of SDG period.

Vision: A world free of TB: Zero deaths, disease and suffering due to TB

Goal: End the global TB epidemic

Targets for 2035

- 95% reduction in TB deaths (compared with 2015)
- 90% reduction in TB incidence rate
- No affected families face catastrophic costs due to TB

Milestones for 2030 (SDG's)

- 90% reduction in TB deaths (compared with 2015)
- 80% reduction in TB incidence rate
- No affected families face catastrophic costs due to TB

Milestones for 2025

- 75% reduction in TB deaths (compared with 2015)
- 50% reduction in TB incidence rate
- No affected families face catastrophic costs due to TB

Milestones for 2020

- 35% reduction in TB deaths (compared with 2015)
- 20% reduction in TB incidence rate
- No affected families face catastrophic costs due to TB

Principles

- Government stewardship and accountability, with monitoring and evaluation
- Strong coalition with civil society organizations and communities
- Protection and promotion of human rights, ethics and equity
- Adaptation of the strategy and targets at country level, with global collaboration

Pillars and components

1. Integrated, patient-centered care and prevention
    a. Early diagnosis of TB including universal drug susceptibility testing; systematic screening of contacts and high-risk groups
    b. Treatment of all people with TB including drug-resistant TB, with patient support
    c. Collaborative TB/HIV activities; and management of co-morbidities
    d. Preventive treatment of persons at high-risk and vaccination for TB
2. Bold policies and supportive systems
    a. Political commitment with adequate resources for TB care and prevention
    b. Engagement of communities, civil society organizations, and public and private care providers
    c. Universal health coverage policy; and regulatory frameworks for case notification, vital registration, drug quality and rational use, and infection control
    d. Social protection, poverty alleviation and actions on other determinants of TB
3. Intensified research and innovation
    a. Discovery, development and rapid uptake of new tools, interventions, and strategies
    b. Research to optimize implementation and impact, and promote innovations

Table 3: The End TB Strategy's three high-level global indicators, targets and milestones

INDICATORS	Milestones		Targets	
	2020 (%)	2025 (%)	SDG 2030 (%)	End TB 2035 (%)
1. Reduction in TB death (compared with 2015 baseline)	35	75	90	95
2. Reduction in the TB incidence (compared with 2015 baseline)	20	50	80	90
3. Proportion of TB patients and their household experiencing catastrophic costs due to TB (Level in 2015 unknown)	0	0	0	0

1.3.2 Regional framework for action on implementation of the end tb strategy in the western pacific, 2016–2020

The Regional Framework for Action on Implementation of the End TB Strategy in the Western Pacific 2016–2020 adapts the Global End TB Strategy to the particular circumstances of countries and areas in the Region. The endorsement of this framework by the sixty-sixth Regional Committee for the Western Pacific repre¬sents the commitment of Member States to build and maintain bold national efforts for TB control until the vision of zero deaths, disease and suffering due to tuberculosis is achieved. The regional framework provides policy options for NTPs and policy-makers to consider in updating national strategies and plans to strengthen efforts to advance TB control. To provide guidance and policy options in areas beyond the conventional TB control approach, the regional framework elaborates strategies, concepts and frameworks that are not fully employed in conventional TB control policies and practices which the National NSP 2021 - 2030 draws from while developing the strategies for Cambodia.

The regional strategy encourages member states to focus on:

1. Promoting a **whole system approach** for the **equitable** delivery of quality health services
2. Emphasis on health system strengthening and promotion of **multisectoral actions**
3. Covering the **whole spectrum of TB epidemiology**
4. **People-centered care:** an approach that sees individuals, families and communities as participants in and beneficiaries of trusted health systems that respond to their needs and preferences in humane and holistic ways.

1.3.3 United Nations High Level Meeting on TB (UNHLM)[6]

Following-up with Moscow Ministerial Meeting on TB in late 2017, on Sept 26, 2018, the first ever UN General Assembly (UNGA) High-Level Meeting on Tuberculosis (UNGA-HLM-TB) was held in New York. The meeting resulted in the adoption of a Political Declaration on Tuberculosis on Oct 10, 2018, which reaffirmed commitment to end the tuberculosis epidemic globally by 2030 and included ambitious and bold targets for scale-up of tuberculosis care and prevention services, as well as commitments on research for new tools, principles of equity and patient rights, and resource needs targets for both implementation and research. A follow-up WHO Executive Board meeting focused on ending tuberculosis re-affirmed targets set for 2022. Cambodia is committed to contributing to attainment of these global targets and has adapted the UNHLM targets while setting the NSP targets.

[6] https://www.who.int/tb/features_archive/UNGA-adopts-TB-declaration/en/

1.3.4 The global plan to end tb 2018 2022[7]

The Global Plan to END TB 2018-2022 presents with directions to get on track to end TB by 2030. It follows the UNHLM declaration and is centered on strong political leadership to achieve the country contribution of the global TB targets agreed in the UN Political Declaration on TB. This Global Plan for 2018-2022 is deliberately aligned to the time frame of the UNHLM targets, making it a tool for advocacy, resource mobilization, civil society, and community empowerment and accountability on the UNHLM targets and commitments. It highlights the need for a patient rights-based, people-centred approach, accelerated innovation in care delivery, the introduction of new tools, substantial investment in research and diagnostics (R&D) and a strong country response.

1.4 HIGHLIHTS OF THE NSP TO END TB IN CAMBODIA 2021 2030

The NSP to End Tuberculosis in Cambodia 2021-2030 is the fifth national strategic plan (NSP) for TB control in the Kingdom of Cambodia. This plan differs from the previous ones not only by its key title point, for instance “End TB” instead of “TB Control”, but more importantly it is the national government plan and formulated through a systematic process, involving all stake holders including technical experts, civil society, community representatives, and partners. The plan has more ambitious target than its predecessors; this is in line with the global directions, especially SDG.

The 3rd NTP Joint Programme Review (JPR) in June 2019 conducted by a team of around 100 national and international experts provides critical insights on where the NSP and NTP was successful and where roadblocks occurred. The JPR report containing the recommendations is one of the key guiding documents in the development of this NSP along with other global and national directions as well as evaluations conducted in the country over the last 7 years.

The NSP with full activities formulated and costed for the first five years is designed as a rolling plan for ten years, which needs to be updated to account for progress, new policies, programs and strategies as well as updated priorities. Mid-term Evaluation of the plan should be conducted in 2023 and 2025 for corrections within the first five years 2021-2025 and formulating the 2026-2030 rolling plan. The detailed activity plan for the second period of the plan 2026-2030 should be formulated in 2025. Ending TB in Cambodia, one of the 30 high burden countries in world, is poised at a crucial juncture with a declining incidence of TB but with a high number of “missed cases”, uncertain donor support, and a changing health system at the primary level to universalize TB care.

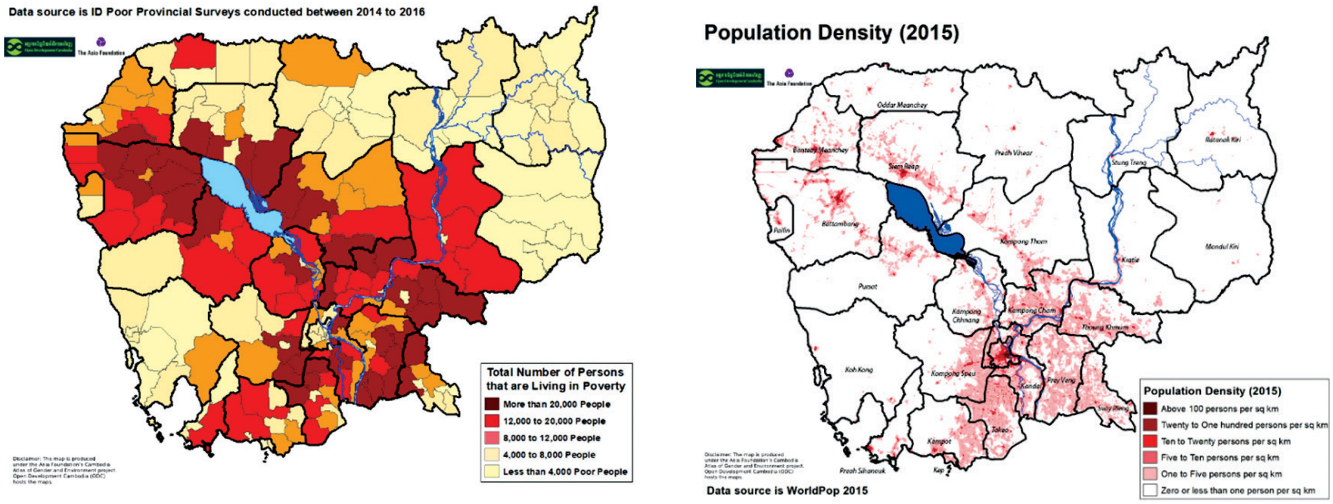
[7] http://www.stoptb.org/global/plan/plan2/

CHAPTER 2 CAMBODIA: EVOLVING COUNTRY CONTEXT

2.1 DEMOGRAPHIC, GEOGRAPHIC AND SOCIO-ECONOMIC FEATURES

Over the past two decades, Cambodia has undergone a significant transition, reaching lower middle-income status in 2015. Driven by garment exports and tourism, Cambodia's economy has sustained an average growth rate of 7.7% between 1995 and 2018, making it among the fastest-growing economies in the world. Poverty continues to fall in Cambodia. According to official estimates, the poverty rate in 2014 was 13.5% compared to 47.8% in 2007. Rural household incomes have risen and their composition has changed considerably: poor rural households have become increasingly engaged in salaried work in the domestic garment industry and construction, or through out-migration for work. Most villages have much better access to infrastructure and financial services. However, a number of people living in poverty remain in the country (Figure 1) who continue to be more at risk for TB.

Figure 1: Total number of persons living in poverty level and population density



Eighty percent of the population in Cambodia live in rural areas (DHS 2014). The population growth rate declined from 3.2 % in 1990 (World Bank 2019) to 1.2% per year in 2019 (population census 2019). The average household size is 4.7 persons. Phnom Penh is the capital city with a population of about 2 million.

Table 4. Basic economic and health economic data [8] [9] [10]

Total population 2018	16,249,798
Population Phnom Penh 2018	2,000,000
Gross Domestic Product (GDP) per capita (US$) 2018	1,512
Income GINI coefficient 2013 0 (equality) – 100 (inequality)	36
Current expenditure on health per capita (US$), 2016	79.6
Current expenditure on health as share (%) of GDP 2016	6.0
General government health expenditure as share (%) of current health expenditure 2016	22.3
Out-of-pocket health expenditure share (%) of current health expenditure 2016	60.4
Life expectancy at birth (in years) 2017	69

[8] UHC and SDG Country Profile 2018 Cambodia, WHO Western Pacific Region

[9] WHO (2018) Cambodia national health accounts (2012-2016): Health expenditure report. Manila: World Health Organization Regional Office for the Western Pacific.

[10] https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=KH

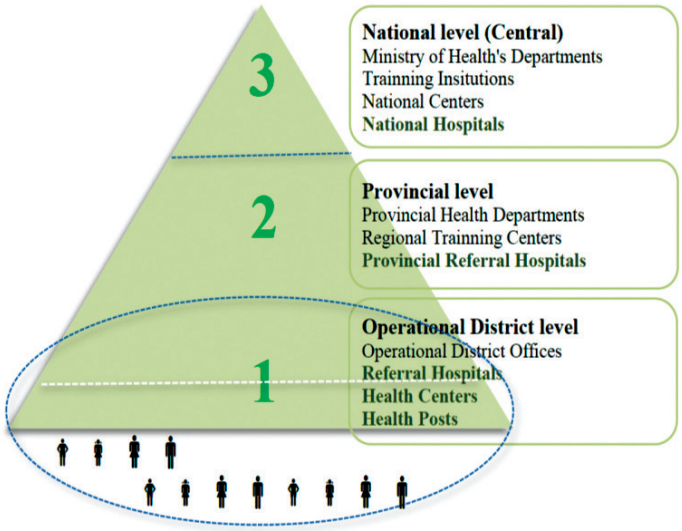
Progress towards universal health coverage (UHC)

The vision of the Health Strategic Plan 2016-2020 is for Cambodians to "have better health and wellbeing, thereby contributing to sustainable socioeconomic development." To achieve this, the plan sets out health development goals. Cambodia has relatively low coverage of some essential services. It continues to face challenges in access to and quality of services and capacity for service delivery, compared to other countries in the Western Pacific Region. While service coverage and accessibility remain relatively high for maternal and child health and for immunization services, key challenges include the provision of non-communicable disease (NCD) services, TB and hepatitis detection and treatment, and access to improved sanitation.

Several SDG 3 indicators are close to the target in Cambodia

Cambodia shows relatively advanced progress towards new born and child health indicators and some infectious disease indicators. However, significant progress is required to achieve maternal mortality and family planning targets, and relatively large inequities persist in the adolescent birth rate and in neonatal and under-5 mortality.

2.2 HEALTH SYSTEMS IN CAMBODIA



Provincial hospitals- 24
Operational Districts (OD) – 102
Referral Hospitals – 91
Health Centres - 1228
Health posts - 118

Sustained efforts have been made in Cambodia to reform health policy and the organisation of the health system in order to address health challenges and the provision of equitable health services. These efforts, combined with the effects of steady economic growth, have contributed to a general improvement in population health, particularly in the areas of infectious diseases, child and maternal health; however, key challenges remain, including gaps in the public health infrastructure and technical platforms, human resources, the increasing burden from non-communicable diseases, injuries, and the threat of antimicrobial resistance[11] .

2.3 NTP IMPLEMENTATION ARRANGEMENTS

The National TB Program (NTP) includes the National Centre for Tuberculosis and Leprosy (CENAT) at the national level, 25 provincial and city health departments, 102 operational districts with 1,474 health facilities providing TB services, which include 126 referral hospitals (RH) and 1,221 Health Centres (HC) and 127 health posts. The National TB Reference Laboratory (NTRL) is part of the NTP and is located in the CENAT premises, under the authority of the Director. Each OD has one or several RHs with TB units and beds, TB microscopy centres (TB-MC) for diagnosis by smear microscopy. In all, there are 218 TB-MC together with 64 Xpert Centers in the country. Each level has designated TB staff and is responsible for specific functions of the TB programme as below:

[11] Annear PL, Jacobs B, Nachtnebel M., The Kingdom of Cambodia. Health system review. Manila: WHO Regional Office for the Western Pacific, 2015.

Central level

Leadership and managerial responsibility for the NTP lies with CENAT, which is manned by around 200 staff, of which 25 are working full-time for the NTP at national level. In this Unit are the focal points responsible for developing policies and plans, training, supervision, monitoring and evaluating the NTP, drug procurement for the whole country and coordinating with other partners supporting the NTP. CENAT, one of the eight National Public Hospitals, also houses a referral TB hospital and Leprosy In-patient services with the total 130 beds and the National TB Reference Laboratory (NTRL).

Central Level National Centre for TB & Leprosy (CENAT)
National TB Reference Laboratory TB training center

Provincial Level Provincial TB Supervisor
Provincial Lab Supervisor
TB services in RH

Operational District Level OD TB Supervisor RH with TB services
TB services in HCs & HPs

TB Community Networks HCMC & VHSG

Provincial level

Every province has a Provincial TB Medical Supervisor, and a Provincial TB Laboratory Supervisor, appointed by the Provincial Health Director. They are responsible for all TB services in the province, especially planning, training, coordination and regular supervision of the ODs, TB-MC and HC, and in 11 provinces are directly involved in the clinical care provided in MDR-TB treatment Units.

Operational district level

Every OD has an OD TB Supervisor whose main responsibilities are responsible for all TB services in the district and to maintain the OD TB registry, and plan, train, coordinate and supervise HCs every month, and interact with the clinical teams caring for patients with TB. TB RH has TB staff and laboratory staff.

Health centre level

In the HCs, cross-trained general health workers implement basic TB services. Usually, at least two workers in each HC have received three-day training on DOTS, including smear making. They are designated as TB health workers at HC level.

Networks within the community

Community-based TB activities or Community DOTS (C-DOTS) are often run in a degree of relationship or harmony with other health interventions such as maternal and child health and malaria. These are conducted in line with the draft Community Participation Policy for Health12, through the Village Health Support Groups (VHSG) and Health Centre Management Committees (HCMC). For TB, two VHSG members per village were trained to refer presumptive TB cases, collect and transport sputum specimens, conduct community sensitization, support patients on treatment, and collect drugs from the HC. The routine monthly or bi-monthly meetings of HC workers with VHSGs at HCs are used sometimes for refreshing the basic knowledge and skills of the VHSGs about TB screening, diagnosis and treatment.

CHAPTER 3

JOINT PROGRAMME REVIEW OF NTP

3.1 BACKGROUND

The broad objectives of the third JPR were to review the National TB Programme of Cambodia; note the accomplishments since the last JPR of 2012; identify challenges to making progress; make recommendations to help make rapid progress towards ending TB in the country and importantly, inform the development of the next ten-year strategic plan. The review was undertaken in June 2019. 23 international and 69 national experts participated in the review and gathered information for the purpose through desk reviews of documents and records, field visits and interviews, and consultations with a wide range of stakeholders. The key highlights of the JPR report is as follows:

3.2 CHALLENGES CONFRONTING THE NATION'S TB RESPONSE

1. A top challenge has been **deficient funding.** The current and projected levels of finances are **clearly insufficient to implement the country's national strategic plan** that ends in 2020 and beyond. Large funding gaps persist as does a heavy dependence on donor funding.
2. A persistent problem has been that more than **one third of the estimated TB cases in the country go undetected or unreported.** The main reasons for this include inadequate access to recommended sensitive tools for TB case detection – chest X-ray for screening and rapid molecular testing for diagnosis; non-engagement of private practitioners; incomplete engagement of public and private hospitals; and limited geographic coverage of systematic screening and active case finding interventions. Notably, TB is not a notifiable disease in Cambodia; this may also be a reason for under-notification.
3. **Engagement of NTP partners is confined to time-bound and resource-limited projects** tied up to funding availability from donors. Cessation of funding has led to interruption or termination of several projects including those addressing important issues such as increasing TB case detection through innovative approaches.
4. Many important initiatives such **as private provider engagement, hospital engagement, active TB case finding, workplace TB management** though successful, have either been discontinued (public-private mix for instance) or have limited geographic coverage.
5. On the demand side, about **a third of patients may face catastrophic costs due to TB**, especially non-medical expenses such as transport and wage loss, adding to further impoverishment in particular for poor or near poor families.
6. Importantly, TB prevention – starting with preventive treatment of people living with HIV (PLHIV) and children and infection control measures – need country wide scaling up and finally,
7. Multisectoral engagement is essential to end TB. The current multisectoral initiatives are modest in their scope and nature. **Multisectoral collaboration is yet to be scaled up, expanded to all relevant ministries and monitored regularly** for expected inputs and outcomes as part of a national coordinated TB response.

3.3 MAIN RECOMMENDATIONS

To the Ministry of Health, Kingdom of Cambodia

1. **Secure and sustain enhanced funding to End TB in Cambodia:** The MoH should work with the Ministry of Economy and Finance (MEF) to ensure that government financing for a multisectoral TB response is increased and sustained.
2. **Set up and use a high-level mechanism for a national multisectoral effort to End TB:** Since addressing drivers (driving factors) of the TB epidemic necessitates inputs from multiple sectors beyond health, ending TB in Cambodia will require a very high level of political commitment. This JPR infers that there is a scope to set up a high-level and high-profile mechanism, possibly under the patronage of the Samdech Prime Minister.
3. **Sustain strong leadership of CENAT and support partnerships with all stakeholders:** The MoH needs to meet requirements of properly trained human resources (HR) for an expanded TB response especially for implementation of new and innovative strategies and tools. Partnerships with the existing and new partners will have to be further strengthened for scaling up successful initiatives and commencing new ones.
4. **Make TB a notifiable disease and regulate sale and use of all anti TB medicines:** MoH needs to extend and effectively enforce current regulatory measures for TB to: a) making notification of TB cases mandatory for all care providers and b) regulating the sale and use of all anti-TB medicines including second line drugs used in the treatment of drug-resistant TB.
5. **Ensure social protection for people with TB and their families:** Considering that TB is largely a disease of poverty and a tracer for progress on the SDGs, the JPR team strongly recommends that all TB patients, by default, should be eligible to receive the benefit package that reimburses providers for providing TB care and compensates indirect costs of TB care to the patients and affected families.

To CENAT and Partners

6. **Provide universal access to quality chest X-ray and rapid test for TB case detection:** This JPR recommends CENAT to improve ease of access to Xpert MTB/RIF including sample transport and to scale-up the network of functional X-ray machines through repair, maintenance, upgrade to digital technology and procurement of additional digital machines.
7. **Expand active case finding with attention to key populations:** This JPR supports scaling up of ACF across the country including systematic screening of key populations such as PLHIV, elderly people, migrant populations and prison inmates.
8. **Engage private providers and strengthen hospital involvement:** Scale up engagement of private care providers through proven and innovative approaches based on diverse country experiences in other Asian countries, and involvement of all public and private hospitals, making them integral to the national TB response.
9. **Scale up preventive TB treatment and infection control:** This JPR recommends phased scale up of active contact tracing approaches and preventive TB treatment, including implementation of a plan for transition to new LTBI regimens, and Infection Prevention and Control (IPC) in general and across the country.
10. **Pursue innovation and research:** This JPR team recommends to pursue innovation and research including creating a platform for TB researchers and innovators, formation of a national TB research network, development of a prioritized national TB research agenda, developing national and international collaborations and contributing to resources mobilization for TB research.

CHAPTER 4

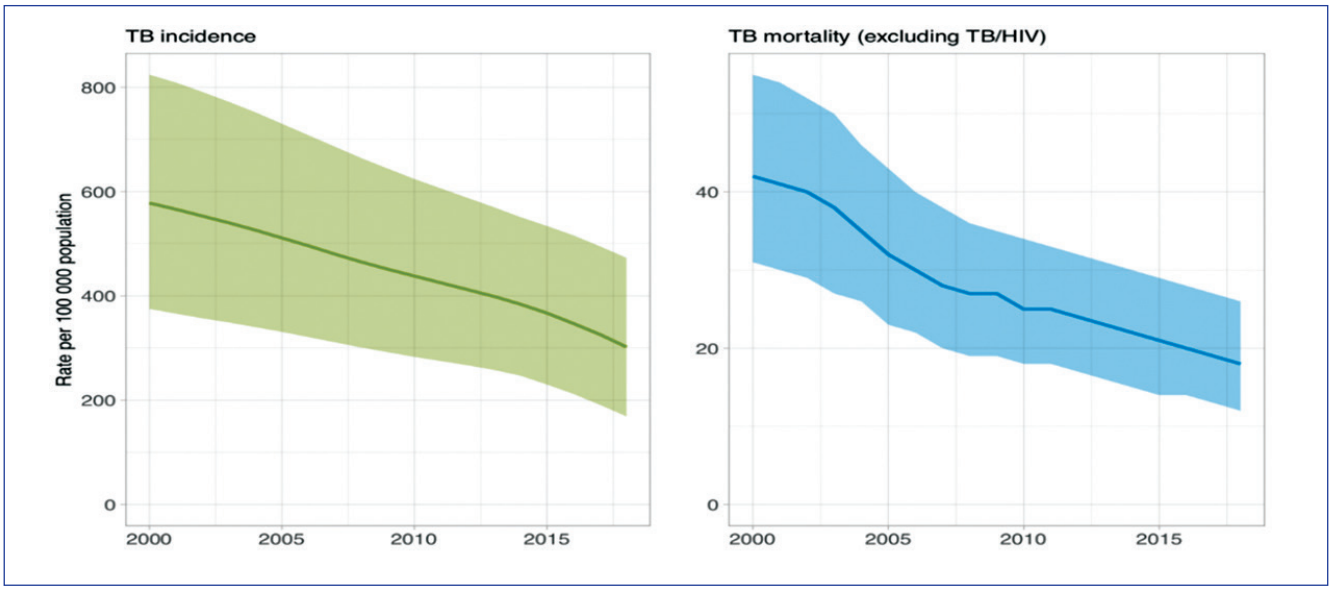
SITUATION ANALYSIS

4.1 TB EPIDEMIOLOGY IN CAMBODIA

Declining TB burden

Cambodia is one of the 30 high TB burden countries with an estimated TB incidence of 302 per 100 000 population (49,000) and a mortality among HIV-negative TB patients of 18 per 100 000 population (3100) in 2018 (Figure 1). WHO's estimated annual TB incidence declined from 575 in 2000 to 302 per 100 000 population in 2018 with an average annual reduction rate of 2.5%. The estimated mortality rate (excluding TB/HIV) declined from 42 to 18 per 100 000 population, with an average annual decline of 3.2% in this period. Since 2012, there has been a steady decline of TB burden with 4.1% annual reduction of the estimated incidence and 4.2% annual reduction of mortality (excluding TB/HIV). Treatment success rates among TB patients have been consistently over 90%. 94% for drug-sensitive TB (2016 cohort) and 64% for MDR-TB (2016 cohort)[12] . However more than one-third of the cases are undetected or unreported.

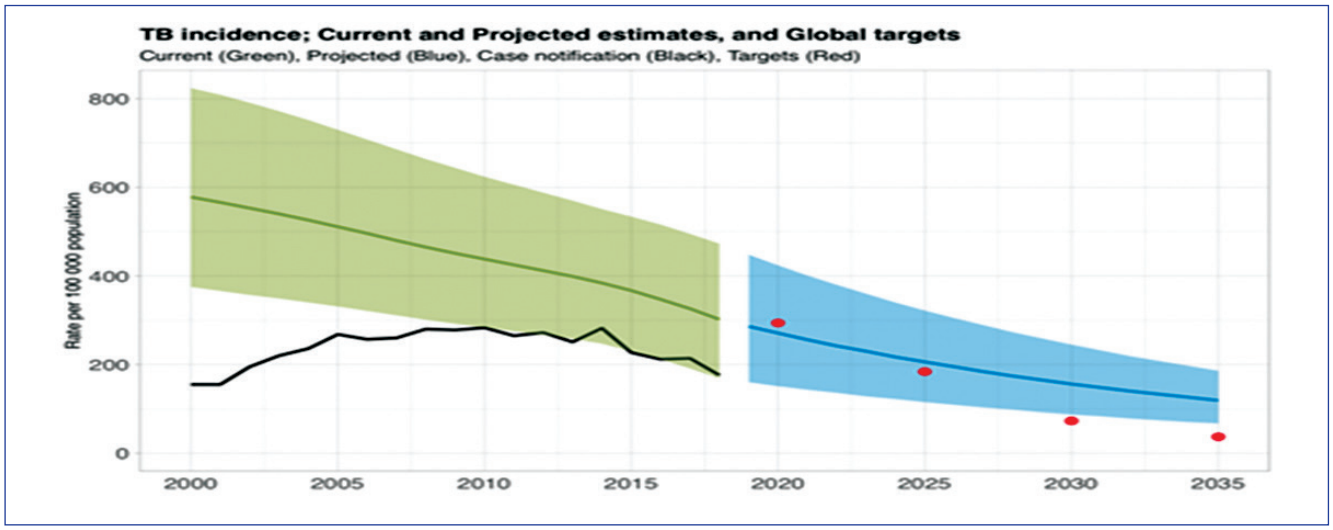
Figure 1: Estimated TB incidence and mortality in Cambodia, 2000-2018



Assuming that the recent annual reduction rate continues until 2035, it is expected that Cambodia will achieve the 2020 milestone of the End TB Strategy. However, it is challenging for the country to achieve the milestone and targets of the End TB Strategy and the SDG for 2025, 2030 and 2035 (50%, 80% and 90% reduction in incidence rate, respectively, compared with 2015) (Figure 2).

[12] Epidemiological Analysis. WPRO, 2019

Figure 2: Projected incidence of TB with recent annual reduction rate, 2019-2035



(Source: WHO Global TB database. The incidence rate for 2018-2035 was projected based on the annual reduction rate of incidence for 2014-2018 assuming the current level of efforts continue until 2035)

Cambodia has experienced a rapid economic development over the past decade, which has led to a marked improvement in key socio-economic indicators including increased GDP per capita and reduced poverty rate, and in health indicators such as infant mortality and life. Exposure to social and other risk factors for TB such as the poverty rate, smoking prevalence both in males and females, unemployment rate, proportion of population living in slums, and proportion undernourished declined consistently over the period 2000-2017. Such multiple sources of evidence indicate that the burden of TB is falling in Cambodia.

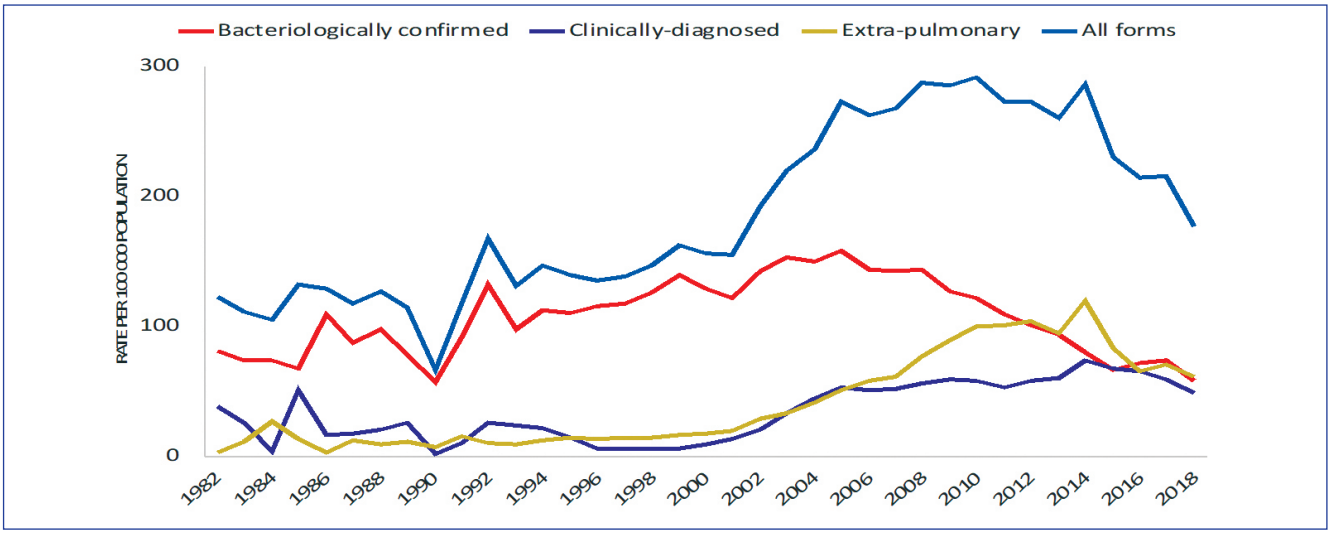
4.2 NATIONAL TUBERCULOSIS CONTROL PROGRAMME PERFORMANCE AND IMPACT[13]

4.2.1 Case notification

The rapid DOTS expansion during the 2000s resulted in a sharp increase in case notification for all forms of TB during this period (Figure 3). The rate peaked in 2010 with 283 per 100 000 population, and after several years of stagnation, it gradually declined over time at an annual rate of 5% (of note, the spike in 2014 was attributable to over-diagnosis of extra-pulmonary TB in children Fig.3). In 2017, treatment coverage was estimated to be 66% (CI 48% - 96%), and 34% of TB was estimated to be either undiagnosed or not notified by the national TB programme. In 2018, a total of 28757 cases were notified and, of them, 28620 were incident (new and relapse) TB cases. The case notification rate for new and relapse TB was 176 per 100 000 population in 2018 with treatment coverage of 58%. The case notification rate of bacteriologically confirmed (BC) TB has declined since 2005 while that of extra-pulmonary (EP) TB increased in the late 2010s and that of clinically diagnosed (CD) TB has remained stable (Figure 4). Reduced case notification of BC-TB may indicate the possible reduction of infectious cases in the community. Intensified case finding activities including ACF in the 2010s could have facilitated early detection of patients. Rapid expansion of childhood TB services during the late 2000s and early 2010s might have contributed to the increased case notification of extra-pulmonary TB. The recent decline in case notification is likely attributable to both a reduction in underlying TB incidence and reduced activities associated with shrinking external funding for TB. The reduced case notifications both in number and rate were seen in many provinces.

[13] The data used in this section is derived from the Epidemiological analysis conducted by WHO WIPRO in 2019

Figure 3: Case notification rate for TB by type of TB, Cambodia



Source: CENAT data, population data from the UN Population Division

4.2.2 Case finding efforts

Population testing rate has more than tripled, from 0.4% in 2001 to 1.3% in 2012, but it has been in a declining trend since 2012 (Figure 4). There was a substantial reduction in the number of smear test in 2015-2018, while the number of Xpert test has increased in the same period. There is considerable difference in the population testing rate across provinces, ranging from 0.05% in Kratie to 1.4% in Kampot in 2018, highlighting some subnational gaps in case finding efforts (Figure 5). The population testing rate was negatively correlated to the smear positivity rate ($R2 = -0.74$, $p < 0.001$), demonstrating that increased screening/testing activities results in declined smear-positivity.

4.2.3 Age sex distribution of TB

Case notification rate (new and relapse) is higher in male than in female in most of age groups (Figure 6). Higher case notification rates are observed in older age groups for both sexes. The declining trend of case notification rate was seen in all age groups in both sexes. Age-sex distribution of notified TB cases greatly varied across provinces (Annex 5). In 2018, over 90% of childhood TB cases were extra-pulmonary TB. The higher proportion of clinically-diagnosed TB and lower proportion of extra-pulmonary were found in older age groups.

Among pulmonary TB, the proportion of bacteriologically confirmed TB ranged from 49% to 50% among adult age group. The proportion of bacteriological confirmation among children is very low with 16% in patients aged <5 and 4% in patients aged 5-14.

4.2.4 Drug-resistant TB

The number of estimated incidence of rifampicin-resistant/multi-drug resistant (RR/MDR) TB was 1000 (460-1900) in 2018 (WHO Global TB Database). The estimated prevalence of RR/MDR-TB is 1.8% among new TB cases and 8.2% among re-treatment cases in 2018 (WHO Global TB database).

The third National TB Drug Resistant Survey was conducted in 2017/2018 and the results showed the prevalence of drug-resistant TB has not increased since the second survey in 2006/2007. The preliminary results show the estimated prevalence of RR cases among the captured bacteriologically confirmed cases is 0.9% (0.5%-1.6%) for new cases and 9.4% (4.5%-18.6%) for previously treated cases; while the estimated prevalence of RR by DST among smear-positive cases is 1.1% (0.5%-2.3%) for new cases and 12.4% (4.9%-23.1%) for previously treated cases

Since 2006, CENAT has expanded the programmatic management of drug-resistant TB along with scaling-up Xpert testing. The number of cases enrolled on treatment with second-line drugs increased from 21 in 2007 to 134 in 2012. Since then, the number has remained stable for the past seven years with a slight drop in 2015-2016. In 2018, more than 85% of RR/MDR-TB cases were estimated to be missed. However, based on practice and experience, for setting targets or MDR-TB, the NTP use notified cases of Bacteriologically TB and pulmonary TB as factors for calculating denominator.

The number of laboratory confirmed RR-/MDR-TB patients increased from 110 in 2014 to 125 in 2018. The proportion of notified RR-/MDR-TB patients tested for Second line Drug (SLD) resistance increased from 74% in 2017 to 98% in 2018

4.2.5 TB/HIV

The percentage of registered TB patients who were tested and recorded HIV results in the TB register increased from 47% in 2007 to 98% in 2018. HIV prevalence among notified TB patients sharply dropped from 6.3 % in 2009 to 4.4% in 2012, and it further declined to 2.1% in 2018. Of the estimated 1100 incident TB/HIV patients in 2018, 508 (53%) were notified to the NTP (WHO database). There is no national data yet on treatment success rates in TB/HIV patients. Cotrimoxazole Preventive Therapy (CPT) and ART coverage among patients co-infected TB/HIV has remained high with over 90% since 2014.

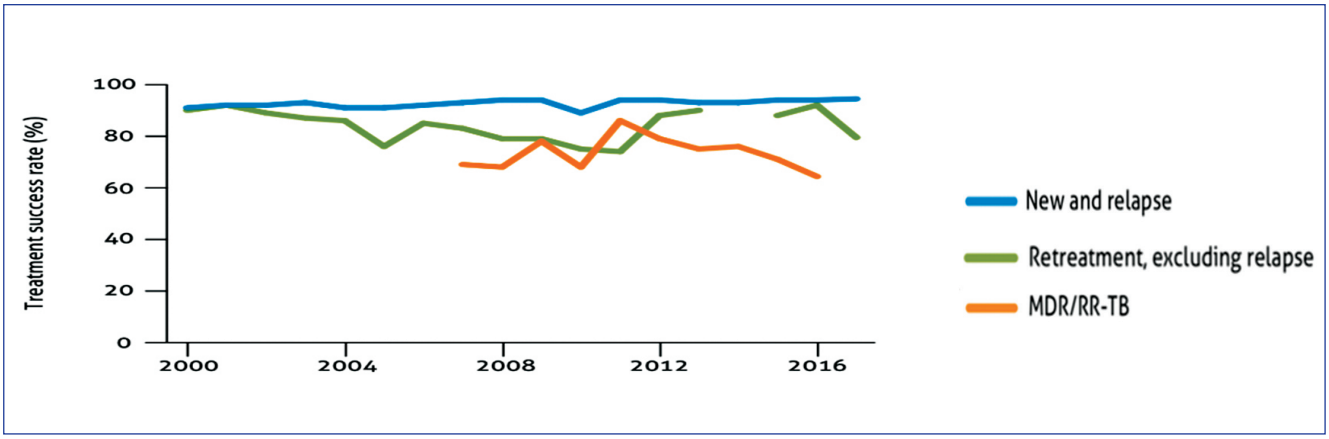
4.2.6 Childhood TB

Childhood TB service was expanded in the late 2000s and early 2010s in Cambodia. Since 2012, the number of childhood TB cases has remained relatively stable between 5000 and 7000, except in 2014 when over-diagnosis of childhood TB was reported. In 2018, 19% of all TB cases were children. Considerable variations in the proportion of childhood TB is observed across provinces, ranging from 0% in Kep and Mondul Kiri to 39% in Prey Veng. Proportions of disease type (BC, EP and CD) and age distribution of childhood TB (0-4 vs 5-14) are also found to be varied across provinces (Annex 6 and 7).

4.2.7 Treatment outcome

Since 2012, the treatment success rate for all forms of drug-susceptible TB has been maintained high with more than 93% (Figure 12). TB patients in older age groups and in male tend to have lower treatment success rate (Annex 8). Treatment success rate for RR/MDR-TB has also been maintained relatively high with more than 64% since 2007. Of note is the “death” amongst the resistant TB cases - The number of RR/MDR-TB patients with treatment outcome “death” increased from 19 (17%) in 2014 to 25 (25%) in 2016. The number of RR/MDR-TB patients with treatment outcome “death” was 25% in 2016, 4% failure and 7% was LTFU.

Figure 12: Treatment outcomes for all forms of TB, 2012-2017



4.3 PROGRESS TOWARDS UNIVERSAL HEALTH COVERAGE (UHC)

The vision of the Health Strategic Plan 2016-2020 is for Cambodians to "have better health and wellbeing, thereby contributing to sustainable socioeconomic development." To achieve this, the plan sets out health development goals including improving reproductive health and reducing maternal, child, and new-born mortality; reducing morbidity and mortality due to communicable and non-communicable diseases; and making health system more accountable and responsive to health needs of the population.

Cambodia has relatively low coverage of some essential services. The estimated coverage of essential health services increased from 55% in 2015 to 60% in 2017. It continues to face challenges in access to and quality of services and capacity for service delivery, compared to other countries in the Western Pacific Region. While service coverage and accessibility remain relatively high for maternal and child health and for immunization services, key challenges include the provision of non-communicable disease (NCD) services, TB and hepatitis detection and treatment, and access to improved sanitation.

Out-of-pocket (OOP) payments accounts for 60.9% of current health expenditure.

4.4 PROGRESS TOWARDS SDG 3 INDICATORS

Cambodia shows relatively advanced progress towards new-born and child health indicators and some infectious disease indicators. However, significant progress is required to achieve maternal mortality and family planning targets, and relatively large inequities persist in the adolescent birth rate and in neonatal and under-5 mortality. As the population ages and embraces a more Western lifestyle and diet, NCD's are becoming more prominent, accounting for 64% of all deaths (NCD country profile Cambodia, WHO 2018). Noteworthy in combination with TB are the harmful use of alcohol and smoking and the high rates of diabetes.

- Few of the key indicators of progress towards the achievement of SDG 3 targets[14] demonstrate the progress being made towards it attainment are as follows.
- Between 2014 and 2017 the life expectancy has increased by one year (68-69)
- Between 2014 and 2018 the infant mortality has decreased from 29 per 1000 to 24 per 1000 live births
- The GDP per capita increased from $973 in 2014 to $1512 in 2018
- Between 2014 and 2017 the prevalence of undernourishment has decreased from 18.3% to 16.4%
- Between 2014 and 2016 the percentage of the population that has access to clean cooking fuels has increased from 15.3% to 17.8%
- Smoking has decreased from 18.3% in 2014 to 17.2% in 2016.
- An estimated 6.7 litres of pure alcohol were consumed per capita (<15yr) in 2016.
- The diabetes prevalence was 4% of the population (age 20-79) in 2017.

[14] World Bank data on progress towards SDGs

4.5 STRENGTHS, WEAKNESSES, OPPORTUNITIES, AND THREATS (SWOT) TO END TB IN CAMBODIA

	Strengths	Weakness
Internal factors	1. High level political and administrative commitment providing fresh impetus to TB elimination efforts in the country. 2. Strong and stable leadership at the NTP. 3. Evidence of increase domestic funding for NTP in 2017, 2018, and commitments till 2020. 4. Strong absorptive capacity for partner funds supporting TB interventions.	1. TB is yet to be a notifiable disease. 2. The 2019 budget only allocated $455 million to healthcare, a decrease of $30 million from 2018. 3. Limited human resource at the CENAT which severely limits programme management at the National level. 4. Private sector involvement in public health actions related to TB control is not commensurate to its size and dominance in TB care. 5. Variable implementation capacity, capability and ownership of the provinces. 6. Weak cross border initiatives for TB control: An estimated 3000 – 4000 presumptive TB cases migrate to earn livelihood abroad, specifically in Thailand. 7. User fees for Chest X Ray presenting as a barrier to access. 8. Weak advocacy, and strategic communications important for raising the profile of TB control
	Opportunities	**Threats**
External factors	1. In-country innovations and pilots with potential for replication and scale up. 2. Engagement of parliamentarians to increase domestic funding for TB. 3. Potential of leveraging the programmes of other ministries to compliment NTPs actions to end TB. 4. SDGs, UNHLM declaration and End TB strategy provide ambitious targets to aim for by the national efforts. 5. The National Social Protection Policy Framework (NSPPF) 2016-2025 enunciates for financial protection against the costs of seeking health care, which is an opportunity for eliminating catastrophic costs. 6. Large scale trials and studies related to newer diagnostic approaches and 7. Availability of new drugs, regimens, diagnostics, vaccines and approaches and strategies to end TB.	1. Leadership change at NTP requiring expert change management support over the first year of the new leadership. 2. Insufficient budgetary outlay for health in the national budgets compromising the allocation to TB. 3. Lack of collaboration with other ministries and programmes that can accelerate and augment the national END TB response 4. High dependence on donor support for TB program delivery 5. Shrinking external assistance for TB control/elimination. 6. Loss of independent, third party, technical assistance from development partners

CHAPTER 5

GAP ANALYSIS

Objective wise thematic areas and the existing gaps presented below focuses on specific areas of NTP activities. It analyses their achievements, with key gaps and lessons learnt. The analysis is taken largely from the report of the 2019 Joint Programme Review. The main findings and recommendations of the JPR is attached at ANNEX 6.

5.1 OBJECTIVE 1: FIND AND TREAT ALL TUBERCULOSIS CASES EARLY USING MORE SENSITIVE SCREENING AND DIAGNOSTIC ALGORITHMS AS WELL AS NEW AND MORE EFFECTIVE TREATMENT REGIMENS WITH AN EMPHASIS ON REACHING THE MISSING CASES.

Thematic area 1.1: Basic TB care services

Not all RHs are covered with comprehensive TB services namely hospital linkage. Moreover, there is a lack of confidence in the quality-of-service care-seeking at primary health services for less severe illness hence avoided. Greater confidence in seeking care from the TB service at the HC is also a potential barrier to earlier detection of TB. Maintenance of existing TB services in all health facilities, including those in the hospitals, HCs and health posts over the next decade without adequate funding and human resources is an anticipated gap and challenge.

Thematic area 1.2: Labs and Diagnostic services

87 health facilities out of the 118 facilities have at least one X-ray machine, with 75 out of these functional. Not all OD are covered with Xpert which is available at 64 sites in the country. This presents geographical accessibility gaps to Xpert MTB/RIF testing in some areas of Cambodia.

Most clinicians do not send specimens from sputum smear positive patients for Xpert MTB/RIF testing.

Xpert proficiency testing (PT) panels, are routinely done but only in six labs. On-site maintenance, repairs and supervision for Xpert MTB/RIF testing is currently managed by the central-level CENAT staff, and not the Provincial TB lab supervisor. There is no Local Service Provider agreement. This system is reaching its limits due to limitations of available budget and time of dedicated staff at CENAT.

Phenotypic DST to the new/newly repurposed drugs (Bdq, Dlm, Lzd, Cfz) has not yet been implemented, although the drugs are already in use for TB treatment.

An important gap identified has been the lack of a comprehensive specimen transport system which currently (2019) is available in only 46 of 102 OD's.

Thematic area 1.3: Active Case Finding

ACF coverage is currently limited to 14 of 102 ODs, and 9 out of 28 prisons while community TB screening activities are limited to 46 of 102 ODs. Only a few mobile x-ray units in the country available for ACF activities and Chest X-ray is not used routinely to screen high risk populations. There exists limited coordination between ACF outreach activities and laboratory Xpert capacity.

5.2 OBJECTIVE 2: ADDRESS THE PROGRAMME SPECIFIC NEEDS AND PRIORITIES (COMMUNITY DOTS, PRIVATE SECTOR INVOLVEMENT, MDR TB, TB/HIV, TB DM, AND TB IN PRISONS.

Thematic area 2.1: Community DOTS

C-DOTS not yet covers all ODs and HCs. In addition, comparative efficiencies of different approaches as well as volunteer motivation have not been studied within the C-DOTS varied implementation. Linking with other national program, including MNCH and non-communicable diseases is still to be exploited and strengthened.

Thematic area 2.2: Private sector involvement

A large and increasing proportion of people with symptoms suggestive of TB (64%) first approach the private sector potentially contributing to diagnostic delays and additional costs of care for TB patients. There have been limited efforts to engage private pharmacies and practitioners and due to donor project completion private provider involvement has been interrupted. Private providers do not receive adequate on-the-job training in-service training or any in-practice training on TB management. There have not been any attempts to engage private practitioners in tasks other than referring their patients to the public sector TB programme. The biggest challenge is that TB case notification is not mandatory in Cambodia.

Thematic area 2.3: MDR-TB

Population testing rate shows a declining trend since 2012. Institutionalization of Programmatic Management of Drug-Resistant Tuberculosis (PMDT) services into provincial TB control programmes has been slowly implemented, which may affect the already relatively low case detection rates. The WHO estimates suggest a significant under-detection of RR/MDR-TB cases. In addition, there is low case notifications of MDR-TB in children (<15 years): Only 6 cases of RR/MDR-TB were reported in children under 15 years for the 2006-2019 period (0.54%). Insufficient Xpert coverage (Xpert MTB/RIF at 64 sites) further affects the PMDT. There is a steady decline in rates of treatment success and increased case mortality (2011-2016). The continued reliance on NGO personnel and limited pool of MDR-TB expertise at NTP poses challenges.

Thematic area 2.4: TB/HIV

HIV testing among TB patients: The testing rate has increased from 70% in 2009 to 94% in 2018, with 21 out of 25 provinces achieving 90% or more (2018). The updated Standard Operating Procedure (SOP) for treatment of LTBI are being finalized to reflect the latest WHO recommendations. The LTBI treatment outcomes are not reported despite being captured in the HIV/AIDS database. It is seen that there are discrepancies in the data reported by CENAT and NCHADS. In addition, there is suboptimal capacity of Health-Care Worker (HCW) in diagnosing and preventing TB in PLHIV.

Thematic area 2.5: TB-Diabetes

The prevalence of TB among DM patient is six times as high as in the general population (University Research Corporation (URC) assessment) with only 7 ODs in 5 provinces currently implementing TB/DM collaborative activities. There is no formal coordination platform or collaborative framework for TB/DM collaborative activities. TOR of the TWG for TB/DM is yet to be finalized. There is limited recording and reporting of TB/DM screening at all levels. Active screening implementation is affected by the unavailability of the new triage/screening forms in some hospitals, as well as workload of staff and staff shortages. Finally, there is insufficient effort on TB/DM awareness raising in the community and DM patients have limited knowledge on TB risk factors.

Thematic area 2.6: Childhood TB

The childhood TB TWG is not functioning optimally and only ad hoc meetings held. Childhood TB focal point

position in CENAT was vacant. Almost 50% of young children are not diagnosed and/or not reported, while there appears to be a degree of over-diagnosis in the older age group over 5 years. Overall, 19.7% of all TB cases notified were children aged 0-14 in 2017, and 18.7% in 2018.

There is still a high proportion of Extra Pulmonary Tuberculosis (EPTB) in almost all provinces, mainly peripheral lymphadenopathy. The childhood TB guidelines require re-visiting. Although 2019 training materials include Xpert as initial diagnostic test for children, these are not yet widely rolled-out. The module on TB-MIS on TB preventive treatment currently does not capture LTBI treatment outcome. Incomplete coverage of contact investigation with limited linkage to LTBI treatment provision; Low numbers of adults with bacteriologically confirmed pulmonary TB affect contact investigation and may lead to missed opportunities for provision of LTBI treatment and case detection among children. There is limited access to CXR for children and paediatric specimens are not routinely collected. Some hospitals do not adhere to national TB guidance and do not report to CENAT while there is poor linkages with the Maternal, Neonatal and Child Health (MNCH) programme and other programmes. Although transport cost for the poor are covered through the health equity fund, up and down-referrals are difficult to track.

Thematic area 2.7: TB in prisons

All the 28 prisons in the country currently not covered with comprehensive TB services. ACF is conducted in a small number of prisons. Monitoring and evaluation, including quarterly meeting, is not regularly performed.

Thematic area 2.8: TB in migrants

There is no cross-border notification of TB cases. There is no formal referral mechanism for cross-border migrant for TB treatment. Safe migration training for migrants to Thailand is limited to Poipet check point centre.

5.3 OBJECTIVE 3: PREVENT THE EMERGENCE OF TB IN SUSCEPTIBLE POPULATIONS USING A COMBINATION OF BIOMEDICAL, BEHAVIOURAL, SOCIAL AND STRUCTURAL INTERVENTIONS.

Thematic area 3.1: LTBI

Only 21% of newly enrolled PLHIV and 44% of child contacts under 5 years are on preventive treatment. TPT Regimens based on new global directions not yet implemented.

Thematic area 3.2: TB Infection control

TB-IC activities are currently not funded, and TB-IC measures are not adequately and systematically implemented. There is evidence of mixing up of TB and presumptive TB patients with other patients in some RHs. There exists limited training and resources for infection control measures. Health Care Worker Safety is often neglected and there is no information on staff rates of TB and no annual screening among health care workers.

5.4 OBJECTIVE 4: BUILD, STRENGTHEN AND SUSTAIN ENABLING POLICIES, EMPOWERED INSTITUTIONS, HUMAN RESOURCES WITH ENHANCED CAPACITIES, AND FINANCIAL RESOURCES TO MATCH THE PLAN

Thematic area 4.1: Human resources to END TB

A thorough analysis to assess HR needs to End TB in Cambodia is yet to be undertaken. However the HR issues relate largely to staff adequacy to implement comprehensive tasks related to TB diagnosis, treatment,

prevention and monitoring; staff competence and motivation to sustain quality services, implement innovative approaches and make analysis and use of routinely collected data; frequent staff turnover outpacing training and retraining opportunities; insufficient staff motivation to staff working on TB. The delivery of TB services at the ground level is dependent considerably on voluntary services offered especially by community volunteers of the VHSGs.

The current medical training curriculum in Cambodia mainly covers TB epidemiology. Management of TB is covered under in-service training for public sector physicians and Private sector doctors who receive a large proportion of presumptive TB cases do not receive any in-practice training in TB care.

Thematic area 4.2: TB Financing

The financing gap for END TB is projected to increase to meet current and future NSP targets. Continued dependency on external funding, that finances 68% (2018) of NTP creates challenges to long terms sustainability. The economic impact of TB on patients with a number of households suffering catastrophic costs is not yet evaluated. In addition, TB services are not comprehensively included in the National Quality Enhancing Monitoring Tools which may lead to reduced financial incentives for health workers to deliver TB interventions.

5.5 OBJECTIVE 5: STRENGTHEN NTP MONITORING AND EVALUATION SYSTEM AND RESEARCH ACTIVITIES

Thematic area 5.1: Monitoring and Evaluation

There is some degree of uncertainty regarding the TB burden given that it is already 9 years since the second prevalence survey which was conducted in 2011-2012. Updated epidemiological evidence is required to better understand the current TB epidemiology and help strategize how and where to find the missing TB cases.

The TB-MIS data is not yet considered official due to discrepancies between paper-based quarterly reports (entered into Excel) and data reported from TB-MIS. Both paper-based and electronic-based systems are running in parallel, which has increased workload of OD supervisors and resulted in delay in uploading data in TB-MIS. The number of staffs trained on TB-MIS appears to be insufficient, and a high rate of staff turnover continues to pose a risk for continuity of the system. Some parameters have not yet been included.

Currently there is limited use of the TB-MIS case-based data even at national level partially due to insufficient staff capacity to analyse case-based datasets and unavailability of a dashboard in the system.

Thematic area 5.2: Research in TB

A platform for program staff to engage with multidisciplinary research stakeholders for communicating research gaps or leveraging resources is absent. There is no strong link between strategic information (M&E findings, reports from operational research, and JPR) and research priorities. This is compounded by no national research guideline and standard operating procedures in place with limited capacity in research at all levels which is reflected in limited articulation of existing research findings and interpretation into national programs and policies. There exists insufficient domestic funding for health research (including TB) and limited investment from international funders.

A national TB patient cost survey was not yet conducted in Cambodia although a few studies on TB patient cost are available. Hence there is no baseline on the percentage of TB-affected families facing catastrophic costs due to TB, which is one of the three major targets of the End TB Strategy.

targets of the End TB Strategy and the SDG for 2025, 2030 and 2035 (50%, 80% and 90% reduction in incidence rate, respectively, compared with 2015) (Figure 2).

CHAPTER 6

NSP STRATEGIES EXPLAINED

6.1 THE TASK AHEAD

Besides demonstrating the tremendous progress made in TB control, the NSP to END TB in Cambodia 2021 - 2030 also highlights the long way still to go to achieve a TB free Cambodia. Over the next decade, 2021 – 2030, the NTP aims to detect and treat 250,000 cases of all forms of TB[15] cases to reach the SDGs and END TB milestones with 155,000 would be identified during 2021-2025. While DR-TB about 1,400 cases would be identified during 2021-2030 with 850 cases diagnosed within 2021-2025.Prevention will continue to gain importance and a total of **66,500** will be initiated on preventive treatment of latent TB infection, over the next decade.

Table 5: Estimated number of TB cases and coverage annually

Type of TB	2021	2022	2025	2030
All TB cases notified	32,500	31,500	30,000	15,500
Coverage	80%	90%	90%	90%
DR TB	165	170	170	80
Paediatric TB	5,670	5,580	5,400	2,790
Preventive treatment	15,000	18,000	8,500	

6.2 EXPLAINING THE FTPB APPROACH OF NSP 2021 -2030

Continuation of prior NTP response have yielded inadequate declines, and were found insufficient to accelerate the progress towards ending TB. New, comprehensively-deployed interventions are required to accelerate the decline in TB incidence, to more than 6 - 7 % annually. The requirements for moving towards ending TB and ultimately TB elimination have been integrated into the five strategic objectives of FIND – TREAT – PREVENT – BUILD, STRENGTHEN, AND SUSTAIN (FTPB) along with a robust PROGRAMMATIC SURVEILLANCE, MONITORING AND EVALUATION SYSTEM to address the PROGRAMME SPECIFIC NEEDS AND PRIORITIES. The following table describes the renewed approach to END TB in the country.

[15] NTP projection

6.3 THE PILLARS, STRATEGIES AND INTERVENTIONS OF CAMBODIA END TB NSP 2021 -2030

PILLAR 1 : FIND AND TREAT ALL		INTERVENTIONS
Find and treat all TB cases with an emphasis on reaching TB patients that are not notified and those that are undiagnosed.	• Scale-up free, high sensitivity diagnostic tests and algorithms • Scale-up effective NTP - private provider engagement approaches • Scale up testing and treatment with shorter all oral regimens for drug resistant TB to cover the whole population • Supportive activities to improve patient's adherence to treatment • Post treatment follow up for one year for early detection of TB recurrence • Elimination of catastrophic costs by linkages of eligible TB patients with social welfare schemes including nutritional support	• Maintain and strengthen quality TB care delivery services in hospitals and HCs • Ensure the provision of comprehensive TB services in particular the hospital linkages at hospitals • Ensure TB diagnostic tools, guidelines/SOP, and TB lab strategic plan are available, functioned, updated/revised at health facilities • Expansion of the utilization of TB microscopy and testing services • Enhance the utilization of Xpert machines for improved quality diagnosis and increase TB case findings • Introduction of LF-LAM new diagnostic tool for case findings amongst PLHIV • Adoption of New WHO Rapid Test for Diagnostic (WDR) Tool during 2021-2030 • Enhancing the utilization of culture and DST services • Sample collection and transportation • Expanding X-ray service • Enhancing and building capacity • M&E for lab and X-rays • Enhance quality assurance • Augment capacity at TB Lab/Support TB Lab Capacity • Improve waste management and plan • Implementation of ACF in Community/OD and in Prisons, Correctional Centers and Rehabilitation Centers
PILLAR 2: ADDRESS PROGRAMME SPECIFIC NEEDS AND PRIORITIES		INTERVENTIONS
Focus on the key challenges confronting the national TB programme	• Prompt treatment of all TB patients and rapid scale-up of short, injectable-free regimens for drug-resistant TB and DST guided treatment. • Strengthening TB services in congregate setting including prisons; TB in migrants; Childhood TB; PPM, TB/HIV, and TB/Diabetes. • Regulations for TB notifications, sale of second line TB drugs • Patient-friendly adherence monitoring including digital adherence tools and social support to sustain TB treatment	• Maintain existing C-DOTS, and Expand scope and scale of C-DOTS service to community and health facility • Strengthen and improve PPM for TB control • Strengthen and improve the multi-drug resistance for TB control • Enhance and strengthen the TB-HIV services at all levels • Strengthen and coordinate TB-DM services to ensure proper case management • Strengthen and expand Childhood TB services at Hospitals and RHs • Strengthen and coordinate the implementation of TB services in prisons and correction centers • Strengthen and coordinate the implementation of TB migrant's intervention

PILLAR 3: PREVENT		INTERVENTIONS
Prevent the emergence of TB in susceptible populations	• Scale up air-borne infection control measures at health care facilities • Contact investigation and screening of high-risk groups for latent TB • Provision and monitoring of treatment for latent TB infection in contacts of bacteriologically-confirmed cases to start with and over the next decade, in all contacts of TB patients • Maintain BCG vaccination coverage high (90% in 2018[16]) and introduce possible new vaccines whenever available	• Ensure the availability of LTBI SOP/Guideline • Improve the capacity of health care providers (all health facilities) on LTBI • Improve TPT provision services to eligible LTBI clients • Raise the awareness of LTBI in general population • Strengthen and improve the quality of LTBI service providing at RHs/HCs • Develop TB-IC Policy, SOP, Guideline, Training Curriculum and Tools • Improve the capacity of health care providers (all health facilities) on TB-IC • Improve TB-IC management and implementation • Procure and maintain the TB-IC Equipment and Supplies • Introduce Annual checkup to Health Care Workers • Raise the TB-IC Awareness among health care providers and communities • Improve the structural/facility construction/ maintenance of health facilities
BUILD, STRENGTHEN AND SUSTAIN		**INTERVENTIONS**
Build and strengthen enabling policies, empowered institutions and human resources with enhanced capacities.	• Enhanced funding and resources to End TB in Cambodia • Engagement of civil society organizations and communities • Strengthen national and provincial program management structures specifically human resources required to accelerate the national response to the epidemic • A high-powered committee to guide multi-accountability framework and other policy recommendations and implementation.	• Develop and strengthen the capacity of all TB-related personnel • Enhance and motivate the staff performance • Mobilize the financial resources for TB control and create financial investment sustainable plan • Procure and supply management of TB drugs and commodities • Enhance coordination mechanism with high level multi-sectoral partners for TB program • Strengthen national and subnational TB platform such as Interagency Coordinating Committee (ICC) • Ensure the engagement of wider stakeholders, Civil Society Organisation (CSO) and other relevant institution • Develop Policy on free TB services; addressing stigma and addressing gender and patient rights • Operationalize the selected recommendations/Findings from the Community, Rights, and Gender (CRG) Assessments • Strengthen and implement Multi-Accountability Frameworks (MAF) as recommended by WHO, by establishing and functioning a National Partnership Platform to end TB within involvement and engagement of all concerned and relevant stakeholders, including TB affected communities, civil societies, private sectors and academia

[16] https://www.who.int/immunization/monitoring_surveillance/data/khm.pdf

SUREVILLANCE, MONITORING AND EVALUATION AND RESEARCH		INTERVENTIONS
	• National TB surveillance system, integrating public and private notifications, with real time monitoring of patients and programme quality. • Create and adequately fund the "National TB Research Network"	• Strengthen the capacity of national staff on TB program data management • Strengthen and improve TB Management Information system (MIS) • Strengthen and utilize the data through data quality assurance • Build network of CCTBR among research institutes • Conduct and coordinate National TB research agenda • Conduct and implement National TB research studies

CHAPTER 7

CORE NSP

7.1 BRIEF OF THE NSP CORE PLAN

1. The NSP uses a FIND - TREAT - PREVENT approach to provide patient centered care over the next decade and BUILD, STRENGTHEN and SUSTAIN an enabling environment to support the above. This is complemented by a robust PRORAMMATIC MONITORING AND EVALUATION SYSTEM as well as a RESEARCH NETWORK to address the other PROGRAMME SPECIFIC NEEDS AND PRIOZRITIES. The approach is explained in the section below.
2. It uses a sector wide approach to address the disease with extensive inter-sectoral, and inter-ministerial collaborations envisaged
3. It is a 10-year strategy document out of which the first 5 years (2021-25) is detailed with strategic intervention and activities and costed.
4. The NSP takes into account the country's development objectives in the National Strategic Development Plan (NSDP) 2019-2023, which integrates the SDG; long-term development aims as expressed by the Government's Vision 2030, a roadmap towards upper middle-income status.

7.2 NSP VISION, GOAL AND OBJECTIVES

The vision of the Royal Kingdom of Cambodia is towards Cambodia free of TB.

Vision: Cambodia free of TB: Zero deaths, disease and suffering due to TB by 2050.

Fulfilling the vision set out above requires a well-articulated strategic approach to address the Government's overall health and development objectives, while aligning with the World Health Organization (WHO) and other key global UNHLM and SDG targets and commitments.

Goal: To accelerate the reduction of TB incidence by 80% and mortality by 90% by 2030 as compared to 2015.

Fulfilling the vision and the goal, the NSP objectives are therefore expressed in five objectives: first four objectives address the FIND-TREAT-PREVENT continuum and PROGRAMME PRIORITIES; which are underpinned by the last two objectives of BUILD, STRENGTHEN, SUSTAIN and PROGRAMMATIC MONITORING AND EVALUATION as well as RESEARCH , that support the achievement of these objectives.

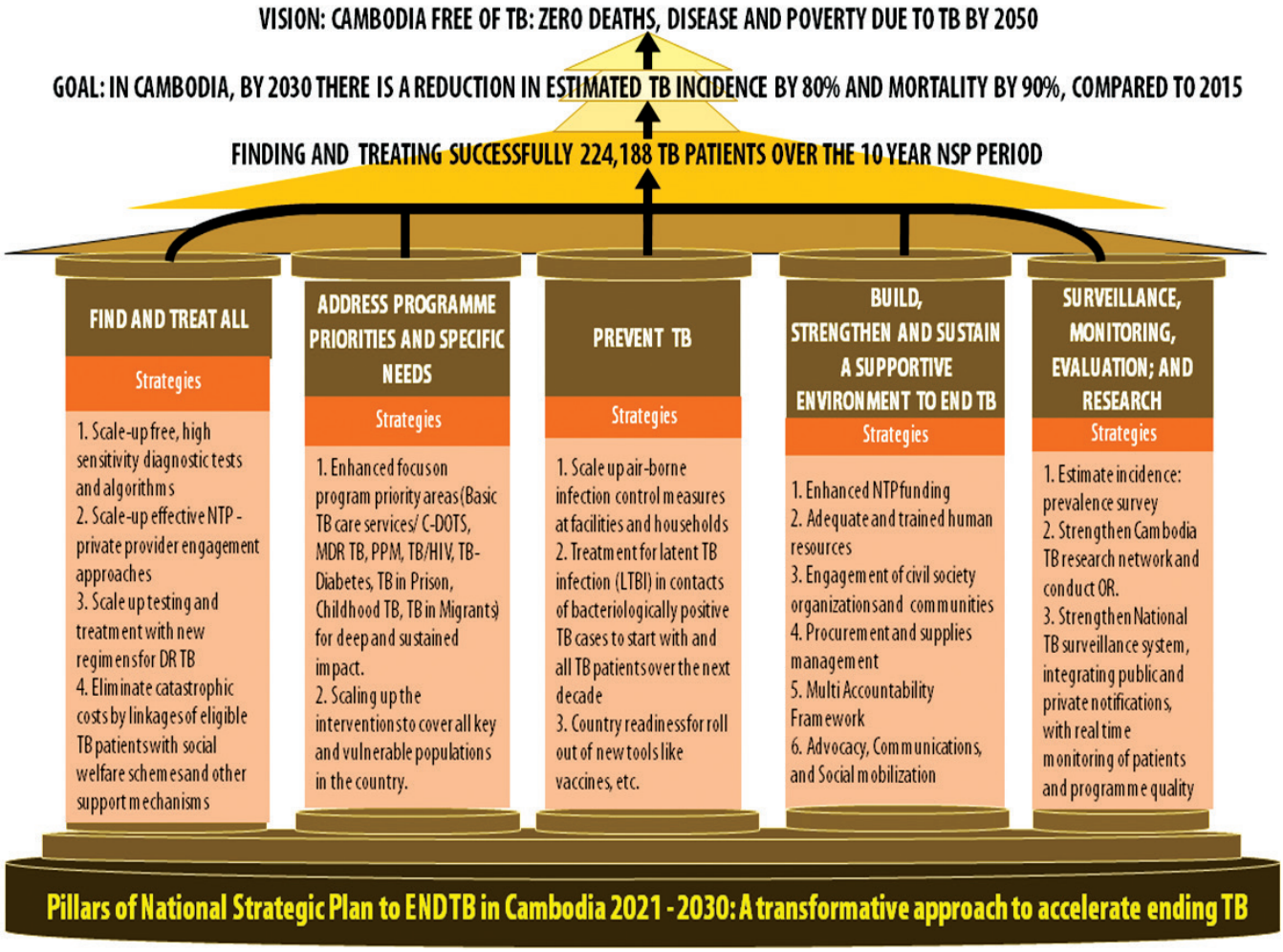
Objectives:

1. **Objective 1:** Find and treat all Tuberculosis cases early using more sensitive screening and diagnostic algorithms as well as new and more effective treatment regimens with an emphasis on reaching missing cases.
2. **Objective 2:** Address other program specific needs and priorities, including C-DOTS, MDR TB, Public Private Mix (PPM), TB/HIV, TB-Diabetes, TB in Prison, Childhood TB, and TB in Migrants.

3. **Objective 3:** Promote prevention activities using combined interventions such as biomedical, behavioural, social and structural interventions.
4. **Objective 4:** Build, strengthen and sustain enabling policies, empowered institutions, human resources with enhanced capacities, and financial resources to match the plan
5. **Objective 5:** Strengthen NTP monitoring and evaluation system and research activities

7.3 THE NSP APPROACH TO END TB OVER THE NEXT NSP PERIOD

The approach in the NSP 2021 – 2030 will build on the FIVE strategic pillars to end TB. **FIND and TREAT ALL; ADDRESS PROGRAMME SPECIFIC NEEDS AND PRIORITIES; PREVENT; BUILD, STRENGTHEN AND SUSTAIN; and MONITORING, EVALUATION and RESEARCH.** Each of the pillar incorporates and represents one of the NSP objectives. The schematic below highlights the five pillars and the key strategies under each of the objectives



The NSP is aligned with the End TB Strategy and TB-related Sustainable Development Goals (SDG) targets, and actions agreed in the Moscow Declaration and the first United Nations High Level Meeting (UNHLM) on TB.

Building on the Global END TB strategy, described in section 1 chapter 1, the three pillars of the END TB strategy have been rearranged to accelerate the national response to end TB in Cambodia.

To provide greater thrust to integrated, patient-centred care Pillar 1 of END TB strategy, is further divided into three pillars of **1) FIND and TREAT, 2) ADRESS PROGRAMME PRIORITIES AND SPECIFIC NEEDS, and 3) PREVENT. END TB Pillars 2 and 3** are accommodated in the fourth NSP pillar of **4) BUILD, STRENGTHEN**, and **SUSTAIN.** All the NSP objectives are supported by a pillar **5) PROGRAMMATIC SURVEILLANCE, MONITORING AND EVALUATION SYSTEM.**

The FTPB approach aligns with the continuum of care of TB patients and also provides for simple interpretation of the key NTP interventions over the next decade for other ministries and stakeholders to adopt, adapt and act upon.

7.4 OBJECTIVE BASED INTERVENTIONS, ACTIVITIES AND SUB ACTIVITIES

The NSP Objectives, thematic area, interventions, and activities are colour coded and presented in the matrix below. Each objective is unpacked into key thematic areas. Interventions for addressing the gaps and challenges of each thematic area is described next. The subsequent rows in the matrix lay out the activities. The sub-activities under each activity is detailed in the NSP budget presented in Chapter 10. All of these are colour coded and numbered by objective (single digit), thematic area (two digit), interventions (three digit), and activity (four digit).

Objective	1	Objective description
Thematic area	1.1	Thematic area description
Intervention	1.1.1	Intervention for the Thematic area mentioned above
Activity	1.1.1.1	Activity for the intervention above

Objective	1	Find and treat all Tuberculosis cases early using more sensitive screening and diagnostic algorithms as well as new and more effective treatment regimens with an emphasis on reaching the missing cases
Thematic area	1.1	Provide basic TB care services to all people living with TB
Intervention	1.1.1	Maintain and strengthen quality TB care delivery services in hospitals and HCs
Activity	1.1.1.1	Develop/revise NTP manuals, related standard operating procedures and other necessary guidelines
Activity	1.1.1.2	Conduct supportive supervision to ensure basic TB care services are improved at all levels
Activity	1.1.1.3	Printing NTP manuals/guidelines, SOP, recording & reporting forms, and others
Activity	1.1.1.4	Procurement of drugs and supplies, maintenance and insurances
Activity	1.1.1.5	Constructing, renovating and maintaining health facilities at CENAT including CENAT hospital
Intervention	1.1.2	Ensure the provision of comprehensive TB services in health facilities in particular the hospital linkages at hospitals
Activity	1.1.2.1	Strengthen and scale up the TB care services in particular the hospital linkages at hospitals (provincial and RHs)
Activity	1.1.2.2	Strengthen and expand TB services in HCs
Thematic Area	1.2	Strengthen the quality of TB laboratory and diagnostic services at health facilities

Intervention	1.2.1	Ensure TB diagnostic tools, guidelines/SOP, and TB lab strategic plan are available, functioned, updated/revised at health facilities
Activity	1.2.1.1	Review and update relevant SOP/guidelines on Xpert testing.
Activity	1.2.1.2	Review and update relevant SOPs/guidelines for smear microscopy EQA
Activity	1.2.1.3	Review and update SOPs/guidelines for culture and DST
Activity	1.2.1.4	Generate, review, and update SOPs/guideline for LF-LAM
Activity	1.2.1.5	Develop the TB Lab strategic plan
Intervention	1.2.2	Expansion the utilization of TB microscopy and testing services
Activity	1.2.2.1	Equip and supply microscopic machines to centers where Xpert utilization is not available
Activity	1.2.2.2	External Quality Assurance (EQA) implementation for quality improvement using slide collection, slide sending and slide cross check
Intervention	1.2.3	Enhance the utilization of Xpert machines for improved quality diagnosis and increase TB case findings
Activity	1.2.3.1	Equip and supply GenXpert machines to needing RHs within 2021-2025
Intervention	1.2.4	Introduction of LF-LAM new diagnostic tool for case findings amongst PLHIV
Activity	1.2.4.1	Conduct orientation of LF-LAM, the new diagnostic tool to health providers at ART clinics
Intervention	1.2.5	Adoption of New WRD Tool during 2021-2030
Activity	1.2.5.1	Pilot New WHO Rapid test for Diagnostic (WRD) Tool
Activity	1.2.5.2	Procurement WRD and other diagnostic tests
Intervention	1.2.6	Enhancing the utilization of culture and DST services
Activity	1.2.6.1	Increase the utilization of culture services
Activity	1.2.6.2	Adaptation of current DST services with recent updates in DR-TB treatment policies
Activity	1.2.6.3	Phenotypic DST for new drugs (Bdq, Dlm, Lzd, Cfz)
Activity	1.2.6.4	Procure drugs, supplies and reagents for first and second line DST
Intervention	1.2.7	Sample collection and transportation
Activity	1.2.7.1	Ensure proper packaging and storage of samples include effective transportation
Intervention	1.2.8	Expanding X-ray service
Activity	1.2.8.1	Expansion the digital CXR machines at decentralized sites
Activity	1.2.8.2	Maintenance and upkeep of existing machines
Activity	1.2.8.3	Introduce X-ray reading using innovative approaches such as AI and deep learning (CAD4TB) to address radiologist capacity
Activity	1.2.8.4	Quality improvement for X-Ray
Intervention	1.2.9	Enhancing and building capacity
Activity	1.2.9.1	TB lab and X-ray training
Intervention	1.2.10	M&E for lab and X-rays

Activity	1.2.10.1	Integration data connectivity from Xpert machine to TB MIS
Activity	1.2.10.2	Strengthen the Lab EQA
Activity	1.2.10.3	Conduct workshop with refresher training with X-Ray technicians for ongoing capacity building and EQA
Activity	1.2.10.4	Conduct onsite visits by central level Lab for EQA
Intervention	1.2.11	Enhance quality assurance
Activity	1.2.11.1	Maintenance and renovation of infrastructure at NTRL (Maintain and repair infrastructure of existing sputum microscopy, culture and DST laboratories, including NRL (excluding equipment)
Intervention	1.2.12	Augment capacity at TB Lab/Support TB Lab Capacity
Activity	1.2.12.1	Supporting of TB Lab Capacity
Intervention	1.2.13	Improve waste management and plan
Activity	1.2.13.1	Cleanliness of the laboratory at NTRL
Thematic Area	1.3	Strengthen active case finding (ACF) approaches
Intervention	1.3.1	Implementation of ACF in Community/OD and in Prisons, Correctional Centers and Rehabilitation Centers
Activity	1.3.1.1	Build and strengthen capacity of ACF teams at national and sub-national levels
Activity	1.3.1.2	Conduct ACF in community/ODs and other relevant settings
Activity	1.3.1.3	Conduct ACF in Prisons and Correction & Rehabilitation Centers
Objective	**2**	**Address other program specific needs and priorities, including C-DOTS, PPM, MDR TB, TB/HIV, TB-Diabetes, TB in Prison, Childhood TB, and TB in Migrants**
Thematic Area	2.1	Community TB Care/Community DOTS (C-DOTS)
Intervention	2.1.1	Maintain existing C-DOTS, and Expand scope and scale of C-DOTS service to community and health facility
Activity	2.1.1.1	Implement community TB care/C-DOTS services
Activity	2.1.1.2	Support the establishment and functions of TB affected community networks to enhance and improve TB case detection with community engagements
Activity	2.1.1.3	Strengthen the capacity of TB affected community networks in implementing community-led response, including community-led monitoring to TB (CLM)
Thematic Area	2.2	Public Private Mix for TB
Intervention	2.2.1	Strengthen and improve Public Private Mix for TB control
Activity	2.2.1.1	Revise a national PPM strategy including revitalization, introduce the PPM strategy and building the capacity to private providers
Activity	2.2.1.2	Conduct supervision and monitoring of PPM implementation
Activity	2.2.1.3	Advocate and introduce mandatory TB case notification from the private sector
Activity	2.2.1.4	Engage National Professional Councils (Medical Council of Cambodia (MCC), Cambodia Council of Nurse (CCN), Midwife, and Pharmacy…) to involve in TB activities

Activity	2.2.1.5	Support incentive\e to private providers for TB screening, diagnosis and TB referral for treatment
Activity	2.2.1.6	Build capacity of private providers on report and recording and provide supplies, commodities and reporting systems to private providers
Thematic Area	2.3	Multi-Drug resistance for TB
Intervention	2.3.1	Strengthen and improve the multi-drug resistance for TB control
Activity	2.3.1.1	Update and disseminate PMDT guidelines based on the latest WHO/global recommendations
Activity	2.3.1.2	Develop the training curriculum and reporting/recording based on the updated PMDT guidelines
Activity	2.3.1.3	Conduct nationwide training to implement the updated PMDT guidelines
Activity	2.3.1.4	Conduct case detection, diagnosis, management and follow up of DR-TB through patient-centered models including procurement of SLD
Activity	2.3.1.5	Improve quality of diagnosis, patient treatment adherence and treatment completion
Activity	2.3.1.6	Conduct supervision and on-site coaching from NTP/CENAT/provincial/OD TB supervisors to oversight the program implementation
Activity	2.3.1.7	Build the capacity of NTP staff and partners at every level
Activity	2.3.1.8	Provide technical support on MDR-TB activities
Thematic Area	2.4	TB-HIV
Intervention	2.4.1	Enhance and strengthen the TB-HIV services at all levels
Activity	2.4.1.1	Update and revise guideline and training curriculum for the management of TB/HIV co-infection
Activity	2.4.1.2	Build the capacity of NTP/NAP staff and partners at every level
Activity	2.4.1.3	Intensify HIV case finding and care among TB patients
Activity	2.4.1.4	Intensify TB case finding and care among PLHIV
Activity	2.4.1.5	Strengthen the monitoring/supervision and on-site coaching to TB-HIV co-infection service delivery
Activity	2.4.1.6	Strengthen coordination between TB-HIV programs to ensure proper case management
Thematic Area	2.5	TB-Diabetes
Intervention	2.5.1	Strengthen and coordinate TB-DM services to ensure proper case management
Activity	2.5.1.1	Develop TB-DM framework and guideline
Activity	2.5.1.2	Strengthen TB-DM collaborative activities
Activity	2.5.1.3	Improve TB DM management
Activity	2.5.1.4	Scale up implementation of TB/DM collaborative activities in additional ODs
Activity	2.5.1.5	Supply glycaemia test kits to HC with blood glucometer.
Thematic Area	2.6	Childhood TB
Intervention	2.6.1	Strengthen and expand Childhood TB services at Hospitals and RHs

Activity	2.6.1.1	Strengthen the Technical Working Group for childhood TB activities
Activity	2.6.1.2	Update and re-enforce Policy, Strategy and Guidelines for Childhood TB management
Activity	2.6.1.3	Expand and maintain comprehensive childhood TB services to all levels including capacity building
Activity	2.6.1.4	Improve childhood TB case finding at hospital, HC and community levels
Activity	2.6.1.5	Improve coordination between HCs and District RH through Hospital Linkage
Thematic Area	2.7	TB in prisons
Intervention	2.7.1	Strengthen and coordinate the implementation of TB services in prisons and correction centers
Activity	2.7.1.1	Update Policy, Strategy and Guidelines for TB in prison
Activity	2.7.1.2	Capacity building for TB prison health post staff
Activity	2.7.1.3	Improve the functioning of technical working group for health in prison
Activity	2.7.1.4	Improve TB treatment adherence and completion among TB patients after release from prison
Activity	2.7.1.5	Strengthen referral and feedback system between prisons and RHs/Xpert sites for sputum transportation
Activity	2.7.1.6	Increase TB case notification in the prisons and improve program coordination and management
Activity	2.7.1.7	Improve infection control in prisons
Activity	2.7.1.8	Improve management support of TB interventions in prisons
Thematic Area	2.8	TB in migrants
Intervention	2.8.1	Strengthen and coordinate the implementation of TB migrant's intervention
Activity	2.8.1.1	Developing Policy and legal framework for Migrant TB services
Activity	2.8.1.2	Strengthen the coordination mechanism between CENAT/MoH and Department of Health at MoLVT and partners in country and region
Activity	2.8.1.3	Provide technical Support to MoLVT to screen migrant workers for TB
Activity	2.8.1.4	Conduct ACF mapping and intervention at 5 international check points
Activity	2.8.1.5	Implement TB screening at border checkpoints
Objective	**3**	**Prevent the emergence of TB in susceptible populations using a combination of biomedical, behavioural, social and structural interventions.**
Thematic Area	3.1	Latent TB infection
Intervention	3.1.1	Ensure the availability of LTBI SOP/Guideline
Activity	3.1.1.1	Develop, print and disseminate LTBI guidelines and training curriculum
Activity	3.1.1.2	Update and revise LTBI SOP/guidelines
Intervention	3.1.2	Improve the capacity of health care providers (all health facilities) on LTBI
Activity	3.1.2.1	Conduct LTBI training to health care providers at HR/HCs
Intervention	3.1.3	Improve TPT provision services to eligible LTBI clients

Activity	3.1.3.1	Conduct bi-annual forecasting of TPT regimen required (No Cost)
Activity	3.1.3.2	Procure the TPT medicine based on the forecasting and monitor the stock management
Activity	3.1.3.3	Provide TPT services to eligible LTBI clients in both facilities and communities
Intervention	3.1.4	Raise the awareness of importance of LTBI among health workers and public
Activity	3.1.4.1	Raise awareness of LTBI importance among health workers and public
Intervention	3.1.5	Strengthen and improve the quality of LTBI service providing at RHs/HCs
Activity	3.1.5.1	Conduct annual/quarterly monitoring, supervision and coaching to RHs/HCs
Activity	3.1.5.2	Ensure the LTBI data, record and report are routinely reported
Intervention	3.1.6	Vaccination activities
Thematic Area	3.2	Infection control for TB control (TB-IC)
Intervention	3.2.1	Develop TB-IC Policy, SOP, Guideline, Training Curriculum and Tools
Activity	3.2.1.1	Introduce the TB-IC SOP and guideline to all health facility providers
Activity	3.2.1.2	Conduct the workshop to develop the training curriculum and tools
Activity	3.2.1.3	Update and revise TB-IC policy, SOP, guideline and curriculum and tools
Intervention	3.2.2	Improve the capacity of health care providers (all health facilities) on TB-IC
Activity	3.2.2.1	Conduct baseline needs assessment to health facilities and disseminate finding to partners
Activity	3.2.2.2	Improve the capacity of health care providers on TBIC
Intervention	3.2.3	Improve TB-IC management and implementation
Activity	3.2.3.1	Improve the quality of TB-IC implementation to meet expected outcomes and impacts
Intervention	3.2.4	Procure and maintain the TB-IC Equipment and Supplies
Activity	3.2.4.1	Ensure optimum Implementation of the measures (Admin, Environment and PPE)
Intervention	3.2.5	Introduce Annual check-up to Health Care Workers
Activity	3.2.5.1	Ensure optimum health and wellbeing of HCW
Intervention	3.2.6	Raise the TB-IC Awareness among health care providers and communities
Activity	3.2.6.1	Ensure updated Information, Education and Communication (IEC) materials (leaflet, poster…)
Intervention	3.2.7	Improve the structural/facility construction/maintenance of health facilities
Activity	3.2.7.1	Ensure sufficient and quality spaces for patient and staff…
Objective	**4**	**Build, strengthen and sustain enabling policies, empowered institutions, human resources with enhanced capacities, and financial resources to match the plan**
Thematic Area	4.1	Human Resource Development (HRD)
Intervention	4.1.1	Develop and strengthen the capacity of all TB-related personnel
Activity	4.1.1.1	Human Resource Capacity Building

Activity	4.1.1.2	Develop the National TB Program Human Resource Development Plan (short and long term)
Intervention	4.1.2	Enhance and motivate the staff performance
Activity	4.1.2.1	Contributes/mobilize financial resources from other partners to support staff retention strategies (such as career development, remuneration, working conditions, etc)
Thematic Area	4.2	TB financing
Intervention	4.2.1	Mobilize the financial resources for TB control and create financial investment sustainable plan
Activity	4.2.1.1	Increase government (budget) support to end TB in Cambodia from 2021-2030 by 4-5% annually
Activity	4.2.1.2	Advocate external partners to continue the support to end TB for filling out the demanded based on NSP targets 2021 -2030, contributing to reaching CSDG.
Activity	4.2.1.3	Develop long term TB financing plan including increase of domestic financing mechanism to ensure CENAT/MoH to end TB.
Activity	4.2.1.4	Make the investment case (Advocacy) for TB funding and Social Return On Investment (ROI) for MEF/MoH to end TB.
Activity	4.2.1.5	Mobilize funds from partners, encompassing private sector involvement
Activity	4.2.1.6	Generate evidences on catastrophic cost faced by TB patients and the household.
Activity	4.2.1.7	Develop a robust system to provide financial protection against the cost of seeking health care.
Activity	4.2.1.8	Link TB financing with the social protection policy framework
Activity	4.2.1.9	Pilot the Corporate Social Response (CSR) to mobilize resources for TB support activities
Activity	4.2.1.10	Advocate and ensure TB service in National Quality Enhancing Monitoring Tools (NQEMT) (National quality enhancing monitoring tools) to get Health facility financing.
Thematic Area	4.3	Procurement and supply management of drugs and other commodities
Intervention	4.3.1	Procure and supply management of TB drugs and commodities
Activity	4.3.1.1	Procure and maintain vehicles for central level
Activity	4.3.1.2	Procure, maintain and insure motorcycles of central level, provincial and OD levels
Activity	4.3.1.3	Procure office supplies for national and provincial and OD offices
Activity	4.3.1.4	Print routine recording and reporting formats (every year)
Activity	4.3.1.5	Procure Office furniture for National office/ sub national level.
Activity	4.3.1.6	Procure fuel for daily operation at National level.
Activity	4.3.1.7	Procure electronic equipment including air conditioner, refrigerator, etc. for NTP/ Subnational level.
Activity	4.3.1.8	Procure drugs for National Hospitals (NH) and RH
Activity	4.3.1.9	Procure medical equipment and materials for NH and RH
Activity	4.3.1.10	Building maintenance at National level /Sub national level

Thematic Area	4.4	Strengthening collaboration and coordination activities
Intervention	4.4.1	Enhance coordination mechanism with high level multi-sectoral partners for TB program
Activity	4.4.1.1	Aim for galvanising high-level political leadership, for tackling TB in Cambodia
Activity	4.4.1.2	engagement of key stakeholders such as private sectors, parliamentarian, media, artists, Academic/universities, research institutes, religious groups (Buddhist monks, nuns) local authority, civil society organization and TB affected communities
Activity	4.4.1.3	Include TB information into the National Education Curriculum.
Activity	4.4.1.4	Strengthen and expand the ongoing collaboration with MoI (Prison), Ministry of Information (IEC), Ministry of Social Affairs, Veterans and Youth Rehabilitation (social services), Ministry of Labor and Vocational Training (garment factories, factories sectors) and Cambodian Red Cross (social services)
Activity	4.4.1.5	NTP in collaboration with local authorities to provide support to TB and poor affected households to access and register/enrol in the ID Poor System of the MoP
Activity	4.4.1.6	NTP to advocate to MEF to have HEF scheme as well as National Social Security Fund (NSSF) covering all coming TB affected persons who receive TB services.
Intervention	4.4.2	Strengthen national and subnational TB platform as ICC
Activity	4.4.2.1	Review TOR and membership of the existing national TB platform (ICC) called sub-technical Working for TB Control.
Activity	4.4.2.2	Strengthen the national TB platform (ICC) called sub-technical Working for TB Control and expand memberships to include other public sectors (especially MoEYS, MoWA, private sector and community networks with common linkages to TB response
Activity	4.4.2.3	Establish sub-national (provincial) TB platform network with clear TOR and membership and linkage with the national TB platform.
Activity	4.4.2.4	Conduct quarterly sub-national TB platform meeting
Activity	4.4.2.5	Include the MoI, MEF, MoSVY and MoP as members of the Expanded ICC Working Group, chaired Prime Minister
Intervention	4.4.3	Ensure the engagement of wider stakeholders, CSO and other relevant institution
Activity	4.4.3.1	Develop and operationalize National Policy on Community and Civil Society Engagement and Meaningful Involvement in TB response
Objective	**5**	**Strengthen NTP monitoring and evaluation system and research activities**
Thematic Area	5.1	M&E and surveillance system
Intervention	5.1.1	Strengthen the capacity of national staff on TB program
Activity	5.1.1.1	Conduct National TB Conference, Annual Planning Workshop, Quarterly M&E Workshops and Meetings

Activity	5.1.1.2	Attend International meeting/ Union World Conference
Intervention	5.1.2	Strengthen and improve TB Management Information system (MIS)
Activity	5.1.2.1	Improve and strengthen the TB-MIS system
Activity	5.1.2.2	Review and Revise TB-MIS in 2024
Intervention	5.1.3	Strengthen and utilize the data through data quality assurance
Activity	5.1.3.1	Investigate data quality assurance, data use and analysis
Activity	5.1.3.2	Develop SoP for data analysis and use
Activiy	5.1.3.3	Provide training to relevant staff on data analysis and use
Thematic Area	5.2	TB Studies and Research
Intervention	5.2.1	Build network of Cambodia Committee for TB Research (CCTBR) among research related bodies
Activity	5.2.1.1	Identify representatives from national universities, research institutions, national TB program, civil society and NGOs
Activity	5.2.1.2	Seek the endorsement of the Cambodia Committee for TB Research by MoH
Intervention	5.2.2	Conduct and coordinate National TB research agenda
Activity	5.2.2.1	Strengthen coordination between existing initiatives in TB research and studies
Activity	5.2.2.2	Build capacity among program staff at all levels (national, provincial, and district) to formulate pertinent research questions, implement research, and communicate research findings effectively to address programmatic challenges and scientific gaps
Activity	5.2.2.3	Establish the national research guideline and standard operating procedures
Activity	5.2.2.4	Linkage of research results to practical programs and policies: Collect and document all research findings and publications generated from Cambodia
Intervention	5.2.3	Conduct and implement National TB research studies
Activity	5.2.3.1	Research priorities identified
Activity	5.2.3.2	Conduct the Third National Prevalence Survey for TB in 2022-2023 to accurately measure the disease burden and impact of the TB program (including sub-national estimates and responses)
Activity	5.2.3.3	Conduct TB Drug Resistance Survey in 2023
Activity	5.2.3.4	Implement TB patient cost studies or research
Activity	5.2.3.5	Conduct Cambodia Patient Pathway Analysis
Activity	5.2.3.6	Implement the TB operational research (2 per year)

CHAPTER 8

PROGRAMMATIC SURVEILLANCE, MONITORING AND EVALUATION

The NTP has a well-functioning standardized recording and reporting system for TB, based on the WHO-recommended quarterly cohort monitoring system. There is a dedicated data management team (Planning and Statistics Unit) at central level. M&E activities including supervisory visits and M&E workshops/meetings are regularly conducted at each level. An annual TB conference is organized to review the progress of the programme with participation of subnational level staff and partners. The annual TB report published every year summaries trends of key programme indicators. An electronic case-based TB surveillance system (TB-MIS [Management Information System]) has been expanded to achieve nationwide coverage in 2018. The system is currently used in the operational District (OD). The introduction of the TB-MIS is a great opportunity to strengthen subnational-level analysis that will promote geo-targeted interventions.

The gaps and challenges have been elaborated in the gap analysis table (annex 10). The interventions, activities and sub activities are presented in numbering order at the end of the Core Plan.

8.1 OBJECTIVES OF THE M&E COMPONENT OF THE NSP

1. To monitor the progress of the TB epidemic across Cambodia over time
2. To improve and coordinate the system of nationwide service-generated data from health facilities and patient-provider interactions,
3. To provide reliable and verifiable information to policy-makers and to the program manager for evidence-based decisions, and
4. To facilitate the dissemination of technically sound information to stakeholders for resource mobilization and rational allocation of funds.
5. To assess NTP performance periodically against national and international standards

8.2 THE NSP RESULTS FRAMEWORK

The results framework below highlights the impact, outcome indicators and targets of the NSP that highlight the thrust areas that include plugging the leak from the TB care cascade, active TB case finding among key populations and specific protection for prevention from development of active TB in high risk groups and private sector engagement.

Table 6: Results Framework (impact and outcome indicators and targets) for the NSP period

	BASELINE	MILESTONE		TARGET	
IMPACT INDICATORS	**2015**	**2020**	**2021**	**2025**	**2030**
1. To reduce estimated TB Incidence rate (per 100,000) BS 2018=302	367	261	232	90%	90%
2. To reduce estimated mortality due to TB (per 100,000)	21	16	12	9	3
3. To achieve no catastrophic cost for affected families due to TB (no baseline available)		80%	90%	>95%	>95%
Outcome indicators	**2015**	**2020**	**2021**	**2025**	**2030**
1. Total TB patient notification	35,638	32,400	32,500	30,000	15,500
2. Number of childhood TB cases notified	6,885	5,830	5,670	5,400	TBD in 2025
3. MDR/RR TB patients notified	75	145	165	170	TBD in 2025
4. Treatment success rate among notified DSTB[17]	93%	>90	>90	> 90	>90
5. Treatment success rate among notified RR/MDR TB[18]		>75	>75	>75	>75
6. Proportion of identified/eligible individuals for TB preventive treatment (TPT) / LTBI[19] - initiated on LTBI treatment *(New indicator)*		11716 (2019)	15000	8500	TBD
7. TPT completion rate *(New indicator)*	N/A	85%	>85%	>85%	>85%
8. Treatment coverage	58% (2018)	80%	90%	90%	90%
9. Percentage of HC with C-DOTS		81%	85%	>90%	>90%
10. Number of RH with comprehensive TB services (HL)		30	60	75	>90

8.3 ANNUAL AND MID-TERM EVALUATION

Annual review should be organized through annual TB conference to review the achievements and constraints during the past year to be used as inputs for formulating next year annual plan of action (AOP). Mid-term evaluation should be done in year 2023 and 2025.Consequantly targets could be adjusted accordingly, especially based on future epidemiological update referring to available information and methodology.

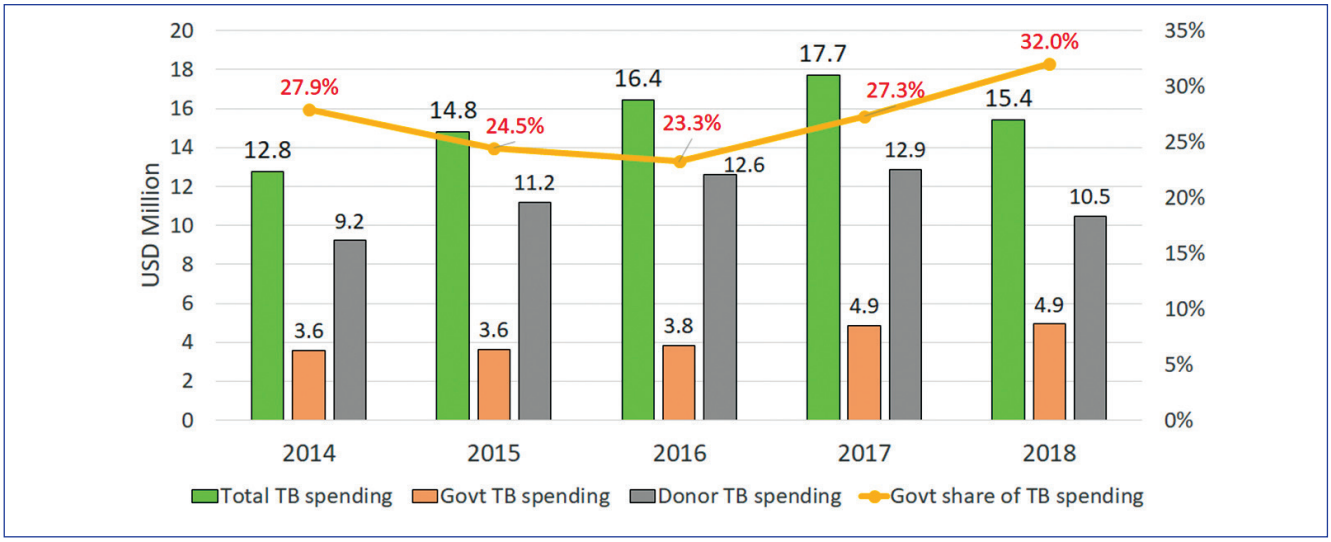
[17] Drug Sensitive TB
[18] Rif Resistant / Multi Drug Resistant TB
[19] Latent TB Infection

9 CHAPTER

FINANCING THE NSP

Over the last NSP period the government financing of the TB response has increased significantly. Commitment to boosting investment in TB is reflected in an increase in government spending on TB from US$ 3.6 million in 2014 to US$ 4.9 million in 2018, equal to a 36% increase. The government's share of TB spending also increased; from 28% in 2014 to about 32% in 2018 (Figure 8).[20]

Figure 1: Government and donor spending on TB in 2014-2018 (US$ million



The government is also on track to meet its co-financing commitments to donor support, including Global Fund. The robust absorption of Global Fund resources has facilitated additional resource mobilization. The TB programme used 96% of the Global Fund 2015-2017 grant and around 85% in 2018 for the current grant, reflecting robust planning and execution of activities financed by the Global Fund. This enabled the TB programme to mobilize additional resources from the Global Fund of US$ 2.7 million in 2018-2020.[21]

Importantly, TB services have been incorporated in the benefit package of Health Equity Funds. TB services were added to the HEF benefit package in 2018.[22] Starting on 1 July 2019, the Payment Certification Agency (PCA) will reimburse providers in the public sector for TB services to poor HEF beneficiaries, including consultation, investigation, treatment, counselling, and follow-up appointments, at HC and hospital level, and reimbursement. Similarly, for those with ID and post ID poor cards, HEF beneficiaries with TB will be reimbursed for Outpatient Department (OPD) IPD services, transportation and food costs for patients who are hospitalized, and a funeral allowance for patients who died at the hospital or a HC.

Cambodia has streamlined the process of procuring drugs from the international market. The government began purchasing TB drugs from the Global Drug Facility (GDF) in 2017, partially taking over from partners. GDF provides access to quality-assured TB drugs, diagnostics, and laboratory supplies, as well as technical assistance

[20] CENAT (2019) Yearly financial reconciliation expenditure reports 2014-2018. CENAT Accounting System.
[21] CENAT (2019) CENAT Yearly Report to Global Fund and WHO.
[22] Ministry of Health (2018) Guidelines for the benefit package and provider payment of the Health Equity Fund for the poor. Phnom Penh: Ministry of Health.

and support to the uptake of innovative tools and procurement planning. This has led to cost-savings, a more streamlined and standardized procurement process, and increased access to quality drugs.

However there remain challenges to be dealt over the next decade to augment the national response and primarily relates to the financing gap which is projected to increase to meet current and future NSP targets. Based on the costing formulated for the NSP period 2021-2025 resource needs are estimated to about USD 177 Million. Funding for TB from the government is expected to increase around 4 to 5% per year; while resources from donors is expected to remain stable during 2021-2023; beyond this period the situation is uncertain. This will result in a considerable financing gap, especially during 2024-2025 period, which represents about 50% of the required resources.

There is a **continued dependency on external funding creates challenges to sustainability.** While the government's share of TB financing increased from 28% in 2014 to around 32% in 2018, external donors financed more than two-thirds (68%) of the TB response in 2018.[23] This may pose challenges to long-term planning and may threaten the sustainability of the TB programme. **TB services are not comprehensively included in the National Quality Enhancing Monitoring Tools.** The National Quality Enhancing Monitoring Tools (NQEMT) and other monitoring tools have an important influence of how financing is distributed between health priorities and health facilities. TB is not comprehensively reflected in these processes, which leads to reduced financial incentives for health workers to deliver TB interventions.

And hence going forward the NTP proposes to **secure and sustain increased government funding for TB**. To achieve that, CENAT/MoH need to make the case for investment in TB as part of the economic development of Cambodia and its population. CENAT can contribute to increased investment in TB by supporting MoH in the budget negotiation and preparation process with the Ministry of Economy and Finance and by strengthening the demand side financing through performance-based financing incentives. It can also help leverage the support of and collaboration with other ministries, such as Ministry of Labour and Vocational Training (MoLVT), Ministry of Interior (MoI), Ministry of Education, Youth and Sports (MoEYS) and the National Assembly (NA). Costed budget proposals, key messages, policy briefs, and briefing sessions should be developed to inform such efforts.

It also needs to maintain and/or increase current donors and identify potential new donors to diversify external funding for TB. Given that resource needs will be substantial to scale up the TB response, external funding will continue to play a fundamental role. To diversify external financing sources, the TB programme should explore the potential of securing additional resources from new financiers, which will be supported by building the case for investment. In addition, NTP will leverage existing and future financing mechanisms to promote inclusion of TB financing.

The Government is committed to developing a robust system to provide financial protection against the costs of seeking health care, as outlined in the National Social Protection Policy Framework (NSPPF) 2016-2025.[24] This presents an opportunity for the TB response to increase social protection and reduce the economic impact of TB on patients and households. Including TB financing in the social protection policy framework will also leverage the purchasing function to increase access and enhance quality of care of TB. The government may consider expanding HEF entitlements and benefits to all TB patients. Other opportunities may be presented through the expansion of the National Social Security Fund (NSSF) and other financing mechanisms, and through future contracting with private providers. The TB programme needs to be part of discussions and planning for the implementation of the NSPPF to capitalize on these opportunities.

[23] CENAT data

[24] Government of Cambodia (2017) National Social Protection Policy Framework 2016-2025. Approved by the Council of Ministers on 24 March 2017. Phnom Penh: Government of Cambodia.

10 CHAPTER BUDGET

10.1 INTRODUCTION:

To achieve Cambodia's ambitious targets of ending TB, the National TB program require an escalated resource envelope to ensure uninterrupted and timely implementation of the program activities. An estimated budget of about $ 177 million will be required over next five years to transform TB control and achieve the national goal of ending TB as a major public health problem by 2030. This resource envelope envisages to cover the following activities as has been detailed in the prior chapters.

1. Large scale strengthening of the existing program activities
2. Introduction of new activities to reach patients seeking care from private providers
3. Increase case detection by systematic screening in key populations
4. Further strengthening of supply chain management and financial management systems

Detecting and treating all TB and MDR-TB patients will require wide spread use of newer diagnostic tools, newer treatment regiments and innovative methods to manage TB patients using information technology. This will require large scale investments. The details of the resources required are given in the tables below.

10.2 SUMMARY OF THE FUNDING FOR ENDING TB IN CAMBODIA

		Description	2021	2022	2023	2024	2025	5 Years
Objective	**1**	**Improve case finding and treatment to all TB cases**	**8,776,631**	**8,403,277**	**8,334,243**	**9,147,500**	**8,958,523**	**43,620,174**
Thematic area	1.1	Basic DOTS	3,151,698	3,090,228	3,090,228	3,199,096	3,226,696	15,757,946
Thematic area	1.2	Laboratory	5,046,277	4,754,973	4,665,359	4,633,410	4,331,135	23,431,154
Thematic area	1.3	Active case finding	578,656	558,076	578,656	1,314,994	1,400,692	4,431,074
Objective	**2**	**Address specific need and Priorities (C-DOTS, Private MDR, Diabetes, & Prisons)**	**6,995,148**	**6,552,184**	**6,649,798**	**6,642,789**	**6,683,383**	**33,523,302**
Thematic area	2.1	C-DOTS	2,041,036	1,891,848	1,891,848	1,891,848	1,891,848	9,608,430
Thematic area	2.2	PPM	715,195	697,672	688,502	680,144	680,144	3,461,657
Thematic area	2.3	MDR	1,101,799	1,149,234	1,114,964	1,114,810	1,123,087	5,603,894
Thematic area	2.4	TB-HIV	373,399	397,723	330,859	483,887	373,399	1,959,267
Thematic area	2.5	TB-Diabetes	311,852	298,774	334,547	256,499	306,067	1,507,739
Thematic area	2.6	Childhood TB	704,225	660,139	662,839	773,859	672,149	3,473,211
Thematic area	2.7	TB in Prison	504,976	391,503	386,948	376,450	403,958	2,063,834

Thematic area	2.8	TB in Migrants	1,242,666	1,065,291	1,239,291	1,065,291	1,232,731	5,845,270
Objective	**3**	**Prevention emergence of TB in susceptible populations**	**3,006,650**	**2,361,432**	**2,295,497**	**2,369,580**	**2,305,051**	**12,338,210**
Thematic area	3.1	Latent TB Infection	1,667,585	1,274,581	1,226,340	1,158,108	1,681,182	7,007,796
Thematic area	3.2	TB Infection Control	1,339,065	1,086,852	1,069,157	1,211,472	623,869	5,330,414
Objective	**4**	**Build and Strengthen and sustain enabling policy, empowered institutions, HR and Financial resources**	**14,404,457**	**14,691,821**	**14,939,976**	**15,415,764**	**15,951,757**	**75,403,774**
Thematic area	4.1	Human Resource Development (HRD)	11,852,428	12,198,943	12,422,097	12,780,885	13,201,878	62,456,232
Thematic area	4.2	TB Financing	259,519	259,519	259,519	259,519	259,519	1,297,593
Thematic area	4.3	Procurement supply Mgt	1,639,315	1,580,165	1,605,165	1,722,165	1,837,165	8,383,975
Thematic area	4.4	Strengthen collaboration and coordination activities	653,195	653,195	653,195	653,195	653,195	3,265,975
Objective	**5**	**Surveillance, Monitoring and Evaluation**	**1,417,231**	**3,291,141**	**3,026,318**	**2,000,872**	**2,338,623**	**12,074,185**
Thematic area	5.1	Monitoring and evaluation	1,325,952	1,634,748	1,806,846	1,912,757	2,151,483	8,831,786
Thematic area	5.2	Research studies	91,279	1,656,393	1,219,472	88,115	187,141	3,242,400
		Grand Total Cost	**34,600,117**	**35,299,857**	**35,245,831**	**35,576,504**	**36,237,337**	**176,959,646**

Level	Code	Description	2021	2022	2023	2024	2025	5 Years
Objective	**1**	**Improve case finding and treatment to all TB cases**	**8,776,631**	**8,403,277**	**8,334,243**	**9,147,500**	**8,958,523**	**43,620,174**
Thematic Area	1.1	Provide basic TB care services to all people living with TB	3,151,698	3,090,228	3,090,228	3,199,096	3,226,696	15,757,946
Intervention	1.1.1	Maintain and strengthen quality TB care delivery services in hospitals and HCs	1,673,290	1,673,290	1,673,290	1,673,290	1,673,290	8,366,450
Intervention	1.1.2	Ensure the provision of comprehensive TB services in particular the hospital linkages at hospitals	1,478,408	1,416,938	1,416,938	1,525,806	1,553,406	7,391,496
Thematic Area	1.2	Strengthen the quality of TB laboratory and diagnostic services at health facilities	5,046,277	4,754,973	4,665,359	4,633,410	4,331,135	23,431,154
Intervention	1.2.1	Ensure TB diagnostic tools, guidelines/SOP, and TB lab strategic plan are available, functioned, updated/ revised at health facilities	110,896	120	68,006	36,057	33,782	248,860

Intervention	1.2.2	Expansion the utilization of TB microscopy and testing services	1,203,990	1,203,990	1,203,990	1,203,990	1,203,990	6,019,950
Intervention	1.2.3	Enhance the utilization of GenXpert machines for improved quality diagnosis and increase TB case findings	1,671,856	1,671,856	1,514,356	1,514,356	1,139,356	7,511,780
Intervention	1.2.4	Introduction of LF-LAM new diagnostic tool for case findings amongst PLHIV	117,756	117,756	117,756	117,756	117,756	588,780
Intervention	1.2.5	Adoption of new WRD tool during 2021-2030	127,779	296,979	296,979	296,979	296,979	1,315,695
Thematic Area	1.3	Strengthen active case finding (ACF) approaches	578,656	558,076	578,656	1,314,994	1,400,692	4,431,074
Intervention	1.3.1	Implementation of ACF in community/OD and in prisons, correctional centers and rehabilitation centers	578,656	558,076	578,656	1,314,994	1,400,692	4,431,074
Objective	**2**	**Address specific need and priorities (C-DOTS, private MDR, diabetes, & prisons)**	**6,995,148**	**6,552,184**	**6,649,798**	**6,642,789**	**6,683,383**	**33,523,302**
Thematic Area	2.1	Community TB care/ community DOTS (C-DOTS)	2,041,036	1,891,848	1,891,848	1,891,848	1,891,848	9,608,430
Intervention	2.1.1	Maintain existing C-DOTS, and expand scope and scale of C-DOTS service to community and health facility	2,041,036	1,891,848	1,891,848	1,891,848	1,891,848	9,608,430
Thematic Area	2.2	Public Private Mix for TB	715,195	697,672	688,502	680,144	680,144	3,461,657
Intervention	2.2.1	Strengthen and improve public private mix for TB control	715,195	697,672	688,502	680,144	680,144	3,461,657
Thematic Area	2.3	Multi-drug resistance for TB	1,101,799	1,149,234	1,114,964	1,114,810	1,123,087	5,603,894
Intervention	2.3.1	Strengthen and improve the multi-drug resistance for TB control	1,101,799	1,149,234	1,114,964	1,114,810	1,123,087	5,603,894
Thematic Area	2.4	TB-HIV	373,399	397,723	330,859	483,887	373,399	1,959,267
Intervention	2.4.1	Enhance and strengthen the TB-HIV services at all levels	373,399	397,723	330,859	483,887	373,399	1,959,267
Thematic Area	2.5	TB-Diabetes	311,852	298,774	334,547	256,499	306,067	1,507,739
Intervention	2.5.1	Strengthen and coordinate TB-DM services to ensure proper case management	311,852	298,774	334,547	256,499	306,067	1,507,739
Thematic Area	2.6	Childhood TB	704,225	660,139	662,839	773,859	672,149	3,473,211

Intervention	2.6.1	Strengthen and expand childhood TB services at hospitals and RHs	704,225	660,139	662,839	773,859	672,149	3,473,211
Thematic Area	2.7	TB in prisons	504,976	391,503	386,948	376,450	403,958	2,063,834
Intervention	2.7.1	Strengthen and coordinate the implementation of TB services in prisons and correction centers	504,976	391,503	386,948	376,450	403,958	2,063,834
Thematic Area	2.8	TB in Migrants	1,242,666	1,065,291	1,239,291	1,065,291	1,232,731	5,845,270
Intervention	2.8.1	Strengthen and coordinate the implementation of TB migrants to ensure case management	1,242,666	1,065,291	1,239,291	1,065,291	1,232,731	5,845,270
Objective	**3**	**Prevention emergence of TB in susceptible populations**	**3,006,650**	**2,361,432**	**2,295,497**	**2,369,580**	**2,305,051**	**12,338,210**
Thematic Area	3.1	Latent TB infection	1,667,585	1,274,581	1,226,340	1,158,108	1,681,182	7,007,796
Intervention	3.1.1	Ensure the availability of LTBI SoP/guideline	279,481	1,418	17,849	63,000	586,074	947,822
Intervention	3.1.2	Improve the capacity of health care providers (all health facilities) on LTBI	128,016	182,880	182,880	182,880	182,880	859,536
Intervention	3.1.3	Improve TPT provision services to eligible LTBI clients	447,860	278,055	213,383	100,000	100,000	1,139,298
Intervention	3.1.4	Raise the awareness of LTBI in general population	754,000	754,000	754,000	754,000	754,000	3,770,000
Intervention	3.1.5	Strengthen and improve the quality of LTBI service providing at RHs/HCs	58,228	58,228	58,228	58,228	58,228	291,140
Thematic Area	3.2	Infection control for TB control (TB-IC)	1,339,065	1,086,852	1,069,157	1,211,472	623,869	5,330,414
Intervention	3.2.1	Develop TB-IC policy, SOP, guideline, training curriculum and tools	41,206	19,268	44,440	13,152	49,152	167,217
Intervention	3.2.2	Improve the capacity of health care providers (all health facilities) on TB-IC	409,545	268,770	227,853	308,056	227,853	1,442,077
Intervention	3.2.3	Improve TB-IC management and implementation	66,164	66,164	66,164	66,164	66,164	330,820
Intervention	3.2.4	Procure and maintain the TB-IC equipment and supplies	280,700	280,700	280,700	280,700	280,700	1,403,500
Intervention	3.2.5	Introduce annual checkup to health care workers	-	-	-	-	-	-
Intervention	3.2.6	Raise the TB-IC Awareness among health care providers and communities	466,450	451,950	450,000	468,400	-	1,836,800

Intervention	3.2.7	Improve the structural/ facility construction/ maintenance of health facilities	75,000	-	-	75,000	-	150,000
Objective	**4**	**Build and strengthen and sustain enabling policy, empowered institutions, HR and Financial resources**	**14,404,457**	**14,691,821**	**14,939,976**	**15,415,764**	**15,951,757**	**75,403,774**
Thematic Area	4.1	Human Resource Development (HRD)	11,852,428	12,198,943	12,422,097	12,780,885	13,201,878	62,456,232
Intervention	4.1.1	HRD plan for TB	274,278	243,261	274,278	243,261	274,278	1,309,356
Intervention	4.1.2	HR management, staff motivation and overhead cost	11,578,150	11,955,682	12,147,819	12,537,624	12,927,600	61,146,876
Thematic Area	4.2	TB financing	259,519	259,519	259,519	259,519	259,519	1,297,593
Intervention	4.2.1	TB financing and other resources	259,519	259,519	259,519	259,519	259,519	1,297,593
Thematic Area	4.3	Procurement and supply management of drugs and other commodities	1,639,315	1,580,165	1,605,165	1,722,165	1,837,165	8,383,975
Intervention	4.3.1	Procurement and supply management of drugs and other commodities	1,639,315	1,580,165	1,605,165	1,722,165	1,837,165	8,383,975
Thematic Area	4.4	Strengthening collaboration and coordination activities	653,195	653,195	653,195	653,195	653,195	3,265,975
Intervention	4.4.1	High level multi-sectoral coordination mechanism/committee	72,997	72,997	72,997	72,997	72,997	364,985
Intervention	4.4.2	Strengthen and expand ICC forum at national level and provincial level						
Intervention	4.4.3	Engage comprehensively civil society and community in End TB strategies and activities	580,194	580,194	580,194	580,194	580,194	2,900,970
Objective	**5**	**Surveillance, Monitoring and Evaluation**	**1,417,231**	**3,291,141**	**3,026,318**	**2,000,872**	**2,338,623**	**12,074,185**
Thematic Area	5.1	M&E and surveillance system	1,325,952	1,634,748	1,806,846	1,912,757	2,151,483	8,831,786
Intervention	5.1.1	Conferences, meetings and workshops	230,706	230,706	230,706	230,706	230,706	1,153,530
Intervention	5.1.2	Programmatic surveillance, M&E	943,456	1,252,252	1,424,350	1,530,261	1,768,987	6,919,306
Thematic area	5.2	TB Studies and Research	91,279	1,656,393	1,219,472	88,115	187,141	3,242,400
Intervention	5.2.1	Cambodia Committee for TB Research (CCTBR)	3,516	352	352	352	352	4,924
Intervention	5.2.2	National TB research agenda	23,985	25,685	23,985	23,985	23,985	121,625
Intervention	5.2.3	National research TB studies conduction	63,778	1,630,356	1,195,135	63,778	162,804	3,115,851

CHAPTER 11

RISK MANAGEMENT

11.1 STRATEGIC RISKS

1. At the time of formulating this NSP, some national strategic plans for the period around 2021–2025 are not yet available. While the NSP is aligned with the RS-IV 2019–2023, there is a possibility that specific priorities might shift. The NTP will maintain close dialogue with other relevant departments and ministries to ensure alignment with national priorities.
2. The shifting international funding landscape will place constraints on NTP program delivery. Collaborative budget development with other aligned departments like NCHADS, and resource mobilization and exploration of new resources and partnerships will seek to ensure a smooth and gradual transition to domestic funding of the national response to end TB.
3. MoH/NTP will work closely with other ministries to ensure that END TB activities are fully embedded within national policies and strategies, thus ensuring sustainability and adequate domestic resource allocation.
4. Strategic human resource management and technical partnerships will mitigate possible risks of limited in-house technical capacity resulting from resource shortfalls.

11.2 OPERATIONAL RISKS AND FIDUCIARY RISK

1. The success of the NSP relies on the ability of all stakeholders of NTP to take full ownership of program activities and manage these in accordance with the NSP directions, and with adequate responsibility and accountability. In addition to robust monitoring, NTP will invest in mentoring and coaching of provincial and partner staff at all levels, aligning program approaches with national formal and social accountability frameworks, and optimizing beneficiary feedback.
2. Shrinking of external financing, currently accounting for more than 70% of the NTP costs, and inadequacy of domestic funding has the potential to derail the gains made by the NTP over the past two decades.
3. Estimated TB incidence in Cambodia during the time of formulating this plan was based prevalence survey conducted about 9 years ago. The current estimation might be over-estimated. A more scientific review like the 3rd prevalence survey or a best alternative methodology will be very crucial.

11.3 MAINTAINING TB CARE SERVICES AMID COVID-19 PANDEMIC

The ten-year national strategic plan for tuberculosis was developed and fell into the challenging time that the world continues to tackle the COVID-19 pandemic. It is crucial than ever to ensure that essential services and operations to deal with long-standing health problems continue to protect the lives of people with TB and other diseases or health conditions. Health services, including national programs to combat TB need to be actively engaged in ensuring an effective and rapid response to COVID-19 while ensuring that TB services are maintained.

Finding and treating people with TB remains the fundamental pillars of TB prevention and care, and those would require the maintained attention of the National Center for TB and Leprosy Control (CENAT).

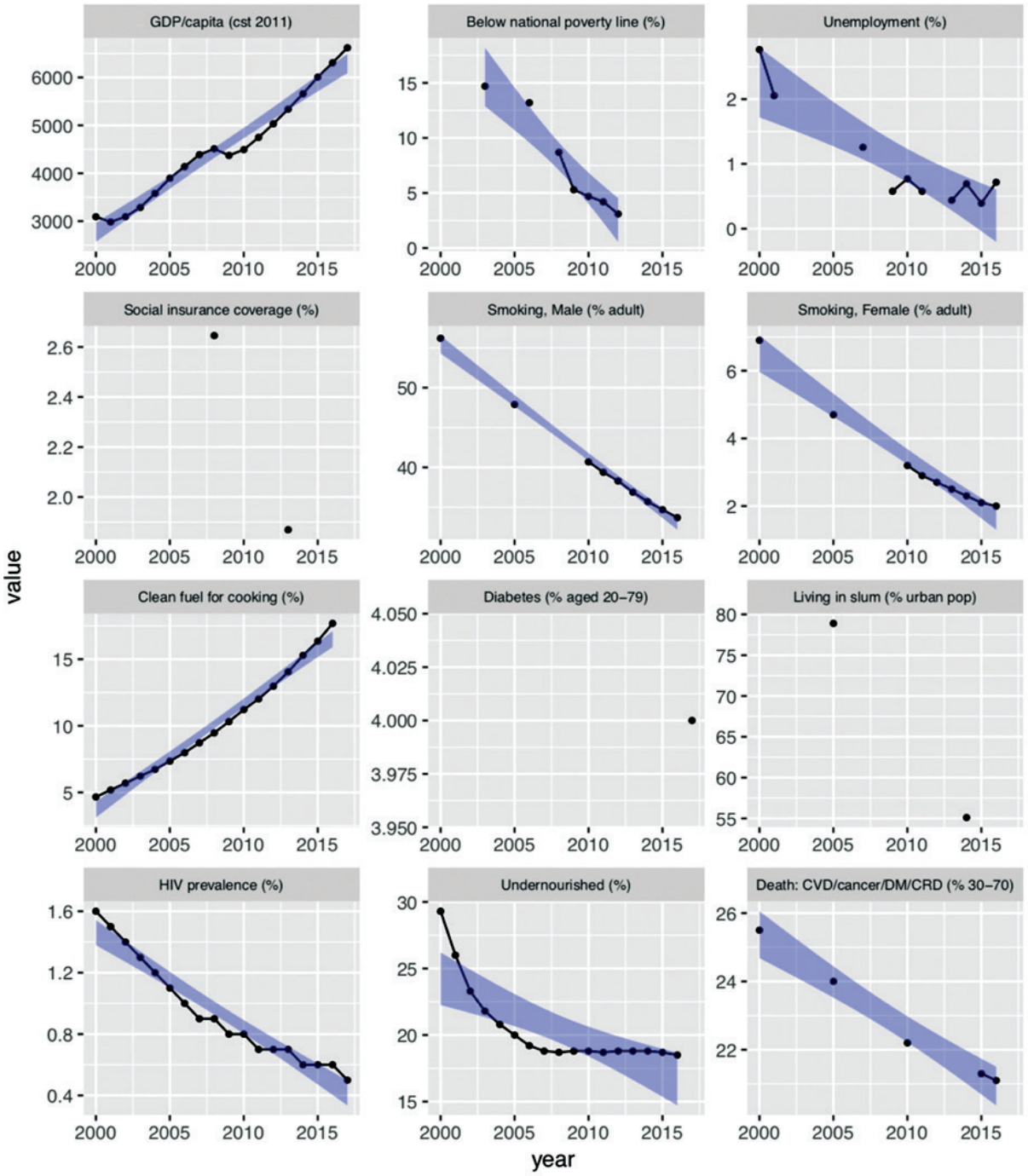
We will ensure through support, collaboration, and partnership with other national health programs, stakeholders, development partners, civil societies, and TB affected communities to develop innovative and adaptable measures and interventions using the WHO Information Note, COVID-19[25]: considerations for tuberculosis (TB) care, by maintaining the continuity of essential services for people affected with TB during the COVID-19 pandemic, driven by innovative people-centered approaches, as well as maximizing joint support to tackle both diseases. This will include the different measures and interventions from screening and preventive and curative treatment for TB during emergencies and recovery of COVID-19.

In addition to this, the National Center for TB and Leprosy Control (CENAT) will closely monitor the delivery of essential services during the pandemic and the recovery ("catch-up") phases and take the immediate and necessary actions.

[25] WHO Information Note. COVID-19: considerations for tuberculosis (TB) care, May 2021, retrieved at: https://www.who.int/publications/i/item/WHO-2019-nCoV-TB-care-2021.1

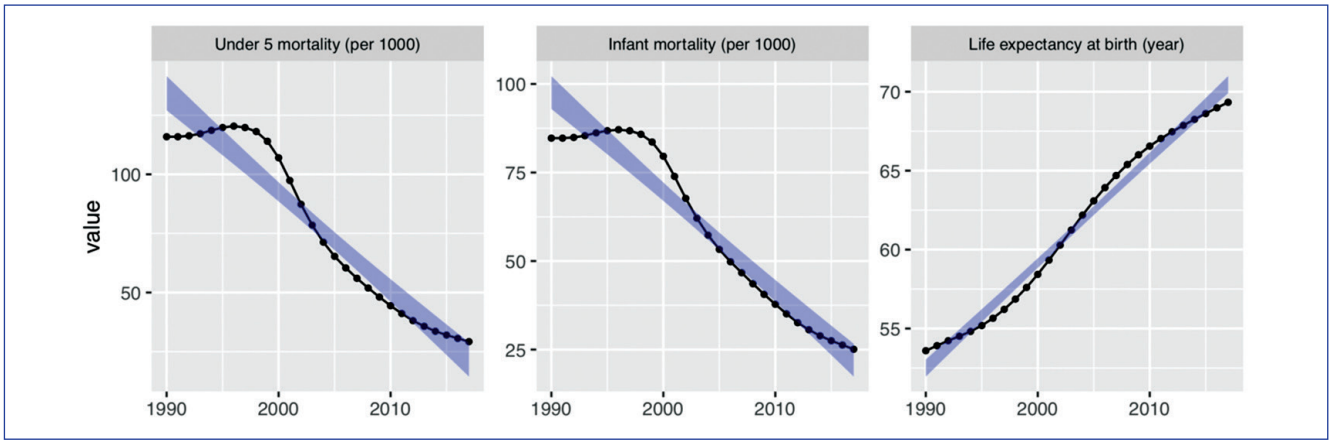
ANNEXES

ANNEX 1: TREND OF SELECTED SOCIO-ECONOMIC INDICATORS AND PREVALENCE OF TB RISK FACTORS IN CAMBODIA



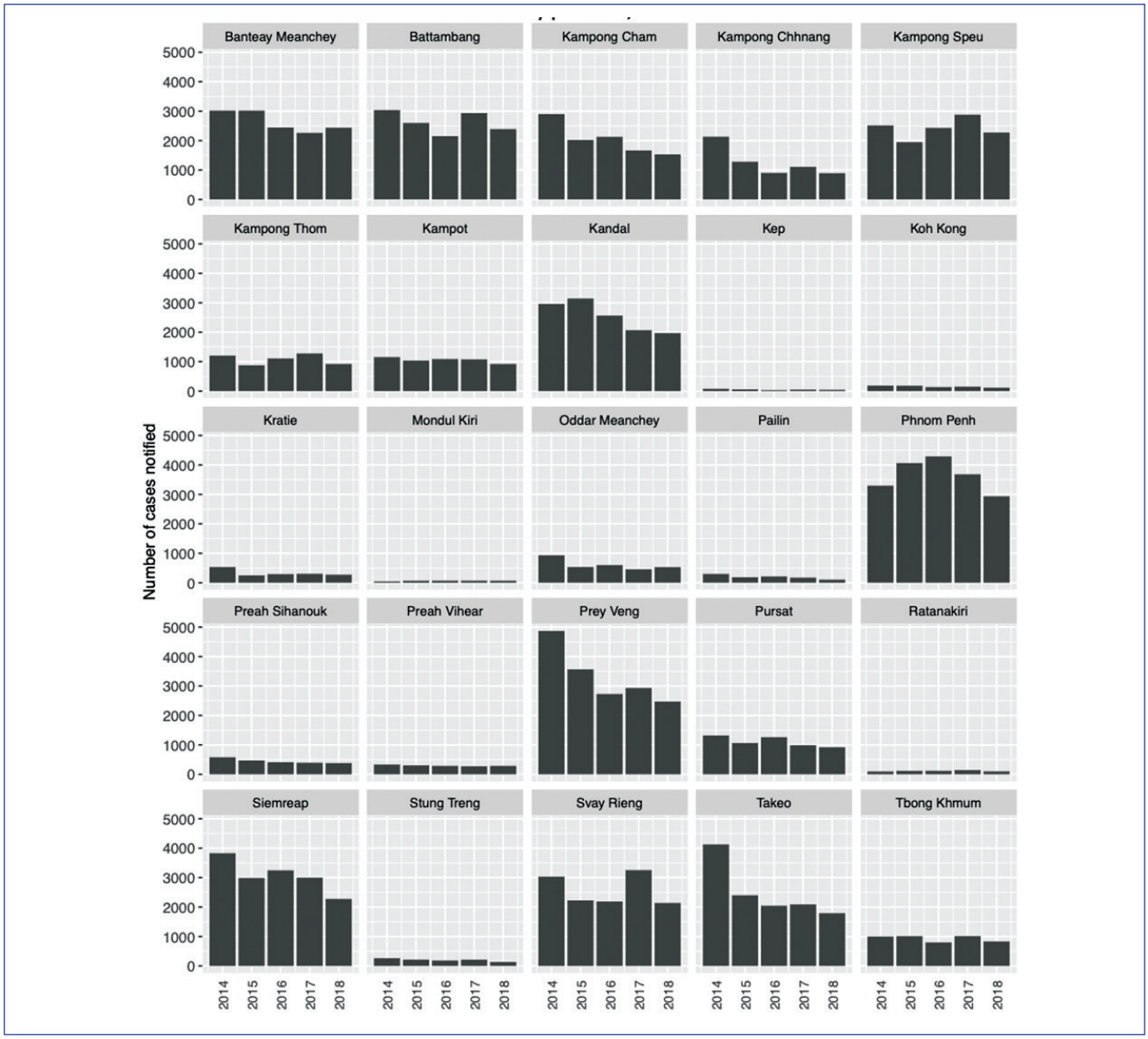
(Source: World Bank)

ANNEX 2: TREND OF KEY HEALTH INDICATORS IN CAMBODIA, 1990-2017



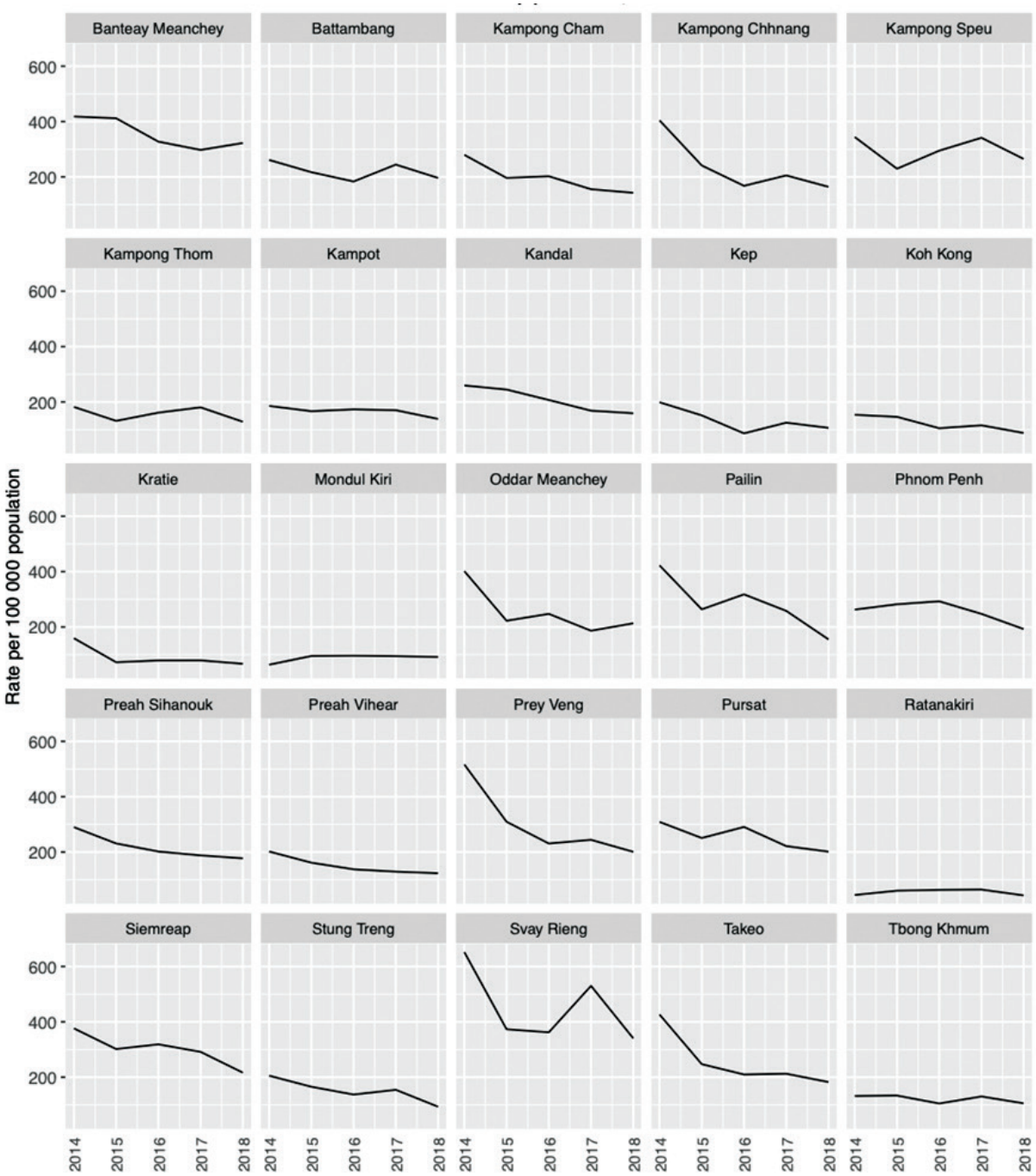
(Source: World Bank)

ANNEX 3: CASE NOTIFICATION OF ALL FORMS OF TB BY PROVINCE, 2014-2018



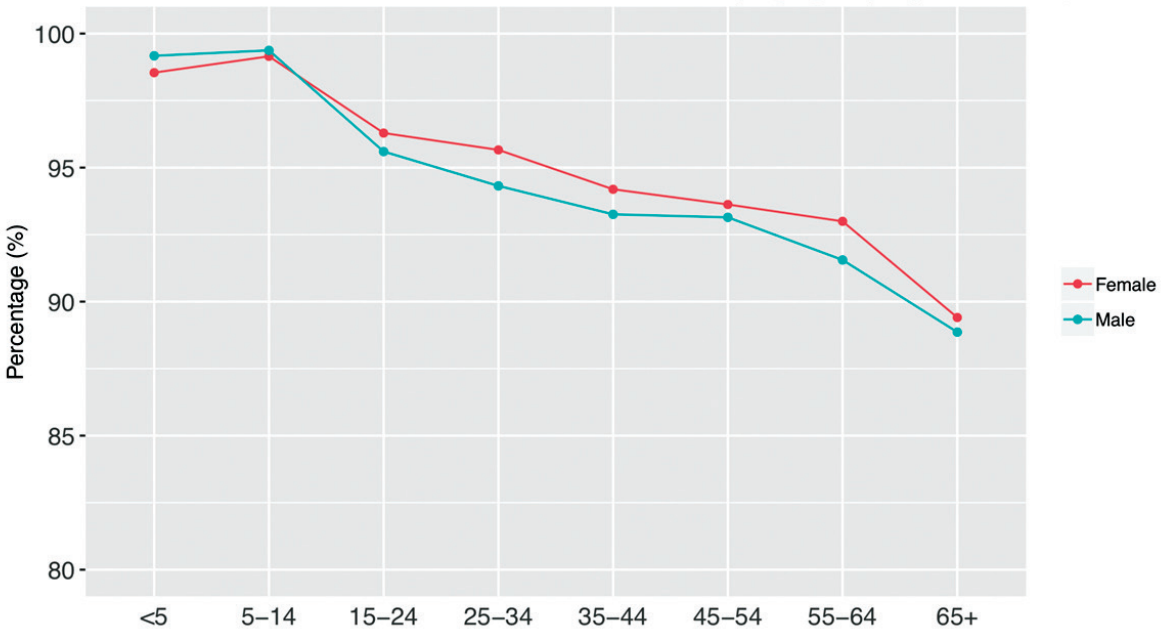
(Source: CENAT aggregate excel database)

ANNEX 4: CASE NOTIFICATION RATE OF ALL FORMS OF TB BY PROVINCE, 2014-2018



(Source: CENAT aggregate excel database)

ANNEX 5: TREATMENT SUCCESS RATE FOR ALL FORMS OF DS-TB BY AGE GROUP BY SEX, 2018 (N=18916)



(Source: CENAT TB-MIS case-based data, 2018. Excluding patients still on treatment)

ANNEX 6: DETAILS OF GAPS IN THE THEMATIC AREAS

Gaps in Basic DOTS services (Thematic area: 1.1)

1. Maintain existing TB services in all health facilities, including those in the hospitals, HCs and health posts
2. Expanding comprehensive TB services namely hospital linkage to cover all RHs

Gaps in Labs and Diagnostic services (Thematic area: 1.2)

1. Cambodia has 87 health facilities out of the 118 facilities that must have X-Ray machines, with at least one X-ray machine, out of which it is functional in 75. The target of installing at least 90 X-ray machines stated in the NSP 2014 -2020 has not been reached. There are facilities with broken or very old X-ray machines. Furthermore, maintenance is not frequently done.
2. Xpert is available at 64 sites in the country. Despite the large Xpert network expansion, not all OD's have a facility with Xpert installed yet. Geographical accessibility gaps to Xpert MTB/RIF testing exist in some areas of Cambodia.
3. Most clinicians do not send specimens from sputum smear positive patients for Xpert MTB/RIF testing, which are eligible for Xpert testing according to the national guidelines.
4. Xpert proficiency testing (PT) panels, are routinely done but only in six labs. New-lot testing of cartridges is not national policy. A digital data system (such as GxAlert) could be of great help for quality monitoring and improvement, but is not in place.

5. On-site maintenance, repairs and supervision for Xpert MTB/RIF testing is currently managed by the central-level CENAT staff, and not the Provincial TB lab supervisor. There is no Local Service Provider agreement. This system is reaching its limits due to limitations of available budget and time of dedicated staff at CENAT and requires specific attention, especially with a further expansion of Xpert laboratories.

6. While great progress has been made to expand access to FL- and SL-DST, FL-LPA testing, which is available in Institute Pasteur Cambodia (Phnom Penh), is not ordered and used e.g. for clinical decision-making for the 9-month regimen.

7. Phenotypic DST to the new/newly repurposed drugs (Bdq, Dlm, Lzd, Cfz) has not yet been implemented, although the drugs are already in use for TB treatment. The lead time for liquid culture (here BD MGIT) reagent supply is challenging, i.e. the most recent order will take about a year to deliver.

8. Challenges are experienced in the repair of broken equipment in culture laboratories. While this did not yet lead to a service interruption, this is a very big concern for lab staff safety.

9. A comprehensive specimen transport system is available in only 46 of 102 OD's, while in the remaining ones, only specimen for presumptive MDR TB cases are transported for Xpert MTB/RIF testing, which limits its accessibility in more than half of the OD's.

Gaps in Active Case Finding (Thematic area: 1.3)

10. ACF interventions are limited to only 12 ODs due to funding constraints. Coverage of community screening is a main challenge as is the loss within the screening and testing cascade. Only a small proportion of people identified seem to participate in active screening sessions.

11. There are only a few mobile x-ray units in the country available for ACF activities and Chest X-ray is not used routinely to screen high risk populations.

12. CI is not mainstreamed to all ODs (46/102) despite the effectiveness of the approach. Further, although a comprehensive dataset on CI activities was collected by the implementers, only a subset was reported upwards, thus limiting the analysis at the national level.

13. Most (exception: selected prisons) active case finding interventions have been externally funded, time-limited projects implemented by NGOs which raised issues related to uninterrupted continuity and sustainability.

14. There has been a rapid turnover of project staff necessitating continuous in-service training.

15. No specific attention is being paid to the significantly distinct problem of urban TB after the one ACF project

16. Little is known of the patient pathway other than that the private practitioners are preferred health care providers for most people including the poor and people with symptoms suggestive of TB.

17. There is no cross-border notification of TB cases.

18. There is no referral mechanism for cross-border migrant for TB treatment.

19. Safe migration training for migrants to Thailand is limited to Poipet check point centre.

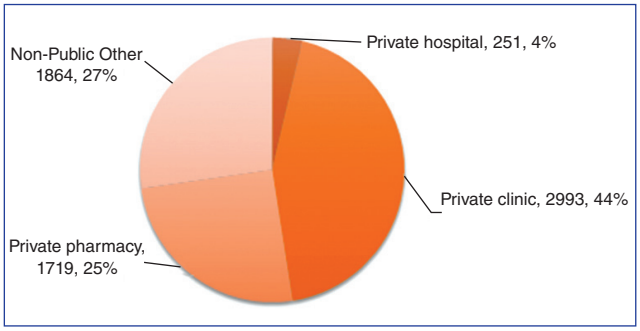
Gaps in involving the private providers (Thematic area: 2.2)

20. A large and increasing proportion of people including the poor and those with symptoms suggestive of TB (64%) first approach the private sector – pharmacies and practitioners – and often receive some investigations and non-specific treatment potentially contributing to diagnostic delays and additional costs of care for TB patients.

21. There have been limited efforts to engage private pharmacies and practitioners and there is no framework for engaging the private providers in the National TB response. The expectation all along has been that private pharmacies and practitioners should promptly identify and refer all people with TB symptoms to the public sector for both diagnosis and treatment of TB which is not done currently.

22. Private providers do not receive adequate on-the-job training in-service training or any in-practice training on TB management.

23. There have not been any attempts to engage private practitioners in tasks other than referring their patients to the public sector TB programme, for example, allowing them to diagnose TB by referral to public or private laboratories or to follow up on patients on appropriate TB treatment.



24. TB case notification is not mandatory in Cambodia.

Gaps in PMDT: (Thematic area: 2.3)

1. Integration of PMDT services into provincial TB control programmes: An SOP "Piloting a Sustainable PMDT Model within Provincial TB Control Programme 2019" has been developed and a plan endorsed by the CENAT in 2018 but implementation has been deferred until at least 2020.

2. Low RR/MDR-TB case detection rate: The WHO estimates suggest a significant under-detection of more than 85% of RR/MDR-TB cases. A study on MDR case finding in Cambodia published in 2014 suggested that a key factor contributing to missed cases related to health workers not correctly identifying previously treated patients and misclassifying them as "new". Poor quality sputum specimens and transport delays were cited as the next most important factor.

3. Low case notifications of MDR-TB in children (<15 years): Only 6 cases of RR/MDR-TB were reported in children under 15 years for the 2006-2019 period (0.54%). It is likely that some children will develop MDR-TB in relation to household contact and that some cases are going undetected due to limited awareness among health workers. In children who have been close contacts of an MDR-TB case within 12 months the diagnosis should be made on strong clinical suspicion.

4. Insufficient Xpert coverage: Xpert MTB/RIF has been rolled out to 64 sites and there is a need to cover all ODs. Presently the use of Xpert is limited to presumptive RR/MDR-TB cases and recently all new smear positive cases and all HIV infected cases.

5. No restriction on availability of fluoroquinolone over the counter: From 2018 to 2019 there has been an increase in the rate of fluoroquinolone resistance from 6% (8/128) to 16% (9/58) as identified by second line LPA for Xpert RR-TB cases. There is ready availability of over the counter moxifloxacin.

6. Steady decline in rates of treatment success and increased case mortality (2011-2016): The rate of treatment success reached 86% in 2011, however in association with scale-up, a progressive decline occurred over the next 5 years to a low of 65% in 2016. In addition of concern is the deaths for the same period rose from 7% to 25%. The reasons for the adverse trend likely reflect a combination of factors: a) the impact from the increased burden of cases from scale-up requiring a long duration of treatment associated with less than optimal monitoring, and b) the characteristics of the cases – severe disease related to delayed presentation, malnutrition, older age, HIV co-infection.

7. Reliance on CHC and limited pool of MDR-TB expertise: The limited pool of MDR-TB expertise is a challenge to the provision of quality care for this more complex group of patients. An adequately trained workforce with sufficient supervision and support will be critical if PMDT services are to be further integrated into provincial TB control programmes.

Gaps in TB HIV services: (Thematic area 2.4)

1. The TWG for TB/HIV is not functioning optimally.
2. There is a relatively low uptake/level of implementation of LTBI treatment/Isoniazid Preventive Therapy (IPT) at higher level facilities.
3. Updated SOP for treatment of LTBI to be being finalized to reflect the latest (2018) WHO recommendations
4. LTBI treatment outcomes are not reported despite being captured in the HIV/AIDS database.
5. There are discrepancies in the data reported by CENAT and NCHADS
6. At hospitals HIV testing for TB patients is not integrated in the TB services.
7. There is suboptimal capacity of HCW in diagnosing and preventing TB in PLHIV.

Gaps in TB and Diabetes Mellitus comorbidity services: (Thematic area 2.5)

1. The prevalence of TB among DM patient is six times as high as in the general population (URC assessment)
2. Only 7 ODs in 5 provinces are currently implementing TB/DM collaborative activities
3. There is no formal coordination platform for TB/DM collaborative activities. The TOR of the TWG for TB/DM has not been finalized; The focal point person for TB/DM collaborative activities is not officially nominated
4. There is no collaborative framework for care and control of TB and DM
5. There is limited recording and reporting of TB/DM screening
6. Active screening implementation is affected by the unavailability of the new triage/screening forms in some hospitals, as well as workload of staff and staff shortages
7. The functioning of referral system is suboptimal, with limited feedback on referrals from HC to RH
8. Connection and coordination between private and public sectors on TB/DM collaboration is weak
9. There is insufficient effort on TB/DM awareness raising in the community and DM patients have limited knowledge on TB risk factors

Gaps in Childhood TB services (Thematic area 2.6)

1. The childhood TB TWG is not functioning optimally: TORs are not available and only ad hoc meetings are held; there is no childhood TB focal point in CENAT.
2. Almost 50% of young children are not diagnosed and/or not reported, while there appears to be a degree of over-diagnosis in the older age group over 5 years. Overall, 19.7% of all TB cases notified were children aged 0-14 in 2017, and 18.7% in 2018.
3. There is still a high proportion of EPTB (94% in the 0-4 age group, and 89% in the 5-14 age group in 2018, compared to an expected proportion between 20 and 30%) in almost all provinces, mainly peripheral lymphadenopathy.

4. Childhood TB guidelines are fragmented and in need of further updating (2008 guidelines and childhood TB chapter in 2016 TB technical guideline). 2013 separate algorithms may not be optimally used by clinicians. Although 2019 training materials include Xpert as initial diagnostic test for children, these are not yet widely rolled-out.
5. There is limited access to CXR for children and paediatric specimens are not routinely collected.
6. The module on TB-MIS on TB preventive treatment currently does not capture LTBI treatment outcome.
7. Incomplete roll-out of training on childhood TB and new child-friendly Fixed-Dose Combinations (FDCs) to ensure correct administration at all levels.
8. Incomplete coverage of contact investigation with limited linkage to LTBI treatment provision; Low numbers of adults with bacteriologically confirmed pulmonary TB affect contact investigation and may lead to missed opportunities for provision of LTBI treatment and case detection among children.
9. Limited coordination between ACF outreach activities and laboratory Xpert capacity.
10. Low acceptance rates for IPT in children in some ODs.
11. Some (Kantha Bopha)Hospitals do not adhere to national TB guidance and do not report to CENAT.
12. Inadequate linkages exist with the MNCH programme and other programmes.
13. Although transport cost for the poor are covered through the health equity fund, up and down-referrals are difficult to track.

Gaps in TB prevention - Latent TB Infection treatment (Thematic area 3.1) and Infection control TB Control (TB-IC) and Vaccines (Thematic area 3.2)

1. Delayed diagnosis and limitations in TB and MDR-TB case detection enhance TB transmission and have been detailed in other sections.
2. TB-IC activities are currently not funded, and TB-IC measures are not adequately and systematically implemented. There is evidence of mixing up of TB and presumptive TB patients with other patients in RHs.
3. Limited training and resources for infection control measures
4. Limited staff training in TB Infection control has occurred. Resources including personal protective equipment and IC materials remain limited.
5. Health Care Worker Safety is often neglected
6. There is no information on staff rates of TB and no annual screening among health care workers. In some places visited, staff either did not wear N95 masks or were wearing double surgical masks. Respirator fit-checking has not been implemented to check suitability of N95 masks.

Gaps in Human Resources for TB services (thematic area 4.1)

1. An adequate and competent health workforce with requisite skills-set need to be in place if a comprehensive and holistic TB response envisaged under the End TB Strategy is to be implemented and committed national targets are to be achieved. A thorough analysis to assess HR needs to End TB in Cambodia has not been undertaken.

2. HR issues identified are related largely to staff adequacy to implement comprehensive tasks related to TB diagnosis, treatment, prevention and monitoring; staff competence and motivation to sustain quality services, implement innovative approaches and make analysis and use of routinely collected data; frequent staff turnover outpacing training and retraining opportunities; and incentives available (or unavailable) to staff working on TB.

3. Delivery of TB services at the ground level is dependent considerably on voluntary services offered especially by community volunteers of the VHSGs. Incentivizing and formalizing this voluntary work force may need to be considered given the long-term nature of the TB response.

4. The current medical training curriculum in Cambodia mainly covers TB epidemiology. Management of TB is covered under in-service training for public sector physicians. Private sector doctors who receive a large proportion of presumptive TB cases do not receive any in-practice training in TB care.

Gaps in TB Financing and other resources (thematic area 4.2)

1. Government financing of the TB response has increased significantly in the last five years: Commitment to boosting investment in TB is reflected in an increase in government spending on TB from US$ 3.6 million in 2014 to US$ 4.9 million in 2018, equal to a 36% increase. The government's share of TB spending also increased; from 28% in 2014 to 32% in 2018.

2. TB services have been incorporated in the benefit package of Health Equity Funds: TB services were added to the HEF benefit package in 2018 using CENAT guidelines and protocols. The PCA will reimburse providers in the public sector for TB services to poor HEF beneficiaries, including consultation, investigation, treatment, counseling, and follow-up appointments, at HC and hospital level, and reimbursement. HEF beneficiaries with TB will be reimbursed for transportation and food costs for patients who are hospitalized, and a funeral allowance for patients who died at the hospital or a HC.

3. The financing gap is projected to increase to meet current and future NSP targets: Based on modeling for the TB investment case , resource needs are estimated to increase from US$ 24.4 million in 2019 to US$ 26.2 million in 2023. Funding for TB from the government and donors is expected to remain stable; US$ 11.7 million in 2019 and US$ 11.6 million in 2023. This will result in a considerable financing gap of US$ 14.6 million in 2023, which represents more than half (56%) of the required resources. It should be noted that the TB investment case estimates are approximate.

4. Continued dependency on external funding creates challenges to sustainability: External donors financed more than two-thirds (68%) of the TB response in 2018. This creates challenges to long-term planning and may threaten the sustainability of the TB programme.

5. The economic impact of TB on patients and households is considerable: Almost 15 000 households are estimated to have suffered catastrophic spending in 2019 as a result of incurring direct (including transportation costs) and indirect (loss of wages for patients and caretakers) costs of seeking treatment for TB.

6. TB services are not comprehensively included in the National Quality Enhancing Monitoring Tools: The National Quality Enhancing Monitoring Tools (NQEMT) and other monitoring tools have an important influence of how financing is distributed between health priorities and health facilities. TB is not comprehensively reflected in these processes, which leads to reduced financial incentives for health workers to deliver TB interventions.

Gaps in Procurement and supplies management Drugs and commodities (Thematic area 4.3)

1. Update the NTP manual, related standard operating protocols (with checklists) and related posters

2. Procure, maintain and insure 4WD vehicles for central level

3. Procure, maintain and insure motorcycles of central level, provincial and OD levels
4. Procure office supplies for national and provincial and OD offices
5. Print routine recording and reporting formats (every year)
6. Procure Office furniture for National office
7. Procure fuel for daily operation at National level
8. Procure electronic equipment including air conditioner, refrigerator, etc.
9. Procure medical equipment and materials for NH and RH (not yet costing)
10. Building maintenance at National level

Gaps in Surveillance, Monitoring and Evaluations (Thematic area 5.1)

1. Although nationwide coverage of TB-MIS was achieved, the TB-MIS data is not yet considered official due to some discrepancies found between paper-based quarterly reports (entered into Excel) and data reported from TB-MIS. Both paper-based and electronic-based systems are running in parallel, which has increased workload of OD supervisors and resulted in some delay in uploading data in TB-MIS.
2. The number of staffs trained on TB-MIS appears to be insufficient, and a high rate of staff turnover continues to pose a risk for continuity of the system. Currently there is limited use of the TB-MIS case-based data even at national level partially due to insufficient staff capacity to analyse case-based datasets and unavailability of a dashboard in the system.
3. Although multiple sources of evidence indicate that the burden of TB is falling in Cambodia, there is some degree of uncertainty regarding the recent TB burden because it has been already 7-8 years since the second prevalence survey was conducted in 2011-2012. Updated epidemiological evidence is required to better understand the current TB epidemiology and help strategize how and where to find the missing TB cases.
4. A national TB patient cost survey was not yet conducted in Cambodia although a few studies on TB patient cost are available. Hence there is no baseline on the percentage of TB-affected families facing catastrophic costs due to TB, which is one of the three major targets of the End TB Strategy.

Gaps in research and innovation (Thematic area 5.2)

1. A platform for program staff to engage with multidisciplinary research stakeholders for communicating research gaps or leveraging resources is absent
2. No strong link between strategic information (M&E findings, reports from operational research, and JPR) and research priorities
3. Limited capacity in research
4. No national research guideline and standard operating procedures in place
5. Limited articulation of existing research findings and interpretation into national programs and policies
6. Insufficient domestic funding for health research (including TB) and limited investment from international funders.

CITATIONS – NSP 2021 2030

1. The End TB Strategy. https://www.who.int/tb/strategy/end-tb/en/
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