



Bending the Curve



**World Health
Organization**

REGIONAL OFFICE FOR

South-East Asia



Ending TB

Invest Now or Pay Later



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Contents

- 6 Abbreviations
 - 7 Foreword
 - 8 Why South-East Asia must invest in ending tuberculosis
 - 12 Resources needed to implement commitments to end TB in South-East Asia
 - 16 The resource gap for ending TB
 - 19 Closing the resource gap to end TB: Sources of funding
 - 23 The costs of inaction
- 

Abbreviations

EFO	Enhanced Facility Operations
GDP	Gross Domestic Product
GNI	Gross National Income
LE	Laboratory Expansion
MDR TB	multidrug-resistant tuberculosis
MDG	Millennium Development Goals
NSP	national strategic plan
NTP	national TB control programme
PSE	Private Sector Engagement
RN	resource need
SEA	South-East Asia
SEAR	South-East Asia Region (of WHO)
SDG	Sustainable Development Goals
TB	tuberculosis
WHO	World Health Organization
UHA	Universal Health Coverage
UN	United Nations

Foreword

Unprecedented gains have been made in the global fight against tuberculosis since the turn of the millennium. The total number of new cases of TB has shown a decline between 2000 and 2015, helping the world and the South-East Asia Region to achieve the target of reversing the spread of the disease set in the Millennium Development Goals framework. Treatment success rates have been sustained at a high level in most countries. However, despite these gains, TB remains a major health challenge with a high death toll and loss of productivity in the WHO South-East Asia (SEA) Region. Inadequate treatment has resulted in the new threat of multidrug-resistant TB.

What does it take to fight a debilitating health problem like TB? You need potent and effective drugs, affordable and accessible diagnostic tools, political will to tackle the problem and a workable strategy for all to follow. Fortunately, we have all these elements either in place or within our reach. All you need is a final push.

Newer and more effective diagnostic, prevention and treatment tools are in the pipeline and will become available over the next few years. A strategic framework for action exists in the form of the Global Plan to End TB 2016–2020, developed by the Stop TB Partnership.

Political awareness about the need to address the TB epidemic is very high, and above all, there is strong political commitment to end TB as a public health threat in a time-bound manner in the SEA Region. The Regional Strategic Plan to End TB 2016–2020 envisages a region “free of TB with

zero death, disease and suffering due to TB”. At the landmark ministerial meeting in 2017 in New Delhi, all 11 Member States of the SEA Region endorsed a Call for Action to End TB, and take the necessary steps to translate the call into reality.

When all necessary building blocks of ending TB are in place, what is holding us back? One of the fundamental reasons the progress on TB remains slow in the Region is underfinancing of TB programmes. If we want to achieve results, we will have to find necessary resources and explore innovative avenues. It is possible to do so.

Now is the time to take advantage of this unique constellation of events to lay the foundation to end TB as a public health threat once and for all in South-East Asia. This document provides a simple yet powerful analysis on resources needed, the resource gaps and the ways of financing the TB programmes.



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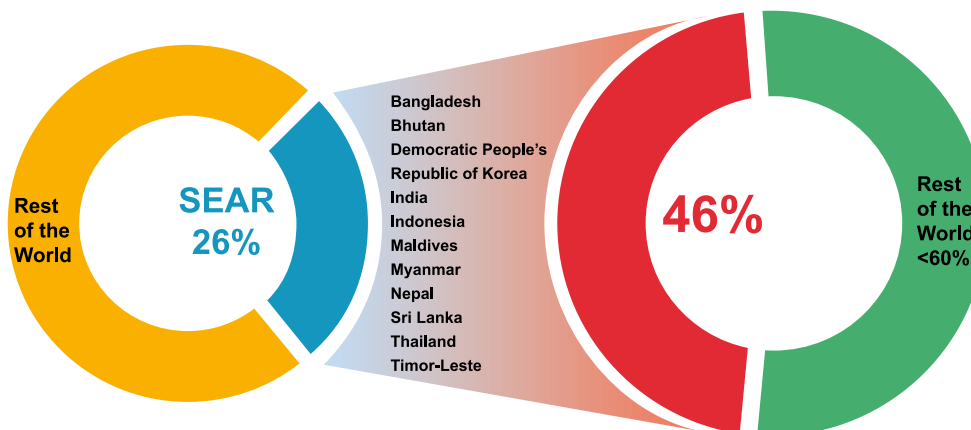
Why South-East Asia must invest in ending tuberculosis

Disproportionate burden in SEA Region

Tuberculosis (TB) is now the leading infectious killer in the world, having surpassed HIV, and is among the top 10 causes of death worldwide.¹ In 2016, 1.7 million people worldwide died of TB, including 400 000 TB deaths among people living with HIV.¹ The Sustainable Development Goals call for action to end the TB epidemic as a public health threat by 2030, but the pace of progress currently is too slow to achieve this milestone.


The world's heaviest TB burden is in the WHO South-East Asia Region. Home to about 26% of the global population, South-East Asia accounts for nearly half of all new TB cases worldwide (Figure 1) and for nearly 41% of TB deaths globally.¹ Recent analyses confirm that the TB burden in South-East Asia is much greater than previously understood. Six countries in the region – Bangladesh, DPR Korea, India, Indonesia, Myanmar and Thailand

SEAR bears nearly half the global burden of TB disease while it is home to 26% of the global population



– are among the 30 high-burden TB countries globally. India and Indonesia alone account for 37% of the global TB burden, while Timor-Leste and DPR Korea have among the world's highest population-based TB case rates. The highest population-based TB death rates in South-East Asia are in Bangladesh (40), DPR Korea (43), Indonesia (42), Myanmar (47) and Timor-Leste (100 per 100000 population).¹

TB is the number one cause of disability-adjusted life years (DALYs) lost among people in South-East Asia between the ages 15 and 49: the productive core of any successful economy, about 10 million each year in this group². TB is proving to be a great drain on productivity in some of the fastest growing economies in the region.



***Pathway to reach the goals is known:
time for action***

The cruel irony of these haunting facts and statistics is that modern science has provided the tools needed to bring TB under control. TB is curable, and effective treatment interrupts the chain of transmission. New diagnostic platforms have made the diagnosis of TB much easier. Moreover, TB treatment is inexpensive and highly effective. In contrast to earlier times, when little energy was apparent in the search for even better TB-fighting tools, the pipeline for new TB technologies is active and crowded. It is anticipated that these efforts are likely to yield new regimens, vaccines and diagnostics, further buttressing regional capacity to drive down rates of TB transmission, morbidity and mortality.

The strategic way forward is also clear. The Global Plan to End TB 2016–2020,³ developed

by the Stop TB Partnership, has recommended that countries pursue the 90-(90)-90 targets. The 90-(90)-90 targets set in the Global Plan to End TB 2016–2020 should guide countries to root out TB.

These provide that 90% of all people who need TB treatment (including 90% of people in key populations) will receive treatment services, and that 90% treatment success will be achieved. In the report, the Stop TB Partnership has also warned that a five-year delay in funding TB research and development could result in an additional 8.4 million TB cases and 1.4 million TB deaths by 2030, equating to over US\$ 5 billion in excess treatment costs.³ As one of the leading drivers of AMR, TB will contribute to even greater economic losses, which could exceed US\$ 100

trillion by 2050 in the absence of concerted action today.⁴ Thus, complacency comes with a cost and, given the scale of these costs, the least expensive option for governments in a

region already struggling with multiple health challenges is to invest in TB control both politically and financially.

Strong support from the top: renewed political commitment

In South-East Asia, there is clear political will to take the fight against TB to the next level, with the ultimate aim of ending the TB epidemic as a public health threat in the Region. The Regional Strategic Plan to End TB 2016–2020 envisages a region “free of TB with zero death, disease and suffering due to TB” in alignment with the Sustainable Development Goals and the WHO End TB strategy.⁵

The plan calls for concerted action to advance universal access to high-quality TB care in the context of strong health systems; reduce TB-related human suffering and socioeconomic burden; protect vulnerable populations from TB (including in the context of HIV infection) and drug-resistant TB; expedite the introduction of new TB-fighting tools as they emerge; and protect and promote human rights in TB prevention, care and control.

At a landmark ministerial meeting in 2017, all 11 Member States of the WHO South-East Asia Region endorsed a Call for Action to End TB (Figure 2). Agreed action steps include leadership by the Head of State for national TB



Figure 2: Delhi call for Action

control initiatives, full funding for TB programmes, universal access to high-quality TB services, patient-centred socioeconomic support, creation of a fund to catalyse the translation of regional innovation to implementation, and intensified efforts to mobilize resources for TB programmes.

In translating these political commitments into concrete action and results, decision-makers across South-East Asia should recognize that spending on TB prevention and care is an investment in the Region’s further, accelerated development.

TB a disease of marginalised and investing on it is cost-effective



TB is a particular problem for poor families.

TB vulnerability is inextricably linked with poverty, overcrowding and malnutrition. TB disease deepens poverty, as affected households must mobilize funds for treatment often by taking loans or selling household items. As MDR-TB involves more extensive and longer treatment courses than drug-susceptible TB, households with multidrug resistance are at particularly greater risk of incurring catastrophic costs.

In India, it is estimated that over three quarters of TB patients are from households with an income of less than a dollar a day per person, but it costs about US\$ 145 for treatment (nearly half a year's income for one person). The average sufferer (across all social groups) also loses about US\$ 500 in income.⁶ Treating TB can be highly cost-effective. Between 1997 and 2006, scaling up of TB control saved 1.3 million lives and a total of over 29 million life-years of disability or death. The overall increase in economic well-being was valued at US\$ 88 billion for the 10-year period, and each dollar spent generated US\$ 115 worth of benefits.⁶

In Thailand, Kamolratanakul et al (1999) estimated the total percentage of patients reporting any out-of-pocket-expenditure before diagnosis was 38.6%, 46.7% and 53.6% across low to high relative income groups. The mean values for out-of-pocket expenditure prior to diagnosis were \$37.63, \$152.55 and \$43.92 for the three patient

income levels.⁷

On average, an individual in the middle of their productive years who receives effective TB treatment and cure has life extended by an additional 20 years, contributing to the preservation of the family and enabling workers to remain productive members of society. According to the Copenhagen Consensus, every dollar invested in averting TB deaths returns on an average US\$ 43 dollars in economic benefits.⁸

Studies in Bangladesh show that investments of just about US\$ 15 would buy an extra year of life for most TB sufferers. Valuing each year at US\$ 1000 means that every dollar spent on TB control pays back thirtyfold.⁹

**53 MILLION
LIVES SAVED**

through effective diagnosis and
treatment between 2000 and 2016
globally¹

Hence ending TB will benefit most the poorest. This is also the basis of the universal health coverage strategy: reaching out to those at the end of the queue

Resources needed to implement commitments to end TB in South-East Asia

A fundamental reason why progress on TB remains slow in South-East Asia, notwithstanding the existence of powerfully effective tools and strategies, is that TB control efforts are under-resourced. If the Region is to keep its commitment to end TB as a public health threat, additional financial resources will be essential.

To project the resources needed to end the TB epidemic as a public health threat in the

Region, modelling exercise was undertaken¹⁰ by WHO SEARO in collaboration with experts from Imperial College, London, Public Health Foundation of India and eSYS private limited. It was assumed that current investments will continue, as these present investments, while inadequate, will be essential if the Region hopes to build on the infrastructure that has been established. These were considered as baseline investments.

In addition to these baseline investments, the modelling exercise examined the costs of three sets of actions required to reach the End TB global targets for 2030'

- 1** **Strengthen** existing health-care services. Given the diverse, fragmented arrangements for health-care service delivery in the Region, additional investments will be needed to coordinate the delivery of TB care, increase the quality of care provided outside the national TB programme (NTP), and ensure notification of TB cases in the non-NTP sector. Additional steps are required to strengthen public TB services, to improve accuracy of reported data on diagnosis, ensure early confirmation of drug susceptibility status, and bolster treatment outcomes among people diagnosed with TB.

2

Accelerate TB case detection. Timely detection and diagnosis are required to avoid further transmission. While some gap between detection of symptoms and confirmation of diagnosis is inevitable, action is required to expedite to the greatest extent possible the early identification of TB cases. This will require tailored actions across the region to vary widely, as the factors that delay early diagnosis vary among settings.

3

Prevent TB transmission. Prevention measures that will be needed include provision of a transmission-blocking vaccine, infection control in the household and the community (in addition to infection control in health-care settings) and use of preventive therapy, coupled with a biomarker test to identify cases of TB infection that are most likely to progress to active disease.

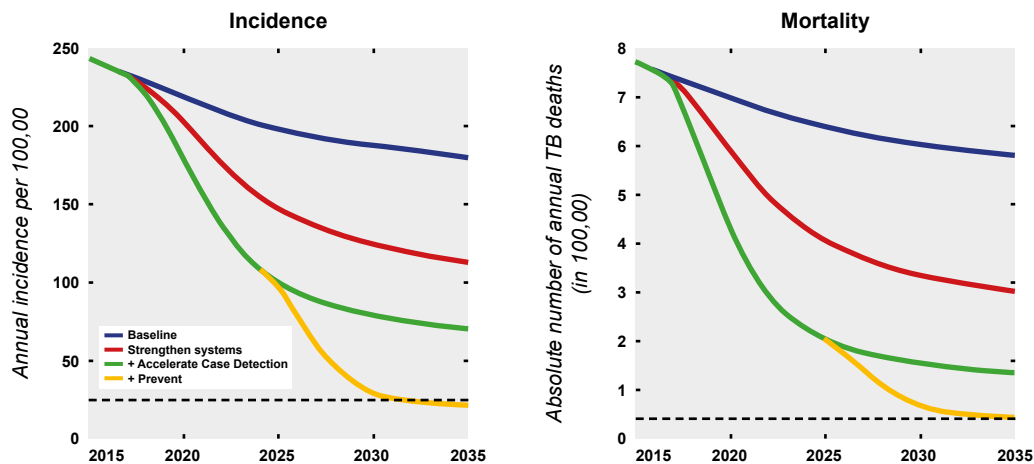


Figure 3: Impact of three packages of interventions on TB incidence and mortality in SEA Region

Figure illustrates the need to invest in a comprehensive approach.¹⁰ While strengthening existing systems is critical, systems strengthening alone will lead to only modest gains in combatting TB. Only if systems strengthening is combined with accelerated case detection and scaled-up TB prevention will it be possible to achieve the regional goal to end TB.

Interventions are cost effective

All these standard TB control interventions – e.g. private sector engagement, laboratory investments, roll-out of new diagnostic tools, TB treatment, contact tracing, and community referral – are highly cost-effective (Figure 4). This is true in both high-burden and low-burden settings. The modelling exercise has indicated that standard TB control interventions such as private sector engagement, rollout of new diagnostic tests, treatment, contact tracing and community referral will prove to be highly cost-effective in both low and high burden settings (Figure 4).

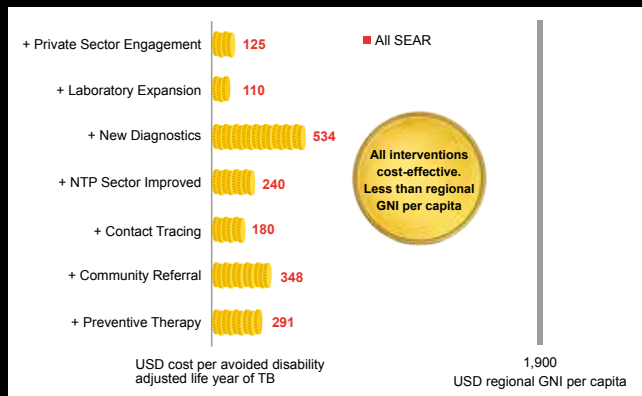


Figure 4: Incremental Cost-Effectiveness Ratios for Modelled Interventions over 2017-2030 for All SEAR Countries

Source: Modelling exercise.¹⁰

Each of the sets of actions is associated with interventions that the model has cost.

Rather than merely adding together costs of individual interventions, the model takes account of the ways in which roll-out of one intervention may affect the cost of other interventions. For example, increasing diagnosis and scaling up preventive therapy are projected to reduce treatment costs.

Adoption of a comprehensive approach combining all three sets of priority actions and the above-described series of interventions would require spending of US\$ 0.80 per capita across all countries in the South-East Asia Region (Table 1). Total resources required during the period 2017–2030 for implementation of the strengthen and accelerate approach to end TB amount to US\$ 26.5 billion, or an average of US\$ 1.9 billion per year. With the availability of preventive tools, this amount will actually reduce because of expected dramatic fall in incidence. Total resources needed to lay the foundation to end TB vary by country.

Table 1: Programme resource needs (RN) projected estimates, 2017–2030

ALL SEAR	INCREASED PROGRAMME PREVENTION COST	INCREASED PROGRAMME DIAGNOSIS COST	INCREASED PROGRAMME TREATMENT COST	INCREASED TOTAL PROGRAMME	TOTAL RN: INCREASED PROGRAMME + BASE COSTS
US\$ Millions Baseline = 8,432	US\$ millions	US\$ millions	US\$ millions	US\$ millions	US\$ millions
Enhanced Facility Operations (EFO)					
+ Private Sector Engagement (PSE)	0.0	1,261.4	683.4	1,944.8	10,376.9
+ Laboratory Expansion (LE), PSE	0.0	1,164.7	849.5	2,014.2	10,446.2
+ New Diagnostics (ND), PSE, LE	0.0	3,463.3	4,635.5	8,098.8	16,530.9
+ NTP Treatment (NTP), PSE, LE, ND	0.0	2,832.7	4,475.3	7,307.9	15,740.0
Enhanced Community Operations (ECO) + EFO					
+ Contact Tracing (CT), PSE, LE, ND, NTP	0.0	6,528.0	4,421.0	10,949.0	19,381.0
+ Community Referral (CR), PSE, LE, ND, NTP, CT	0.0	13,775.7	4,322.1	18,097.8	26,529.9
+ Preventive (TST), PSE, LE, ND, NTP, CT, CR*	395.4	12,909.4	3,644.8	16,949.6	25,381.6

**The use of preventive strategy is expected to dramatically reduce the incidence. Use of such tool from 2025 onwards will reduce the total cost of three packages combined. However, such a tool is hypothetical for now.*



Implementation of the comprehensive approach to end TB will require that TB interventions account for 3.7% of all public health spending in the region*. Although financing for TB interventions must markedly increase if the region hopes to end the TB epidemic as a public health threat, needed resources nevertheless amount to a tiny fraction of gross national income. As strengthened TB interventions are folded into the national programme and achieve reductions in TB transmission and illness, TB-related costs (both as a percentage of public spending and as a proportion of GNI) are expected to decline.

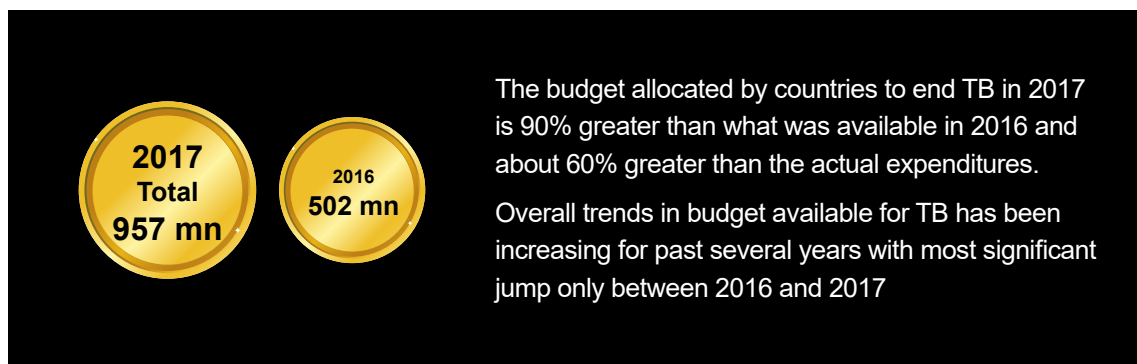
**Calculated from the public health spending figure taken from The World Bank open database.*

The resource gap for ending TB

In 2016, total funding for TB-related activities in South-East Asia amounted to US\$ 502.4 million. As both national population and TB burden vary considerably among the 11 Member States of the South-East Asia region, outlays for TB in 2016 also differed among countries. India accounted for more than half of all spending on TB in the region in 2016 (US\$ 245.2 million). The Global Fund to Fight AIDS, Tuberculosis and Malaria accounted for the largest share of total TB funding in 2016 (50%) followed by domestic resources (43%).* The balance between external and domestic funding for TB also varies among countries; while domestic spending on

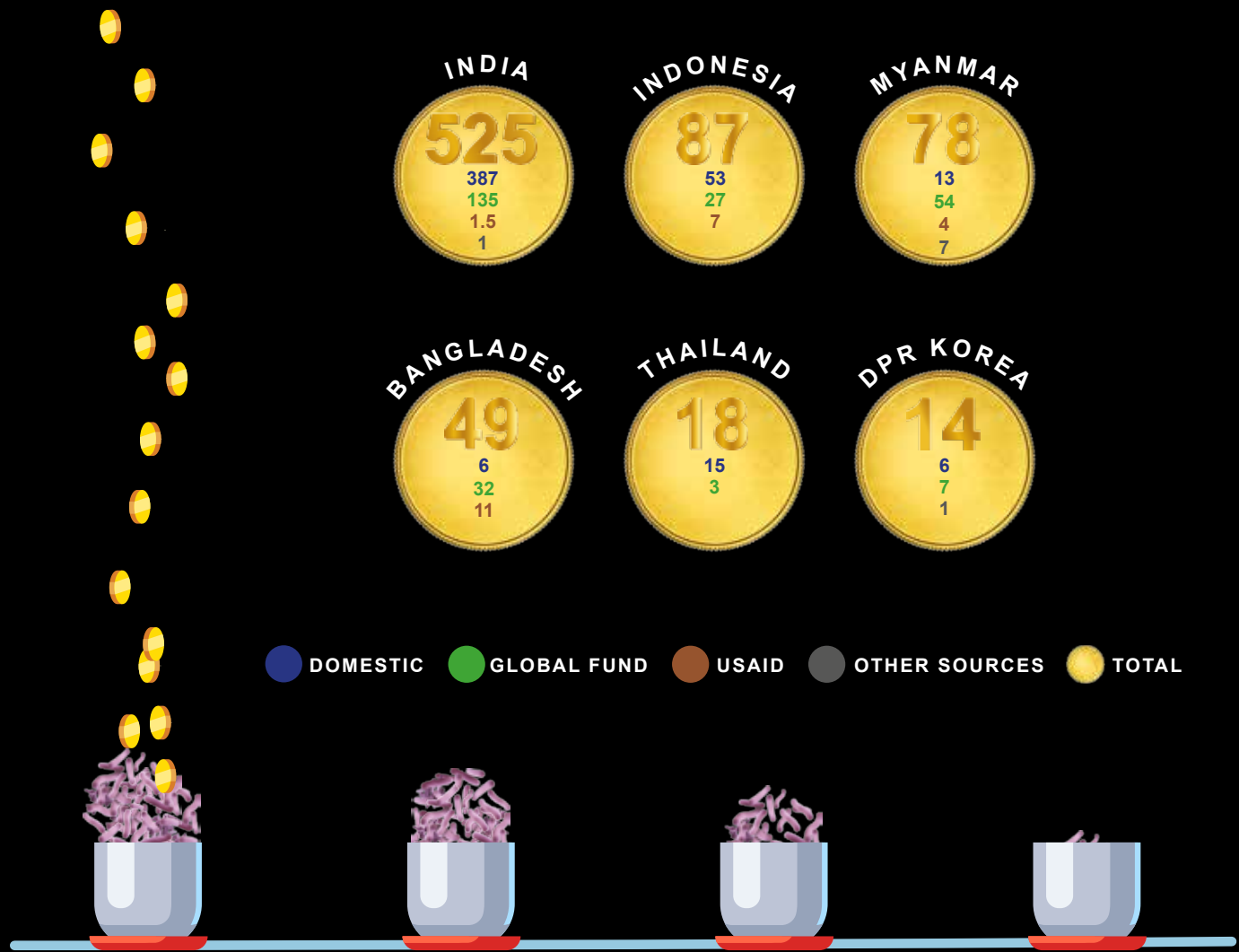
TB is substantially outweighed by TB-related international assistance in some countries (e.g., Bangladesh, Myanmar, Timor-Leste), domestic spending accounted in 2016 for all 100% of all TB funding in Maldives and 88% in Thailand. Altogether, TB spending amounts to US\$ 0.30 per capita for South-East Asia as a whole.

Figure 5 outlines the TB budget planned for 2017 by the 11 Member States. Given amounts mobilized for TB activities in 2016, it is projected that a substantial proportion of budgeted amounts for TB across the Region go unfunded.



**WHO Global TB Report 2017¹*

Figure 5: Current status of available budget (in US\$ - as reported to WHO in 2017) in millions



Source: WHO Global TB Report 2017¹

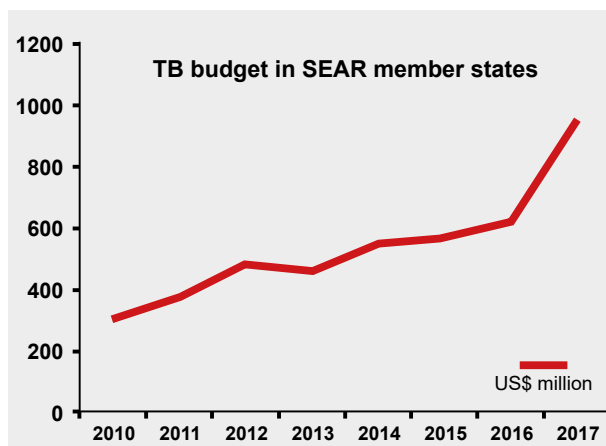


Figure 6: Trend of TB budget in SEAR Member states

The budget allocated by countries to end TB in 2017 is 90% greater than what was available in 2016 and the current reported availability of funding through various sources is 60% higher than what was available in 2016 (Figure 6).*

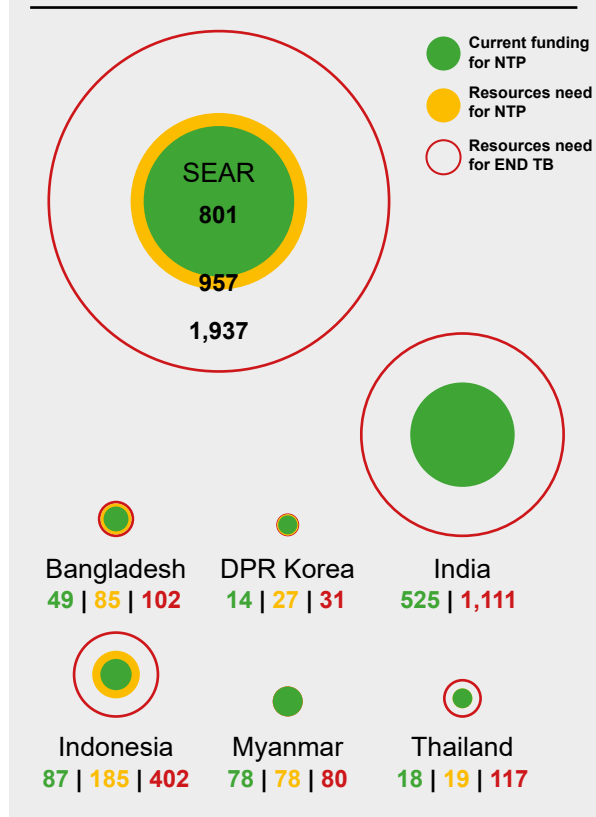
Overall trends in budget available for TB has been increasing for the past several years with the most significant jump observed only between 2016 and 2017.

Average baseline per capita spending on TB is US\$ 0.30 in South-East Asia, but this will need to rise to US\$ 0.80 in order to implement the comprehensive approach to end TB. The proportion of total public health spending devoted to TB must rise from 1.3% to 3.7%. Most countries in the Region will need to devote between 0.1% and 0.2% of Gross National Income (GNI) to implement the comprehensive set of interventions.¹⁰

Despite these increases, the funding gap against aspirational goal of ending TB remains (Table 7)

*Based on the data reported to WHO SEA Regional office (2017) by the member states

Figure 7: TB Funding gap (to end TB) in member states of SEA Region



Thus there is a gap of US\$ 156 million in the costed National Strategic Plans in the Region. However this masks the actual requirement gap for ending TB activities. The total needs are estimated at US\$ 1.9 billion making a total gap of about US\$ 1.3 billion in the Region.¹⁰

Closing the resource gap to end TB: Sources of funding

Front-loading investments in a comprehensive approach to TB is essential to seize the historic opportunity to end the TB epidemic as a public health threat in South-East Asia. Only by taking immediate steps to allocate substantial new resources to the TB fight will it be possible for the response to TB to overtake the epidemic itself.

While the Global Fund is the largest international funder of TB control activities, implementation of the comprehensive approach to end TB will require countries to explore and fully leverage other means of mobilizing needed resources. Especially in countries with heavy TB burden, diversifying the sources of funding for TB activities will be essential.

Beyond the Global Fund, several key sources of financing should be maximized:

Domestic financing

Domestic investments in TB interventions will need to be the cornerstone of regional efforts to close the TB resource gap and to ensure the long-term sustainability of TB programmes. A joint analysis by WHO and the Global Fund indicates that most high-burden countries in South-East Asia have the capacity to finance over 65% of required TB funding in 2014–2016 from domestic sources.

TB investments should be understood within the context of broader national investments

in health. As Table 2 demonstrates, both the amounts per capita invested in health as well as the proportion of health spending assumed by the public sector vary considerably among countries in the Region. Countries with low public-sector health spending (e.g., Bangladesh, India, Indonesia) should take steps to increase public investments in health. In addition to increasing total spending on health, countries should take steps to prioritize TB within constrained health budgets, taking account of its outsized health and development impact.

COUNTRIES	GNI PER CAPITA	HEALTH EXPENDITURE PER CAPITA	SHARE OF GOVERNMENT IN TOTAL HEALTH SPENDING (%)
HIGH BURDEN			
Bangladesh	1,190	31	27.9
DPR, Korea	1,000	NA	NA
India	1,600	75	30.0
Indonesia	3,440	99	37.8
Myanmar	1,160	20	45.9
Thailand	5,720	360	86.0
LOW BURDEN			
Bhutan	2,380	89	73.2
Maldives	6,950	1,165	78.3
Nepal	730	40	40.3
Sri Lanka	3,800	127	56.1
Timor Leste	2,180	57	90.4

Table 2: Per capita GNI, health spending and public spending on health, 2016¹¹

Several countries in the region (including Indonesia and Thailand) have large unfunded gaps in their TB control programme. TB control preparation might potentially benefit from the experience of India, which has successfully generated funding for TB (including from external sources such as the United States Agency for International Development) to reduce its unfunded portion of the TB budget (as per the National Strategic Plan) to zero.

Numerous paths exist to increase domestic investments in health. Countries can increase tax

revenues as a proportion of GDP, an approach that is especially appropriate for middle-income countries and countries experiencing rapid economic growth. As most countries in the Region have relatively low tax-GDP ratios,¹¹ raising these ratios would appear feasible if macroeconomic fundamentals are stable. Some countries (such as Nepal and Thailand) have successfully earmarked special taxes (on tobacco and alcohol products in the case of Nepal) for health initiatives.

Strengthened financial protection and pre-pooling

As countries in the Region move towards universal health coverage, insurance schemes can be an important source of health financing. To leverage these insurance schemes in the efforts to end TB, it is important to include TB-specific services and protections against

individual direct costs in essential health packages. Countries that are considering implementing or expanding health insurance schemes should take these steps with TB outcomes in mind.

Donor funding

Donor funding should remain an important source of funding for TB activities in low-income countries, such as Bangladesh, DPR Korea and Myanmar. The Global Fund alone provides more than 65% of international financing for TB and has disbursed more than US\$ 5.9 billion in TB-related assistance since 2002.¹² However, it is increasingly apparent that donor support alone will be insufficient to close the

TB resource gap, underscoring the need for additional, diversified sources of financing. In all cases, international development agencies should work in a coordinated manner with each other and with national governments to maximize the impact of assistance and to collaboratively identify new sources of financing.

Engagement of the private sector

While the balance between the public and private sectors in health-care delivery varies across South-East Asia, the private sector provides a substantial proportion of health services, including for TB, in many countries in the Region. Strategic engagement of private sector stakeholders (e.g., physicians, pharmacists, clinics, hospitals) in ways that

are consistent with national priorities has the potential to strengthen efforts to end TB, in both monetary and non-monetary terms. With sufficient joint planning, it is possible that a substantial portion of the load of the national TB programme could be assumed by the private sector.

 ***Innovative financing***

In addition to the Global Fund, which is itself an important example of innovative financing, other options exist to generate new funding for TB activities. For example, Development Impact Bonds, adapted from Social Impact Bonds, can involve “pay-for-success” projects in which partners engage with the public sector to implement an intervention to improve development outcomes. An investor would provide upfront

funding in the case of Development Impact Bonds, with the public sector passing a portion of the savings on to the investor. Restaurant or clothing chains or other private companies can join with the government to raise funds through the sale of merchandise, with proceeds earmarked for TB interventions. Other innovative approaches include airline levies, a marginal tax on financial transactions, and the like.

 ***Results-based financing***

Results-based financing aims to improve the efficiency and impact of resources, an especially important goal in resource-constrained environments. These

approaches have been successfully used in health settings in South-East Asia and in other parts of the world.

The costs of inaction

**WHAT COULD
BE ACHIEVED
WILL NEVER
BE ACHIEVED**

The benefits of ending TB now are going to be immense in terms of lives saved and productivity gains in SEA Region. Specifically, action now could avert 7.4 million deaths due to TB mortality, 44 million new cases and 1.72 billion DALYs. We will be deprived of these gains if there is no action today.¹⁰

Modelling indicates a clear correlation between amounts spent on TB interventions and the decline in TB incidence and mortality (Figure 8).¹⁰ As spending over baseline increases, progress accelerates towards the goal of reducing

both incidence and mortality by 90%. With new infections brought to such a low level, South-East Asia will have emerged victorious over TB, as the disease will no longer pose a public health threat in the region.

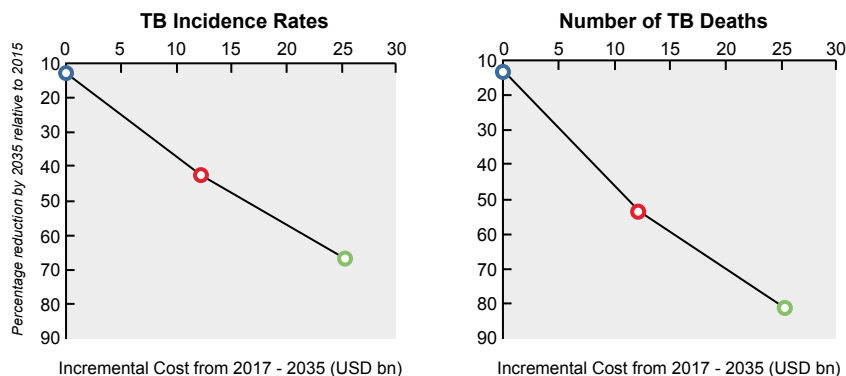


Figure 8: Percent reduction in incidence and mortality of TB vs incremental cost

By contrast, a failure to make the necessary investments would have catastrophic outcomes. As Figure 3 demonstrates, merely continuing existing TB programmes, without making additional investments, would mean that South-East Asia would make little progress over the

next two decades in reducing its TB burden.¹⁰ Continuation of the “business as usual” would cause the TB epidemic, already one of the most serious of all health and development challenges that South-East Asia faces, to remain as serious a threat in 2030 as it is currently.





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