Chapter 7: Resource Needs

SUMMARY

Increased investment in TB continues to be urgently needed. By fulfilling their UNHLM commitments to invest at least US$ 13 billion annually in TB prevention and care and increasing funding for TB research and development to US$ 2 billion annually, governments can put the world on track to end TB.

By financing the Global Plan’s investment scenario (2018-2022), countries will reach:

- the UNHLM treatment targets set for 2022,
- the End TB Strategy milestone of 2020 will be achieved a year later,
- the world will be back on track to achieve the 2025 milestones,
- and new tools from research and development will be on the horizon for the final battle to end TB by 2030.

Financing TB prevention and care: The return on investment for one US$ dollar spent on TB prevention and care is US$ 40 back. Meeting the full resource needs for 2018-2022 for TB care and prevention will lead to 40 million people treated for TB, including 3.5 million children and 1.5 million people with drug-resistant TB, and over 30 million people receiving TB preventive therapy. This will lead to 1.5 million fewer deaths due to TB and 48 million DALYs averted.

Financing TB research and development of new tools: Having new tools is essential to end TB. Fully meeting the resource needs for developing new tools will lead to development of the new diagnostics, new drugs and an effective vaccine which are needed to end the TB epidemic. The cost of inaction or delay in increasing funding for TB research and development will be approximately an additional 2 million people dying, an additional 40 million people developing TB and an additional 40 million DALYs lost (see Chapter 6 for additional discussion of the cost of inaction).

While the bulk of these investments should come from domestic resources and international donors, the mobilization of alternative funding sources – private sector funding, blended financing, loan buy-downs, philanthropy from high net worth individuals, social impact bonds, micro levies or taxes, and pooled donor trusts – could dramatically accelerate the pace of scale-up.

PRIORITY ACTIONS

To close the gap in funding for TB prevention and care the following priority actions need to be taken:

- The full replenishment of the Global Fund and use of all available tools to maximize funds for TB from the Global Fund to meet the ambitious UNHLM targets, which includes full disbursement of country allocations, expansion of catalytic funding and prioritization of portfolio optimization.
- The World Bank and other development banks should ensure that all instruments available for loans and grants to high TB burden countries are considered during negotiations on credit agreements in order to make funds available for TB, including blended finance mechanisms and loan buy-downs.
• National TB Programmes and Partners need to tap the full potential of social health insurance schemes, innovative funding and impact financing for TB.
• Heads of Governments of all high TB burden countries should increase domestic funding for TB.
• Partners and advocates should engage with strategically important high-burden middle-income countries to double or triple their domestic budgets for TB.
• BRICS and upper-middle income countries should increase their domestic resources for TB to fully meet the increased funding needs to achieve the UNHLM treatment targets.
• Additional external funding needs to be mobilized and made available to low income countries and selected lower-middle income countries who have limited fiscal space to increase their domestic budgets. In such countries a total of TKXXX billion USD will be needed over the period 2020 to 2022.
• Eastern-European and Central Asian governments should explore financing a significant share of the expansion of TB services through cost savings within existing TB budgets: by decentralizing TB care, sharply reducing the number of people with TB who are hospitalized and reducing hospitalization times.
• Develop investment cases for TB at country level using modelling and costing projections to inform national strategic plans (NSPs), advocacy for resource mobilization and resource allocations.
• Seek ways to improve the efficiency of TB programme implementation without reducing quality.

For closing the funding gap on research and development of new tools there needs to be urgent actions in these areas:
• Recognition by the global community that funding for TB research and development is a shared responsibility. Countries should contribute at least 0.1% of their research funding for TB.
• BRICS: As countries that are home to half of the world’s TB burden with strong research and development capacity, substantially increase funding for TB R&D.
• Increase support for TB R&D from pooled funding mechanisms such as the European and Developing Countries Clinical Trials Partnership and the Global Health Innovative Technology Fund.
• Tap innovative financing mechanisms, private sector funding and start-up financing mechanisms to promote and fund new tools development.

Investment requirements to achieve the UN HLM funding targets

A significant increase in resources for both current interventions and development of new tools is needed in order to reach the TB implementation targets that governments committed to reaching at the UN High Level Meeting on tuberculosis. The returns on this investment will be dramatic – both in human and economic terms.

Between 2018 and 2022, a total of US$ 65 billion is needed for providing TB prevention and care, and at least US$ 10 billion is needed for R&D for new TB diagnostics, medicines and at least one vaccine. Fig. 7.1 shows the resource needs at global level for all countries, the
available funding if the current trend of funding continues without further increase and the funding gap as a result of this.


Table 7.1 shows the year-wise resource needs (2018-2022) for TB prevention and care for the world as a whole and for different groups of countries. These resources are needed to reach the UNHLM treatment targets for 2022 and to put the world back on track to end TB. Breaking the global resource needs down, in non-OECD countries US$ 61 billion is needed, while in countries eligible for Global Fund financing US$ 44 billion is needed over the 2018-2022 period.

Table 7.1: Resource Needs at Global level, by Income Status, Global Fund Eligible countries, Global Plan country settings, WHO regions and BRICS membership

<table>
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<tbody>
<tr>
<td><strong>GLOBAL TOTAL</strong></td>
<td></td>
<td></td>
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<tr>
<td>Total (Global, including OECD countries)</td>
<td>9.51</td>
<td>11.65</td>
<td>13.46</td>
<td>14.76</td>
<td>15.62</td>
<td>65.00</td>
</tr>
<tr>
<td>Total (Global, excluding OECD countries)</td>
<td>8.80</td>
<td>10.94</td>
<td>12.79</td>
<td>14.12</td>
<td>15.02</td>
<td>61.68</td>
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<tr>
<td><strong>BY INCOME STATUS</strong></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Low income</td>
<td>1.27</td>
<td>1.65</td>
<td>2.10</td>
<td>2.36</td>
<td>2.55</td>
<td>9.93</td>
</tr>
<tr>
<td>Lower middle income</td>
<td>2.99</td>
<td>4.16</td>
<td>5.21</td>
<td>6.02</td>
<td>6.56</td>
<td>24.95</td>
</tr>
<tr>
<td>Upper middle income</td>
<td>3.02</td>
<td>3.48</td>
<td>3.71</td>
<td>3.84</td>
<td>3.91</td>
<td>17.96</td>
</tr>
<tr>
<td>High income</td>
<td>2.23</td>
<td>2.36</td>
<td>2.44</td>
<td>2.54</td>
<td>2.59</td>
<td>12.16</td>
</tr>
<tr>
<td><strong>GFATM ELIGIBLE COUNTRIES, BY INCOME STATUS</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low income</td>
<td>1.27</td>
<td>1.65</td>
<td>2.10</td>
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<tr>
<td>Lower middle income</td>
<td>2.99</td>
<td>4.16</td>
<td>5.21</td>
<td>6.02</td>
<td>6.56</td>
<td>24.95</td>
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</tbody>
</table>
Fig. 7.2 shows the disaggregation of total funding needs for 2018-2022 by cost categories, and Fig 7.3 shows the cost categories by year.
First Line Programme Costs include management and supervision, TB programme human resources, training, policy development, meetings, purchase of office equipment/vehicles, construction of buildings for TB programme, routine surveillance, advocacy and communication, public-private mix activities, community engagement, active case finding, infection control, and management of TB drug procurement and distribution.

Second Line Programme Costs include management of drug-resistant TB services, renovation of MDR-TB wards, Green Light Committee related activities, loss to follow up and contact tracing, and palliative care.

The general health system cost category includes hospital out-patient consultations, hospitalization and ambulatory care costs, together with distribution costs related to TB commodities.

TB-HIV collaboration includes TB-HIV coordinating bodies, joint training and planning, HIV testing for people with TB, TB screening for people living with HIV, preventive therapy, and joint TB/HIV information and education. It does not include ART which is in HIV programme budgets.

TB Preventive Therapy cost category includes drugs as well as TB infection testing for a proportion of adult contacts only. It is assumed that isoniazid-based older regimen will be replaced gradually with Rifapentine-based newer regimen. The cost of contact investigation and exclusion of active TB before starting preventive therapy is not included here as they are already included under first line programme costs and TB-HIV collaboration.

The cost category of Enablers includes a group of activities that provide an enabling environment for rapid scale-up of TB prevention and care. These Enablers include advocacy and communication, community system strengthening and engagement, private sector TB
care, patient support and digital technologies. Although some of these activities are included by several countries under the cost category Programme Costs it is insufficiently budgeted. Therefore, the proportion of budget for these enablers were taken from best practice country examples and applied to other countries, or to countries in similar settings (e.g. private sector TB care was applied to only countries with a large private sector TB care).

The annual estimated resource needs go up from 2018 to 2022 because of two reasons: first, due to the scale up of numbers of people to be diagnosed and treated, and second because several unit cost categories are expected to grow as described in Annex 6. The fastest growing unit cost category is laboratories because of anticipated changes in diagnostic technology and anticipated larger numbers of people to received TB testing.
Costing approach and limitations

Resource needs were estimated from WHO’s TB financial database which has more than 100 countries reporting budgets and the health system costs estimated separately by WHO. From this data unit costs were derived for cost categories, adjusted for future trends based on expert opinion and applied to the treatment scale up targets from the TIME model. Unit costs were imputed for countries which did not report to WHO using learner algorithms as part of the modelling exercise. The detailed methodology for estimating the resource needs for reaching the UN HLM targets is presented in Annex 6.¹

The costing approach is subject to certain limitations. The manner in which the different cost categories are bundled together and reported by WHO is a constraint which does not allow cost categories to be broken down in other ways. Furthermore, the costing for the period 2018-2022 does not factor in the introduction of future new diagnostics or drugs that are currently not available.

The Global Plan recommends more robust collection of financial data from national TB programmes, national health accounts, and international development partners, along with increased investment in tracking and improving unit costs, costs of new interventions, and domestic investments. In addition, the different cost categories should be disaggregated at the point of data collection for a better understanding of the financial implications.

Governments should carry out country-level modelling of the TB epidemic and develop detailed costing projections to be used to inform national strategic plans (NSPs) and Investment Cases for ending TB. NTPs and TB advocates can use these NSPs and Investment Cases to advocate for increased TB funding aligned with national budgeting processes and for donor engagement.

What will the Global Plan achieve?

Patients treated, lives saved and progress towards ending TB

Meeting the full resource needs for 2018-2022 for TB care and prevention will lead to:

- 40 million people treated for TB, including
- 3.5 million children and
- 1.5 million people with drug-resistant TB, and
- over 30 million people receiving TB preventive therapy.
- 1.5 million additional lives saved due to TB and
- 48 million DALYs averted. (see Annex 6 for details on DALYs averted)

New diagnostics, drugs and a vaccine in time to end TB

Fully meeting the resource needs for developing new tools will lead to:

¹ http://www.stoptb.org/global/plan/plan2/annexes.asp
• development of the new diagnostics, new drugs and an effective vaccine which are needed to end the TB epidemic.

The cost of inaction or delay in increasing funding for TB research and development will be:
• additional 2 million people dying,
• additional 40 million people developing TB and
• additional 40 million DALYs lost
(see Chapter 6 for additional discussion of the cost of inaction).

Return on investment (ROI)

When a TB programme provides people with effective prevention and treatment – preventing death and disability – these people receive spillover economic benefits. First, it is possible that the prevention of TB may save household expenditures on health care. Second, when TB is prevented (or effectively treated), household members are able to continue or resume productive work.

A return-on-investment analysis was performed for the Global Plan 2018-2022, based on the methodology of the Lancet Commission on Investing in Health (Jamison 2013) but adapted to new guidelines for benefit cost analysis following the work with The Global Fund to estimate the Return on Investment of the new replenishment cycle 2020-2022. The methodology is described in annex 6.

Table 7.2 summarises the net economic benefit and the Return-on-Investment for every $ spent on the Global Plan by country group and income status.

The Return-on-Investment for every US$ spent on TB prevention and care as proposed in the Global Plan 2018-2022 is US$ 40.4. The net economic benefit of the investment is estimated at US$ 740 billion.

An ROI of 1:40 makes TB prevention and care scale up under the Global Plan 2018-2022 one of the best investments under the SDGs.

Table 7.2: Return-on-Investment and net economic benefit of the TB Global Plan 2018-2022

<table>
<thead>
<tr>
<th>ROI (per USD invested) relative to BAU</th>
<th>Net-Benefit, 2018-2022 (in billions US$)</th>
<th>ROI, 2018-2022, for every US$ invested</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global</td>
<td>$736,000</td>
<td>$40.4</td>
</tr>
<tr>
<td>By Country Group</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High MDR burden, Centralized Care</td>
<td>$19,000</td>
<td>$7.0</td>
</tr>
<tr>
<td>High TB-HIV, SADEC</td>
<td>$100,000</td>
<td>$56.1</td>
</tr>
<tr>
<td>High TB-HIV, outside SADEC</td>
<td>$64,000</td>
<td>$15.0</td>
</tr>
<tr>
<td>Moderate Burden, COE</td>
<td>$3,000</td>
<td>$3.0</td>
</tr>
</tbody>
</table>
Box 7.1 Permanent health systems gains as a result of investing in TB

Investments in TB strengthen health systems permanently, increasing their ability to fight other diseases and outbreaks. This strengthening can be achieved in several ways.

First, investing in early and effective TB diagnosis builds lasting diagnostic, laboratory and case-finding capacity in the health system. TB symptoms are not specific and occur in multiple diseases, and tools such as microscopes and X-rays have manifold uses beyond TB. Efforts to improve early TB case-finding therefore positively impact the early detection of other conditions, particularly those affecting the lungs.

TB laboratory networks are known for establishing standardization and quality assurance processes that can positively impact the quality of public health laboratories across the board. The Global Plan calls for the integration of TB laboratory and diagnostics into health systems and improved access through specimen transportation. It envisages well-integrated TB programmes as a conduit for strengthening health systems for early disease diagnosis.

Second, investments that strengthen contact investigation for TB will create a system that can be reliably called upon during infectious disease outbreaks, such as for Ebola, which demands the rapid mobilization of both health facilities and communities to conduct extensive contact investigations.

Third, fighting TB requires investment in airborne infection control practices. Such investment builds the capacity of health systems to quickly respond to other airborne infection outbreaks such as influenza and respiratory syndromes.

Fourth, as TB treatment requires lengthy interaction with patients and communities, TB investments can strengthen overall engagement with these communities to the benefit of other health programmes.
Fifth, TB treatment demands strong and reliable drug supply chain systems. Further improvements in these systems, and greater integration of these systems into the wider health systems of countries, directly benefits health systems seeking to improve supply chains for other diseases.

Finally, costs besides commodity-based or direct costs make up a large proportion of the costs. These costs involve laboratory strengthening, the improvement of health system components, and human resource development – all of which have the potential to make a lasting, positive impact on the overall strength of health systems.

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The urgent need for funding for research and development

The TB epidemic cannot end with the tools available today. Countries can achieve dramatic gains by scaling up to meet the UN HLM targets. However, after 2025, existing tools will have a diminishing impact and will no longer be sufficient to bend the epidemic curve of TB steeply enough to meet the milestones of the End TB Strategy. Every day the epidemic continues, the human and economic costs only increase. To avert these costs, it is imperative that we urgently and rapidly scale up investments in new diagnostics, drug regimens and vaccines today. Delaying that investment by even one year could result in billions of dollars in additional treatment costs alone. TB research and development, access and optimization of new TB tools are discussed in detail in Chapter 6.

Sources of funding for the Global Plan

The “global public goods”[2] nature of most of the TB investments makes it a priority for funding with a wide societal benefit. Investment in TB gives one of the best returns of investments among all SDG targets[3]. The Copenhagen Consensus Center estimates that 1USD invested in TB gives 43 USD back. The Global Plan investment scenario gives a similar return on investment of 40 USD per dollar invested, as described above in this chapter.

The Stop TB Board in its meeting in January 2019, issued a Call for Action.[4] Recognizing the need for increased resources and the serious funding gap to reach the UN TB targets for 2022, the Board called for:

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[2] “Global public goods” are defined as those goods that are both “non-rival” (i.e. anyone can consume the good without affecting the utility derived from its consumption) and “non-excludable” (i.e. once the good is produced, no one can be prevented from enjoying it). World Bank (http://web.worldbank.org/WEBSITE/EXTERNAL/EXTOED/EXTANNREVDEVEFFE/EXT2008ANNREVDEVEFFE/0, contentMDK:21903365~menuPK:5397143~pagePK:64829573~piPK:64829550~theSitePK:4683541, 00.html). WHO (http://www.who.int/trade/glossary/story041/en/).


• The full replenishment of the Global Fund and use of all available tools to maximize funds for TB from the Global Fund to meet the ambitious UNHLM targets, which includes full disbursement of country allocations, expansion of catalytic funding, prioritization of portfolio optimization, etc;

• That Heads of Governments of all high TB burden countries increase domestic funding for TB, and that the Stop TB Partnership and its partners engage with strategically important high-burden middle-income countries to double or triple their domestic budgets for TB;

• That the World Bank and other development banks ensure that all instruments available for loans and grants to high TB burden countries are considered during negotiations on credit agreements in order to make funds available for TB, including blended finance mechanisms;

• For the Stop TB Partnership to work with partners to tap the full potential of social health insurance schemes, innovative funding and impact financing for TB;

• Recognition by the global community that funding for TB research and development (R&D) is a shared responsibility. As such, the Board supports the proposal to develop specific targets for R&D into TB for each country, recognizing that different countries might choose to support local or regional research initiatives;

• That the Stop TB Partnership form a "TB Finance Task Team" to work on traditional and innovative options available to increase funding for TB particularly in the context of Universal Health Coverage to identify opportunities and provide strategic guidance to the Board and Secretariat for resource mobilization for the global TB response;

There are three broad sources of funding for implementation and research: domestic funding, external funding and innovative financing.

**Domestic Financing**

For the high-income countries, BRICS countries and upper middle-income countries, nearly all TB investments should flow from domestic resources. Russia and other eastern European countries may be able to finance a significant share of the expansion of TB services through cost savings within historical TB budgets: by continuing the current trend of people-centered TB care, reducing the number of patients that are hospitalized, and reducing hospitalization times. Other middle-income, high-burden countries could rationalize their TB activities by better integrating TB care into general health services. However, a paradigm shift focused on ending TB will only be possible if countries are prepared to dedicate special budget lines, as South Africa has done. India has recently quadrupled its domestic budget for TB driven by high level political commitment and the vision of the Prime Minister to end TB in the country 5 years ahead of the global target. Such dramatic increases (doubling, tripling or quadrupling) in domestic budgets for TB are needed in several middle income and high TB burden countries.

The economic realities are very different in low-income countries. Most of the high-burden countries in this subset remain heavily dependent on external financing for their TB programmes. Moreover, large parts of TB budgets currently go unfunded in many of these countries. These countries will need increased external funding support, including grants and loans at concessionary rates from development banks.
In order to determine the right blend of funding sources to finance the efforts outlined in this Plan, the circumstances of each country need to be taken into account, as these vary widely. It is important to track increases in domestic funding through better systems of financial reporting from countries, especially through national health accounts where they exist.

**Increasing the efficiency of domestic TB programmes**

The choices facing TB policy makers and programme implementers are daunting because of a persistently high burden of disease, limited resources, and the need to compare emerging technologies with cheaper (but older and less effective) approaches.

This challenge requires a shift towards allocative efficiency, i.e. the maximization of health outcomes using the most cost-effective mix of health interventions, delivered to target populations in the highest priority areas via streamlined service delivery. Procurement of drugs and diagnostic is an area where domestic budgets can be more efficient by procuring quality assured products at good prices from the Global Drug Facility of Stop TB Partnership. The UNHLM political declaration therefore encourages all countries to use the Global Drug Facility.

The Global Plan urges countries to use analytical approaches that incorporate data on the cost and effectiveness of interventions in real-world applications in order to estimate how the burden of TB can be addressed using available resources. It also encourages countries to seek ways to improve the efficiency of TB programme implementation without reducing quality.

**Social health insurance**

Social health insurance (SHI) is a mechanism by which funds within countries can be raised and pooled to finance health services.\(^5\) In European SHI systems, employees and their employers contribute to a package of services available to the insured and his or her dependents. Many governments also subsidize these systems to ensure sustainability.

These contributions programmes are designed to ensure that the rich contribute more than the poor and that the sick do not pay more than the healthy. In addition, some governments have extended coverage to people who cannot pay, such as the poor and unemployed, by meeting or subsidizing their contributions.

This approach has benefits in the context of TB. As SHI schemes generally charge higher rates for coverage to wealthier people (who are less likely to have TB) and often provide free coverage to poorer people (who are more likely to have TB), SHI mechanisms can help to reduce health inequalities, avoid catastrophic costs for people with TB, and redistribute funds towards TB – increasing the overall levels of funding available for fighting TB.

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A number of countries are planning to introduce and/or scale up SHI as part of their efforts to attain UHC. TB programmes must seize the opportunity to include TB care in the package of coverage provided by SHI. As much as possible, all forms of TB managed by both public and private health systems should be brought under the coverage of SHI schemes. Efforts should also be made to ensure that SHI schemes are inclusive and provide coverage to key populations, such as migrants.

For financing UHC several countries are changing their health financing mechanisms by introduction of Strategic Purchasing of services and a range of Provider Payment Mechanisms with or without SHI. TB programmes need to take active part in these discussions in order to benefit from such health financing approaches.

International Financing

Fig. 7.4 provides an illustration of the need for increased international funding in Global Fund eligible countries. It shows the funds that are anticipated from domestic sources, the Global Fund, and other external sources, as well as the additional funding that countries will require over and above these sources.

Given that the figures for domestic funding are based on the optimistic forecast scenarios prepared by the Global Fund, it is clear that there is a significant and increasing need for additional contributions from the Global Fund and from other international sources. Without such additional funding, the 2022 targets will not be met.

For Global Fund-eligible countries, the total resource need for the Global Fund funding cycle 2020-2022 is US$ 36 billion. The optimistic scenario of increased domestic funding, along with continued external funding at current levels, will provide up to US$ 16 billion, which leaves an additional funding requirement of US$ 20 billion that needs to be mobilized.
Loans from Development Banks, including Loan Buy Downs and converting depts into grants:

World Bank and other Regional Development Banks provide loans to countries which if used smartly can make substantial resources available for TB. Such loans have been used by countries to fund TB programmes since several years. More recently innovative approaches have been used by blending loans and grants from different sources which makes such borrowings more attractive to countries. One such approach is to use grants from Global Fund, bilateral donors or private sector to pay for the interest of loans taken by countries from the World Bank or Regional Development Banks. This is often referred to as “loan buy-down”. An example is the loan buy-down for India TB programme where Govt. of India accessed a World Bank loan of 500 billion USD for TB and the interest amounting to about 40 million USD was paid by the Global Fund. In low income countries another approach of converting loans into grants could also be implemented.

High Net Worth Individuals and The Giving Pledge

The Giving Pledge is a commitment by the world’s wealthiest individuals and families to dedicate the majority of their wealth to philanthropy. By 2019, 204 people have pledged and their pledges total over US$500 billion. It is a hitherto untapped source of funding for TB.

The Role of Innovative Financing In The Fight Against TB

Global health has a strong track record in developing innovative financing mechanisms. While still primarily backed by traditional donors, the Global Fund and UNITAID, for example, have developed innovative approaches to mobilizing, pooling, channeling, allocating and implementing resources in order to direct large amounts of funding rapidly to low-income and middle-income countries.6

These mechanisms will continue to play a key role in the fight against TB. The Global Fund alone contributes nearly 70% of international financing.7 But, there is a need to cultivate funding from non-traditional donors.

Impact Bonds

One instrument that may have the potential to secure additional funding is the impact bond. This is a financial scheme whereby investors pay in advance for interventions in order to achieve agreed-upon results. Then, they work with delivery organizations to ensure that those results are

achieved. Outcome funders (governments and/or donors) make payments to investors if the interventions succeed, with the degree of returns linked to the level of success of the results achieved. In this sense, impact bonds are like other results-based approaches, but with upfront capital. This ensures finance at affordable rates for service providers. There are two main types of impact bonds: Social impact bonds (SIBs) are typically implemented on the scale of a city or district. Development impact bonds (DIBs) are typically implemented on the scale of a country or significant region of a country.

In the context of TB programming, impact bonds could encourage investors to provide upfront capital to support the efforts of various service providers to improve TB diagnosis and treatment in high-burden communities.

These activities would have both social and financial benefits. The social impact would be generated from the reduced burden of disease and the increased productivity of a population with fewer active TB cases. Governments and companies providing TB care (for example in mining communities) would realize financial benefits through the reduced costs incurred in treating patients. The government would also benefit from the increased tax revenues generated from a more economically productive population. These savings would form part of the capital that would be paid back to investors.⁸

**Blended finance**

Blended finance is another framework that has the potential to increase the funding available for TB programmes and R&D. As the name suggests, this approach facilitates the blending of public and private capital to finance development goals.

Its principal aim is to unlock investment from the private sector. Typically, clinical trials for new tools (e.g. TB tests) constitute a high-risk activity with no guaranteed financial returns for a company. Blended finance seeks to reduce that risk by providing public sector and philanthropic funding to defray programme costs – such as technical support for study and intervention design – that a company would not be able to meet. The approach therefore has the potential to leverage private sector investment, innovation and expertise for projects that would otherwise be left on the shelf.

**Micro levies/taxes**

Taxes and micro levies on consumer goods can also generate resources for global health. The most cited example is a small tax on airline ticket purchases. Started in 2006 in France, the tax has now spread to Cameroon, Chile, Congo, Madagascar, Mali, Mauritius, Niger, and South Korea. The funds raised support UNITAID in purchasing treatments for HIV, tuberculosis and malaria. From a tax of around US$ 1 for economy-class tickets and US$ 40 for business-class seats, as of 2019 UNITAID manages a health project portfolio of US$ 1.3 billion.⁹ There remain

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numerous other opportunities in the areas of extractive industry, processing, consumption and finance where such taxes could be levied.

**Pooled donor trusts**

Donor-based trusts are pooled funds that distribute grants to organizations to meet defined social outcomes. Their main feature involves a multi-donor approach, which aims at better coordinating the funding for programmes, while raising awareness for issues that need additional attention.

Trusts can help to simplify the grant-making process and maximize impact. For example, the Power of Nutrition is an independent charitable foundation founded in 2015 with US$ 150 million contributed by the UK government (DFID) and the Children’s Investment Fund Foundation, followed by additional founding contributions made by UBS Optimus Foundation, with the World Bank and UNICEF serving as implementing partners. The foundation works to increase the efficiency of funding for undernutrition and other specific health goals related to stunting and wasting. The fund requires countries to provide matching capital for efforts to tackle the issues.

**Meeting the financing needs for research and development**

There is a huge gap in financing for research and development for new tools to fight TB. In 2017, a total of US$ 772 million was invested in TB R&D, just 38.6% of the US$ 2 billion annual funding target.\(^\text{10}\)

This shortfall in funding means researchers must limit their projects to fit within a constrained funding environment, stifling the creativity, innovation and experimentation needed for the development of new diagnostics, medicines and vaccine. Crucially, insufficient resources limit the number of researchers willing to enter or stay in the field of TB R&D.

To increase funding for TB R&D, action is required in the following key areas:

**Increasing the donor base**

Maintaining current partnerships and increasing the funding base with new donors, investors and private sector actors are priorities.

These efforts must increase. Government, public sector and philanthropic donors, particularly the Bill & Melinda Gates Foundation, have provided essential funding for TB R&D, and some pharmaceutical industry partners have also contributed resources and expertise.

However, expanding investments from BRICS countries – countries that account for nearly half of all TB and have significant research infrastructure and capacity – would provide a major boost. The establishment of the BRICS New Development Bank (NDB), with its US$ 50 billion in capital, represents one such opportunity for BRICS investment in TB R&D.

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A number of additional funding sources exist, including pooled funding mechanisms such as the European and Developing Countries Clinical Trials Partnership and the Global Health Innovative Technology Fund. It is imperative that these initiatives be strengthened, supplemented, and adequately coordinated.

The complexities, costs and risks of TB R&D will require multiple funding platforms and partners, and a combination of push and pull mechanisms. Push mechanisms, such as traditional grants, finance R&D activities up front, reducing the risk to researchers and developers. Pull mechanisms incentivize private sector investment in R&D. In 2007, for example, the US Food and Drug Administration introduced the priority review voucher, granted to companies that discover drugs for neglected diseases. These vouchers can then be sold on the secondary market.\textsuperscript{11} For diagnostics, expanding the market through widespread implementation of existing solutions, while at the same time making new tools more affordable, would help to drive a virtuous cycle of demand creation.

\textsuperscript{11} Noor W. Placing value on FDA’s priority review vouchers. In Vivo. 2009;27(8):1–8.