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TUBERCULOSIS FOUNDATION

# CHALLENGE TB YEAR 2 ANNUAL REPORT

October 1st 2015 - September 30th 2016

CHALLENGE **TB**





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PATH

World Health Organization (WHO)



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# ABBREVIATIONS

ACF	Active Case Finding
ACSM	Advocacy Communication Social Mobilization
aDSM	Active TB Drug Safety Monitoring and Management
AFB	Acid Fast Bacilli
AMR	Anti-Microbial Resistance
ART	Antiretroviral therapy
BDQ	Bedaquiline
CBO	Community Based Organizations
CDR	Case Detection Rate
CHW	Community Health Worker
CI	Contact Investigation
CTB	Challenge TB
CXR	Chest X-Ray
DAP	District Action Plan
DLM	Delamanid
DOT	Directly Observed Treatment
DOTS	Directly Observed Treatment Short Course
DR	Drug Resistance
DRC	Democratic Republic of the Congo
DRS	Drug Resistance Survey
DST	Drug Susceptibility Testing
EQA	External Quality Assurance
ESCA	East, Central and Southern Africa
ePMS	Electronic Patient Monitoring System
ERR	Electronic Recording & Reporting
FAST	Finding cases Actively, Separating them safely and Treating them effectively
GDF	Global Drug Facility
GF	Global Fund for Aids, Tuberculosis and Malaria
GLI	Global Laboratory Initiative
HCW	Healthcare Workers
IC	Infection Control
IPT	Isoniazid Preventative Therapy
LQMS	Laboratory quality management system
LOI	Locally Owned Initiative
LPA	Line Probe Assay
LTBI	Latent TB Infection
MDR	Multi Drug Resistance
MDR-TB	Multidrug-Resistant Tuberculosis
M&E	Monitoring and Evaluation
MoH	Ministry of Health
ND&R	New Drugs & Regimens
NGO	Non Governmental Organization
NTP	National TB Program
NRL	National Reference Laboratory
NTRL	National Tuberculosis Reference Laboratory
OR	Operations Research
PLHIV	People Living with HIV/AIDS
PMDT	Programmatic Management of Drug-resistant Tuberculosis
PPM	Private Public Mix
RIF	Rifampicin
STR	Shorter MDR-TB Treatment Regimen
SLD	Second Line Drug
SOP	Standard Operating Procedures
TA	Technical Assistance
TB	Tuberculosis
TB CAP	Tuberculosis Control Assistance Program
TBCTA	Tuberculosis Coalition for Technical Assistance
TB-IC	Tuberculosis Infection Control
UNSE-TB	UN Special Envoy on Tuberculosis
USAID	United States Agency for International Development
USG	United States Government
WHO	World Health Organization
XDR-TB	Extensively Drug-Resistant Tuberculosis
Xpert	GeneXpert Mtb/Rif





# CONTENTS

5	Executive Summary
8	Introduction
10	Challenge TB Contribution to USAID Targets
11	Mortality
12	Incidence
13	Treatment Coverage
14	Multi-Drug Resistant TB
16	Anti-retroviral Therapy
17	Saving Lives Door-to-Door
18	Objective 1: Access to high-quality TB, MDR-TB and TB/HIV services
18	Sub-objective 1: Improve the Enabling Environment
20	Sub-objective 2: Ensuring a Comprehensive, High Quality Diagnostic Network
26	Mary's Story
27	Sub-objective 3: Strengthening Patient-Centered Care and Treatment
33	Objective 2: Prevention of Transmission and Disease Progression
33	Sub-objective 4: Targeted Screening for Active TB
35	Sub-objective 5: Implementing Infection Control Measures
36	Sub-objective 6: Management of Latent TB Infection
37	Objective 3: Strengthened TB Platforms
36	Sub-objective 7: Enhancing Political Commitment and Leadership
38	Sub-objective 8: Building Comprehensive Partnerships & Informed Community Engagement
40	Sub-objective 9: Strengthening Drug and Commodity Management Systems
41	Sub-objective 10: Ensuring Quality Data Surveillance and Monitoring and Evaluation
44	Sub-objective 11: Supporting Human Resource Development
45	Core Projects
48	She's a Winner
49	New Publications
50	Photo Credits









# EXECUTIVE SUMMARY

In the second year of the project October 2015-September 2016, Challenge TB (CTB) continued to contribute to the United States Government (USG) Global TB strategy (2015-2019) for TB care and prevention by implementing projects at the country, regional and international/global level with the majority of the project's work being done through country-specific projects.

Progress made on selected high-level, overarching indicators in the 22 Challenge TB supported countries:


## MORTALITY

### ESTIMATED NUMBER OF ABSOLUTE TB DEATHS (EXCLUDES HIV+TB)

GLOBAL		Year 1 (2014) 1,396,000	Year 2 (2015) 1,379,000	 1%
CTB COUNTRIES		1,053,000	1,046,000	 1%

The same reduction in TB mortality in CTB countries and globally can be explained by the fact that the behavior of the TB epidemic for HIV negative persons is not much different between CTB countries and other countries, as a result of TB care and prevention activities undertaken by NTPs and broader socio-economic developments (e.g., housing). Another explanation is that the confidence limit of these estimates in each country are wide, and are not reflected in this analysis. The estimated absolute number of TB deaths among HIV-negative people decreased between 2014 and 2015 in 11 CTB countries.





### ESTIMATED NUMBER OF ABSOLUTE TB DEATHS (HIV+ TB ONLY)

		390,000	390,000	
		256,000	236,000	 8%

The estimated absolute number of TB deaths among HIV-positive people decreased between 2014 and 2015 in 14 CTB countries. The proportion of CTB countries in Africa with a serious HIV epidemic is very high, and the implementation of TB/HIV collaborative activities is well advanced in most of these countries, in particular scale-up of ART for HIV infected TB patients. This explains why CTB countries have a high reduction in HIV+TB mortality relative to the rest of the world.

## ESTIMATED INCIDENCE

### TOTAL TB INCIDENCE PER 100,000 POPULATION

		2014 144	2015 142	 1%
		251	244	 3%

The higher rate of decrease in CTB countries needs to be interpreted with some caution as the confidence intervals of these estimates are wide and based largely on mathematical modeling.





### CASES NOTIFIED (ALL FORMS, NEW AND RELAPSE)

		2014 6,053,436	2015 6,136,321	 1%
		3,009,851	3,101,191	 3%

The number of TB cases (all forms) notified increased between 2014 and 2015 in 12 CTB countries (with the estimated treatment coverage/case detection rate being low in all these countries).

## TB/HIV





### ART COVERAGE FOR NOTIFIED TB PATIENTS CO-INFECTED WITH HIV

	77%	78%	 1%
	77%	80%	 3%

In 2015, 12 CTB countries were above the global average for coverage of ART for notified TB patients co-infected with HIV.



## TREATMENT SUCCESS

### TREATMENT SUCCESS RATE (TSR) FOR PEOPLE NEWLY DIAGNOSED WITH TB





	2013 cohort 87%	2014 cohort 83%	 4%
	88%	80%	 8%

Between 2013 and 2014 cohorts, four CTB countries maintained a TSR above 90%; 15 CTB countries maintained or improved on the 2013 cohort TSR. The large number of patients notified in India significantly influences the global performance in a negative way, as this reflects notifications largely received from the private sector with generally poor follow-up of patients during treatment as well as poor recording of treatment outcomes from private health facilities. When excluding India (major drop from 88% in Year 1 to 74% in Year 2) the TSR remained at 88% in CTB countries.





### DRUG-SENSITIVE TB PATIENTS WHO SUCCESSFULLY COMPLETED TREATMENT

	2,215,511	2,406,693	 9%
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### PERCENTAGE OF MDR-TB CASES SUCCESSFULLY TREATED

	2012 cohort 50%	2013 cohort 52%	 2%
	47%	49%	 2%

### DRUG-RESISTANT TB PATIENTS WHO SUCCESSFULLY COMPLETED TREATMENT

	2012 cohort 12,382	2013 cohort 16,251	 31%
	2014 46,282	2015 50,990	 10%

The ten percent increase in MDR/RR-TB patients successfully completing treatment largely reflects a considerable scale-up of PMDT in CTB countries. The smaller increase in the percentage of MDR/RR-TB cases successfully treated might be influenced by big new countries with poor treatment outcomes, such as India and Ukraine.

(Source WHO Global TB Database 2016 and 2015)





As of September 30, 2016, there were a total of 21 country projects implemented under CTB (CTB-Zambia will begin in Year 3 bringing the total to 22 countries). Some of the project's most significant achievements from Year 2 are highlighted here.

#### **Innovative Approach Highlights:**

**Active case finding (ACF)/Contact Investigation (CI)** - Efforts led to nearly 2,500 TB cases being diagnosed in CTB-supported areas.

**GeneXpert MTB/RIF (Xpert)** expansion - nine countries tested at least 20% of new bacteriologically positive cases for drug resistance; 12 countries tested more than half of previously treated bacteriologically confirmed (bac+) TB cases for drug resistance;

**New Drugs & Regimens (ND&R)** - 489 individuals in 13 countries started on treatment regimens containing Bedaquiline (includes patients from Kazakhstan).

#### **Country Highlights:**

In **Afghanistan**, Urban DOTS covered 169 (39% of all) health facilities (92 in Kabul and 77 in four other Urban DOTS cities - Jalalabad, Kandahar, Herat, and Mazar-e-Sharif) in Year 2, compared to 137 health facilities in Year 1. With the implementation of SOPs for TB case finding, treatment, infection control and sputum smear microscopy in urban settings, Urban DOTS facilities identified 59,374 presumptive TB patients and diagnosed 11,458 TB cases (19%). Urban DOTS implementation contributed 30% of all TB cases notified in Year 2.

In **Cambodia**, TB screening among child contacts of infectious TB cases became routine practice at both the community level and in referral hospitals. In Year 2, a total of 7,283 children were screened, of which 1,666 (23%) had TB signs and symptoms requiring further investigation at referral hospitals. Of these presumptive TB patients, 186 children (11%) were diagnosed with TB and initiated on treatment. A total of 1,552 child contacts (21%) were enrolled on isoniazid preventive therapy (IPT).

In the **Democratic Republic of the Congo (DRC)**, CTB engaged four local partner NGOs to improve TB case-finding by raising TB awareness, conducting CI and transporting sputum within target communities. Case notification more than tripled from 1,250 (Year 1) to 3,853 TB cases (Year 2). A total of 219,765 persons (including PLHIV, household contacts of TB patients and hard-to-reach populations) were screened for TB symptoms both at facility and community/household level, of which 11% (24,457/219,765) were identified as presumptive TB cases; 97% (23,687/24,457) of these were tested for TB. Of those tested, 16% (3,853/23,687) were diagnosed with TB, 84% of whom were bac+, 9% were clinically diagnosed, and 7% had extra-pulmonary TB.

In **Ethiopia**, CTB has been instrumental in building the capacity of TB officers to screen close contacts of TB patients and diagnose or rule out TB in children, especially those under five years of age who are most vulnerable to TB. In Year 2, from a total of 1,038 children under five who were identified as household contacts, 43 (4%) children with presumptive TB were identified and 13 (30%) were diagnosed with TB and put on treatment. Another 941 screened negative, of which 425 (45%) were started on IPT to prevent active TB disease.

In **Indonesia**, private and non-NTP public provider contribution to case notification saw an increase in the ten supported districts between 2014 and 2015. CTB implemented a variety of interventions (in addition to mandatory notification) such as intensified case finding (ICF), TB distance learning for general practitioners and public-private mix initiatives. CTB provided continuous support to these approaches, including technical assistance (TA) on TB surveillance to new facilities that had never reported TB cases before. As a result, 3,420 more cases were notified by non-NTP facilities in 2015 (21,109) than in 2014 (17,689), making up 48% of all cases notified in 2015 (44% in 2014).

In **India**, the pediatric initiative to improve the diagnosis of TB in children using Xpert was extended from four to nine sites/cities. Health facilities linked to the project increased from 272 to 747 during the year, including an increase from 90 to 395 in the private sector. A total of 30,963 presumptive pediatric TB cases were provided up front access to Xpert testing - doubling the number with access compared to Year 1 (15,345). A total of 2,146 (7%) pediatric TB cases were detected, of whom 185 (9%) were resistant to rifampicin (RR-TB). Furthermore, under the stewardship of the Ministry of Health (MoH), CTB successfully engaged a wide range of stakeholders in the TB-Free India campaign including celebrities, parliamentarians, corporations and industries, the media, and representatives of the private health sector, research and academia, and the affected community, garnering significant additional private sector resources for TB control as a result.

In **Nigeria**, through the implementation of the FAST strategy (**F**inding cases **A**ctively, **S**eparating them safely and **T**reating them effectively) in 15 facilities in three states, CTB was able to reduce the time to diagnosis (i.e., the time from when a presumptive TB case sees a healthcare worker to when a test is carried out and the result is received). The frequency of time to diagnosis of less than 2 days, increased to 85% (from 19% at baseline), 80% (from 48% at baseline), and 67% (from 50% at baseline) in Lagos, Benue and Akwa Ibom states, respectively.

In **Zimbabwe**, HIV testing became routine for patients undergoing TB screening. Through CTB support, a total of 6,854 patients who did not know their status were tested for HIV and 254 (4%) tested positive. Following the engagement with parliament in Year 1, the government of Zimbabwe, with support from CTB, launched the National TB Caucus in July 2016 as part of the country's commitment to the global declaration to end TB. Parliamentarians have pledged to engage with the National AIDS Council to apportion part of the National AIDS Trust Fund to the TB program so activities benefiting co-infected patients can be carried out.



As of September 30, 2016, CTB was implementing seven core projects.

#### Core Projects Highlights:

**Bedaquiline (BDQ)** - In year one of this Core Project (CTB Year 2), the support team developed a user-friendly implementation planning tool and a generic programmatic and clinical guide based upon the KNCV-developed 'Patient Triage Concept'. The tool has already been adapted in several countries (Indonesia, Kyrgyzstan, Nigeria, Tajikistan, Ukraine and Vietnam), while adaptation is on-going in several other countries (Botswana, DRC, Mozambique and Uzbekistan). By the end of Year 2, 13 countries had developed their country specific strategic documents, and 489 patients were enrolled on a BDQ-containing regimen.

**United Nations Special Envoy for Tuberculosis** - Dr. Eric Goosby was appointed as the UN Special Envoy on Tuberculosis (UNSE-TB) in early 2015 to advocate for more money for research and implementation, more commitment from the leadership in high burden countries and more global awareness about TB. The strategy has largely been successful and the advocacy work done by the UNSE-TB has contributed to successful Global Fund replenishment (US\$12.9 billion) as well as PEPFAR policy change, reinforcing the need for TB prophylaxis, testing and IPT reporting for persons living with HIV (PLHIV).

**Stigma** - In May 2016, two meetings on TB Stigma were held in The Hague which galvanized academic, policy and practitioner support for improved measurement and intervention on TB stigma. In addition, six new studies on TB stigma measurement methods were completed and presented internationally. Collectively, these studies represent a significant advancement in the TB measurement field - answering some basic questions that set the stage for correct measurement tools and methods in future.

**TB prevention** - In Year 2, all clinical trial activities to compare the effect of three months of high dose Isoniazid and Rifapentine (3HP) administered as a single round or given as two annual rounds in HIV-infected individuals, and six months of Isoniazid only, were geared towards initiating participant enrollment in early Year 3. These activities included the signing of a KNCV sub-agreement with the Aurum Institute, establishment of a Trial Steering Committee, a first

planning meeting in December 2015, as well as agreements with Sanofi and Qiagen for donation of drugs and IGRA tests.

**Papua New Guinea Core Project** - This short, but intensive core project was implemented from July-November 2016. Key results included the introduction of a national system for pharmacovigilance, or active TB drug safety monitoring and management (aDSM) as well as the expansion of national programmatic management of drug-resistant TB (PMDT) SOPs to include an aDSM/pharmacovigilance section with accompanying data collection tools.

**Catastrophic Costs Core Project** - This project's focus is the End TB Strategy target of no TB patient or their household should face catastrophic costs due to TB by 2020. In Year 2, field testing of a generic protocol and data collection tool for national TB patient costs surveys took place in Vietnam. Starting in May 2016, the NTP and CTB began implementing a nationally representative patient cost survey involving 720 eligible TB patients - including 57 MDR-TB patients - in health facilities across 20 clusters. The survey, which will be finalized by December 2016, will produce a baseline measure for the percentage of TB-affected households experiencing catastrophic costs due to TB in Vietnam. The implementation of this survey is highly relevant for Vietnam which has expanded its social health insurance system with the aim of achieving universal health coverage by 2020. The experience from Vietnam will provide inputs to draft a final tool that can be used in other countries.

**Global Fund Hub Technical Assistance** - In March 2016 the GF Hub was officially established. The primary role of the GF Hub and the GF Officer is to ensure that CTB contributes to the success of GF grants in CTB countries (from grant making through to implementation). A general mapping exercise and survey were completed to give an overall picture of GF grant performance in the 21 countries where CTB operates. In addition, the GF Hub is focused on getting CTB countries ready for the new funding cycle that will start in 2017.





# INTRODUCTION

Challenge TB (CTB) is USAID's flagship global mechanism for implementing the United States Government (USG) TB strategy as well as contributing to TB/HIV activities under the U.S. President's Emergency Plan for AIDS Relief (PEPFAR).

Launched on October 1, 2014, this five-year cooperative agreement (2014-2019) builds and expands upon previous USAID global programs, namely TB CARE I (2010-2015), the Tuberculosis Control Assistance Program (TB CAP, 2005-2010) and Tuberculosis Control Technical Assistance (TBCTA, 2000-2005).

KNCV Tuberculosis Foundation (KNCV), which also led the aforementioned programs,

leads a unique and experienced coalition of nine partners implementing CTB. The coalition partners are: American Thoracic Society (ATS), FHI 360, Interactive Research and Development (IRD), International Union Against Tuberculosis and Lung Disease (The Union), Japan Anti-Tuberculosis Association (JATA), Management Sciences for Health (MSH), PATH and the World Health Organization (WHO).

Working closely with Ministries of Health (MoH), USAID, Global Fund, the Stop TB Partnership and other key stakeholders at a global, regional, national and community level, CTB contributes to the global End TB Strategy targets.

## END TB STRATEGY TARGETS

### VISION

A world free of TB

### GOAL

To end the global TB epidemic

### BY 2025

A 75% reduction in TB deaths (compared with 2015) and less than 50 cases per 100,000 population.

Aligned with the USG strategy to prevent and control TB, CTB has three objectives and 11 sub-objectives, each with several focus areas for interventions:

#### OBJECTIVE 1: IMPROVED ACCESS TO HIGH-QUALITY PATIENT-CENTERED TB, DR-TB & TB/HIV SERVICES BY:

- 1 Improving the enabling environment
- 2 Ensuring a comprehensive, high quality diagnostic network
- 3 Strengthening patient-centered care and treatment

#### OBJECTIVE 2: PREVENT TRANSMISSION AND DISEASE PROGRESSION BY:

- 4 Targeted screening for active TB
- 5 Implementing infection control measures
- 6 Managing latent TB infection

#### OBJECTIVE 3: STRENGTHEN TB SERVICE DELIVERY PLATFORMS BY:

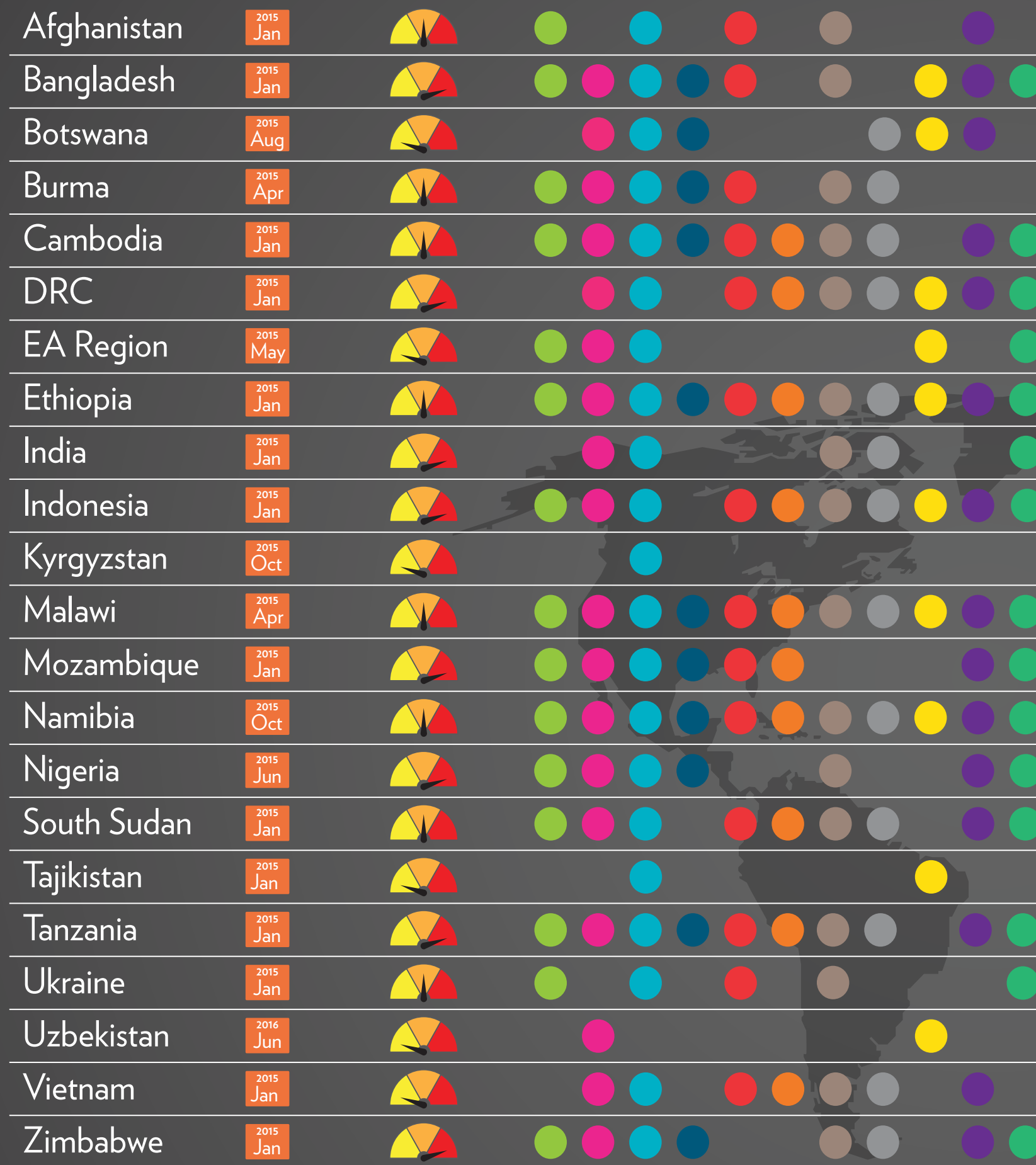
- 7 Enhancing political commitment and leadership
- 8 Building comprehensive partnerships and informed community engagement
- 9 Strengthening drug and commodity management systems
- 10 Ensuring quality data, surveillance and monitoring & evaluation
- 11 Supporting human resource development.

CTB implements projects at the country, regional and global level with the majority of the project's work being done through country-specific projects. As of September 30, 2016, there were 21 total country projects implemented in Year 2 (CTB-Zambia will begin in Year 3 bringing the total to 22 countries.). The next graphic on page 9 provides a snapshot of basic data for

country individual projects. At the regional level, CTB continued implementation of the East Africa Region project. Through core funding, CTB is also working on seven priority projects that have implications for TB prevention and control globally (see page 45 for more details).



# CHALLENGE TB COUNTRIES



Start Date      Investment (Low, Medium or High)      Sub-Objectives

1 2 3 4 5 6 7 8 9 10 11





# CHALLENGE TB CONTRIBUTION TO USAID TARGETS

Challenge TB is aligned with three major objectives, and medium- and long-term outcomes as defined by the USG strategic framework.

## VISION

A world free of TB

## LONG-TERM OUTCOMES

- Reduce the TB incidence rate by 90% by 2035
- Reduce the TB mortality rate by 95% by 2035

## MEDIUM-TERM OUTCOMES

- From 2015-2018:
- Reduce TB incidence rate by 25%
- Maintain treatment success rate at 90%
- Successfully treat 13 million patients
- Initiate treatment for 360,000 DR-TB patients
- Provide ART to 100% of TB/HIV patients

## OBJECTIVES

- Improve access to high quality TB, DR-TB and TB/HIV services
- Prevent transmission and disease progression
- Strengthen TB service delivery platforms
- Accelerate research and innovation

While contributing to this USG strategy, CTB continued tracking selected indicators in CTB-supported countries that are linked to programmatic activities and relevant to CTB goals, objectives/sub-objectives and intervention areas.

In this report, the data are presented for 22 countries (21 countries that received CTB funds in Year 2 plus Zambia, which will start in Year 3). These include high-level indicators that are found in the USG strategy (i.e. TB mortality, incidence, case detection rate; multi-drug resistant TB (MDR-TB) incidence, the percentage of new and previously treated TB cases with MDR-TB; and the percentage of individuals with HIV-associated TB initiating anti-retroviral therapy). Furthermore, under each objective/sub-objective section, data are presented on USAID mandatory indicators for every CTB country, including key outcome indicators such

as treatment success rate (TSR) and the number of TB patients successfully treated as well as the number of DR-TB patients initiating second-line treatment.

For population/patient-based indicators (e.g., mortality, incidence), data are extracted from the WHO Global TB Report 2016 (i.e. data for 2015), which is used to monitor progress towards achieving USG strategic framework medium- and long-term outcomes over the life of project. These data are all estimated based on a modeling exercise, and may have wide confidence intervals, due to a significant absence of country-specific recent data.

Data for programmatic indicators that follow the project cycle (October-September) are collected directly from the CTB country projects.



CTB assists NTPs to improve the care and prevention of TB from a country perspective; in addition to in-country resources (government funding, etc.), countries are often also assisted through other means such as the Global Fund (GF). Therefore, it is difficult to measure to what extent changes are attributable specifically to CTB interventions. In some countries, CTB operates on a selected range of technical areas and the geographic area is not always countrywide.





# MORTALITY

Globally, there were an estimated 1.4 million (range 1.2-1.6 million) deaths from TB among HIV-negative people in 2015 and an additional 0.39 million (range 0.32 million to 0.46 million) deaths from TB among HIV-positive people (WHO 2016 report). About 76% of TB deaths among HIV-negative people, and 61% of TB deaths among HIV-positive people occurred in the 22 CTB countries. The estimated total number of TB deaths among HIV-negative people decreased between 2014 and 2015 in 11 (50%) countries, with an average rate of decline in all 22 CTB countries of 1%. Similarly, the estimated absolute

number of TB deaths among HIV-positive people has decreased in 14 (64%) CTB countries, with an average rate of decline in all 22 CTB countries of 8%. A higher reduction in HIV+TB mortality can be explained by the high proportion of CTB countries in Africa with a serious HIV epidemic, as well as advanced implementation of TB/HIV collaborative activities in most of these countries, in particular scale-up of ART for HIV infected TB patients (e.g., in Ethiopia ART coverage among notified TB cases co-infected with HIV increased from 39% in 2014 to 79% in 2015).

The estimated total number of TB deaths (excludes HIV+ TB) and percentage change from 2014 to 2015 (WHO 2016)

CTB Country	2014	2015	% reduction
Uzbekistan	2,200	2,600	-18%
Botswana	510	590	-16%
Namibia	720	780	-8%
Nigeria	170,000	180,000	-6%
Mozambique	20,000	21,000	-5%
Zambia	4,800	5,000	-4%
DRC	49,000	51,000	-4%
Kyrgyzstan	670	680	-1%
Burma	27,000	27,000	0%
India	480,000	480,000	0%
Indonesia	100,000	100,000	0%
Tanzania	31,000	30,000	3%
Cambodia	8,900	8,600	3%
South Sudan	3,600	3,400	6%
Vietnam	17,000	16,000	6%
Ukraine	5,400	5,000	7%
Bangladesh	79,000	73,000	8%
Afghanistan	13,000	12,000	8%
Tajikistan	250	220	12%
Malawi	2,700	2,300	15%
Zimbabwe	2,000	1,700	15%
Ethiopia	35,000	25,000	29%
<b>Total</b>	<b>1,052,750</b>	<b>1,045,870</b>	<b>1%</b>

The estimated total number of TB deaths (HIV+ TB only) and percentage change from 2014 to 2015 (WHO 2016)

CTB Country	2014	2015	% reduction
Afghanistan	140	170	-21%
Botswana	1,243	1,425	-15%
Uzbekistan	280	320	-14%
Indonesia	24,000	26,000	-8%
Cambodia	410	440	-7%
Ukraine	2,000	2,100	-5%
Mozambique	34,000	34,000	0%
Zambia	12,000	12,000	0%
Namibia	890	880	1%
Burma	5,100	4,800	6%
DRC	17,000	16,000	6%
Tanzania	27,000	25,000	7%
Nigeria	64,000	57,000	11%
Bangladesh	260	230	13%
Zimbabwe	7,200	6,300	13%
India	43,000	37,000	14%
South Sudan	910	760	16%
Malawi	8,000	6,600	18%
Tajikistan	43	34	21%
Kyrgyzstan	57	44	23%
Vietnam	1,500	1,100	27%
Ethiopia	6,700	3,900	42%
<b>Total</b>	<b>255,733</b>	<b>236,103</b>	<b>8%</b>



# INCIDENCE

In 2015, there were an estimated 10.4 million incident cases of TB globally, equivalent to 142 cases per 100,000 population; an estimated 11% (range 9-14%) of the incident TB cases in 2015 were among HIV-positive people (WHO 2016 report). The 22 CTB countries accounted for approximately 60% of the estimated number of incident cases (around 50% among HIV-positive people) in 2015. The incidence rate varied widely among CTB countries in 2015, from under 100 per 100,000 population in Uzbekistan, Tajikistan and Ukraine, to 100-300 in most CTB countries, and above 400 in Mozambique and Namibia.

The incidence among HIV-positive people was highest in countries in the African Region, and exceeded 200 per 100,000 population in Mozambique, Zambia, Botswana, and Namibia. A decline in the estimated TB

incidence rate between 2014 and 2015 was reported in 15 (68%) CTB countries; similarly, a decline in the estimated TB incidence rate among HIV-positive people was reported in 19 (86%) CTB countries. However, the aforementioned decrease in CTB countries needs to be interpreted with some caution. The confidence intervals of these estimates are wide and based largely on mathematical modeling. As such it is good to see the estimated incidence go down, if this is a true reflection of what is happening as a result of TB care and prevention interventions and socio-economic progress (less poverty, better housing, less crowding in living quarters with better ventilation and better nutrition). For many countries no actual data are available from prevalence surveys, and direct measurement of incidence is not possible on this population scale.

Incidence (includes HIV+ TB), per 100,000 population, (WHO 2016)

CTB Country	2014	2015	% reduction
Namibia	474	489	-3%
Kyrgyzstan	142	144	-1%
Afghanistan	189	189	0%
DRC	325	324	0%
Mozambique	551	551	0%
Nigeria	322	322	0%
South Sudan	146	146	0%
Bangladesh	227	225	1%
Burma	369	365	1%
Indonesia	399	395	1%
Vietnam	140	137	2%
Cambodia	390	380	3%
India	223	217	3%
Ukraine	94	91	3%
Tajikistan	91	87	4%
Uzbekistan	82	79	4%
Zambia	406	391	4%
Tanzania	327	306	6%
Ethiopia	207	192	7%
Botswana	385	356	8%
Zimbabwe	278	242	13%
Malawi	227	193	15%

Incidence (HIV+ TB only), per 100,000 population, (WHO 2016)

CTB Country	2014	2015	% reduction
Afghanistan	1.3	1.4	-8%
Ukraine	19	20	-5%
Indonesia	30	30	0%
Mozambique	287	284	1%
Namibia	202	199	1%
Kyrgyzstan	4.5	4.4	2%
Bangladesh	0.4	0.39	3%
Burma	33	32	3%
Uzbekistan	4	3.9	3%
Tajikistan	2.5	2.4	4%
Zambia	247	235	5%
DRC	53	50	6%
Botswana	229	213	7%
India	9.5	8.6	9%
Tanzania	118	107	9%
Nigeria	62	55	11%
South Sudan	19	17	11%
Zimbabwe	192	167	13%
Malawi	121	104	14%
Cambodia	11	9.2	16%
Vietnam	7.3	5.9	19%
Ethiopia	20	16	20%





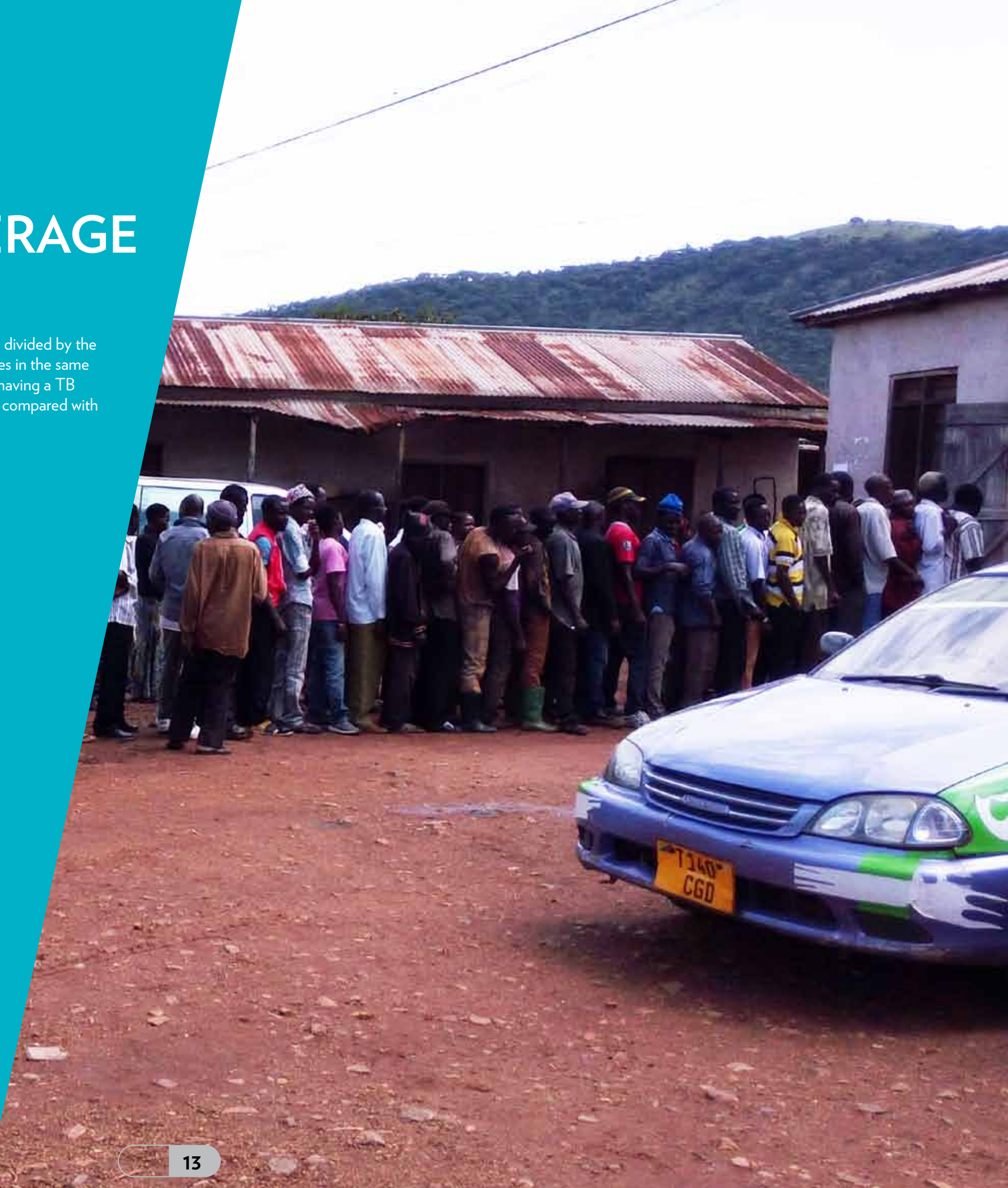
# TREATMENT COVERAGE

Based on the WHO 2015 data (WHO 2016), all 22 CTB countries are below the 90% global End TB Strategy priority target for TB treatment coverage, which is defined as the number of new and relapse cases detected (as a proxy for the number of cases

detected and treated) in a given year, divided by the estimated number of incident TB cases in the same year, with only eight (36%) countries having a TB treatment coverage of 70% or above, compared with ten countries in Year 1.

TB Treatment Coverage (percent), all forms, 2015 (WHO 2016)

CTB Country	Year 1	Year 2	% Change
Kyrgyzstan	77	82	6%
Tajikistan	77	80	4%
Namibia	80	80	0%
Vietnam	77	79	3%
Ukraine	75	74	-1%
Zimbabwe	70	72	3%
Ethiopia	60	71	18%
Burma	70	70	0%
Uzbekistan	76	69	-9%
Botswana	70	62	-11%
India	56	59	5%
Cambodia	72	59	-18%
Afghanistan	53	58	9%
Zambia	59	58	-2%
Bangladesh	53	57	8%
South Sudan	48	54	13%
DRC	48	48	0%
Malawi	43	47	9%
Mozambique	39	38	-3%
Tanzania	36	37	3%
Indonesia	32	32	0%
Nigeria	15	15	0%



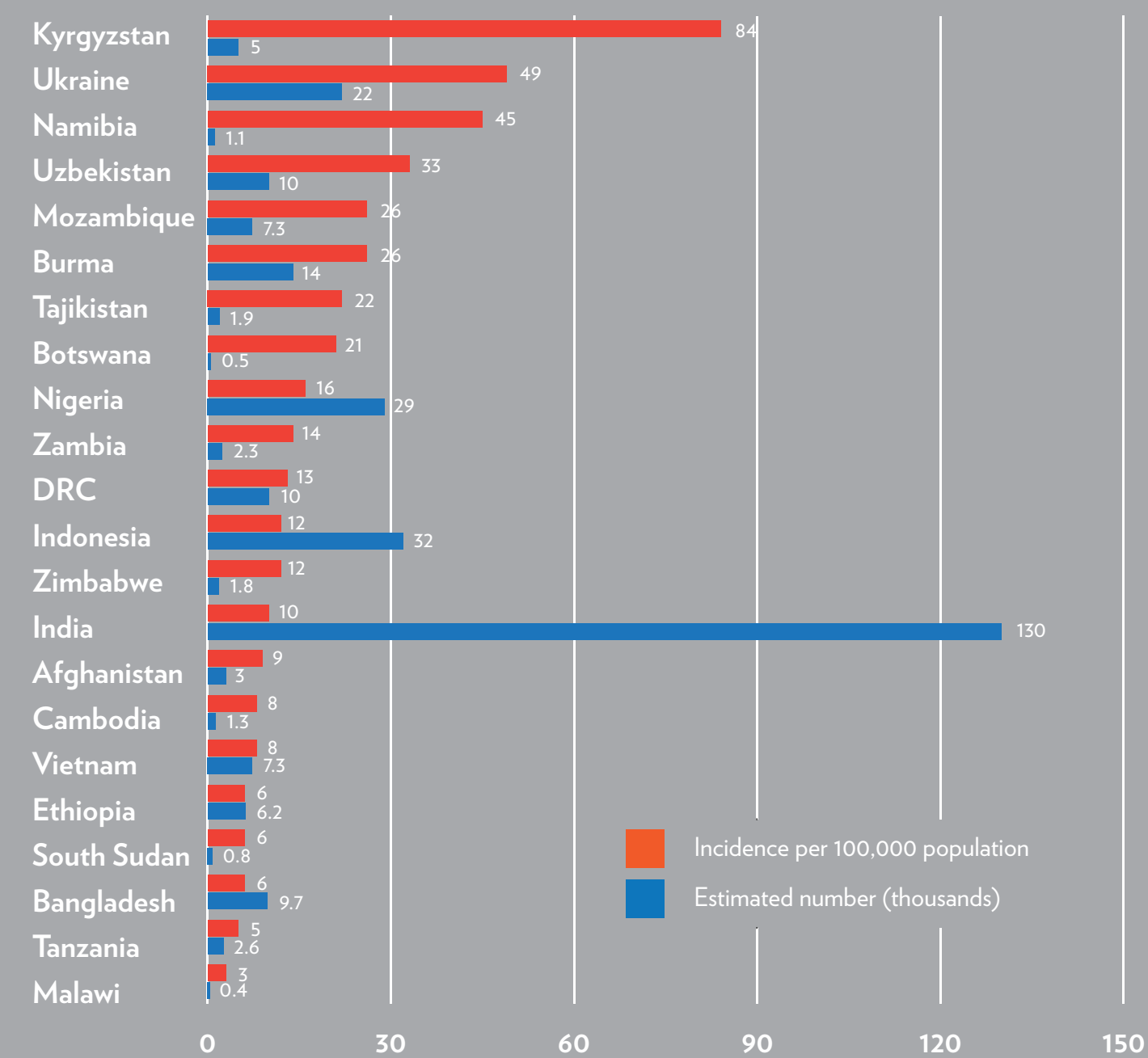


# MULTI-DRUG RESISTANT TB

In 2015, there were an estimated 300,000 MDR-TB cases in the 22 CTB countries. WHO estimated that 19 (86%) CTB countries had more than 1,000 MDR-TB cases, with the highest numbers estimated for India, Indonesia, Nigeria, and Ukraine; whereas, the highest MDR-TB incidence rates were estimated in the Central Asian Republics, Ukraine, Namibia, Mozambique, and

Burma. It must be noted that Namibia, Mozambique, and Burma have much higher estimated incidence rates for TB in general than the other countries, and have relatively high estimated incidence rates for MDR-TB as well, but a much lower prevalence of MDR-TB among new and retreatment patients, and therefore relatively low numbers of patients.

Estimated number of cases and incidence (per 100,000 population) of MDR-TB, 2015 (WHO 2016)



These data were added to the WHO Report in 2016, therefore no trends can be shown from Year 1 to Year 2.



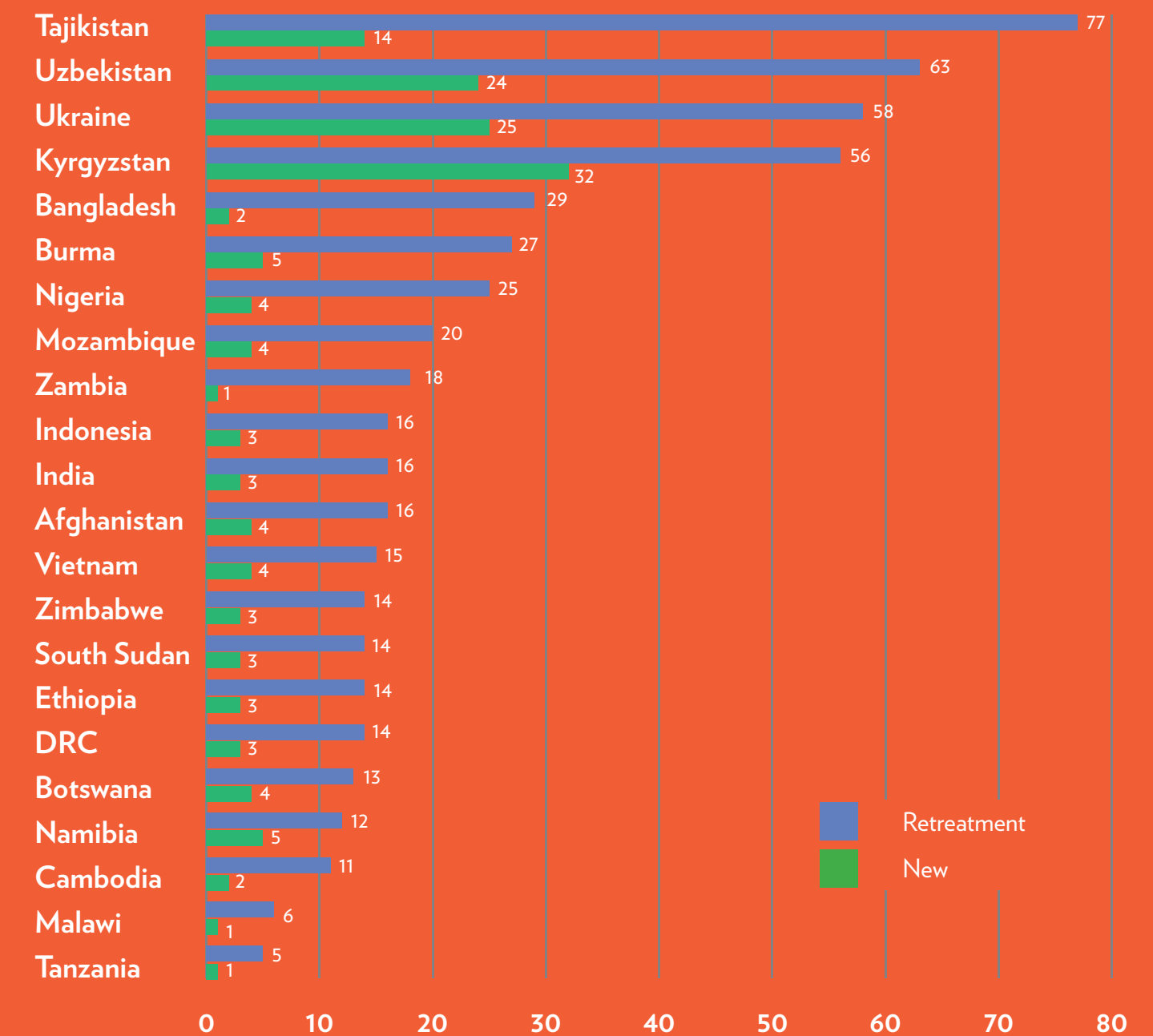




The estimated proportions of new and previously treated TB cases with MDR-TB in the 22 CTB countries are shown below, with the highest proportions reported for the Central Asian Republics and Ukraine. Most countries conduct drug-resistance surveillance or surveys to monitor DR-TB, but some countries do not have representative national drug-resistance surveillance data. Most of the CTB countries in Africa

have relatively low MDR-TB prevalence rates among new and retreatment patients, due to very limited private sector involvement in TB care and prevention, and very restricted availability of quality-assured rifampicin resistance testing for patients managed by private practitioners except for patients treated by/or in collaboration with the public sector.

Estimated percentage of TB cases (new and retreatment) with MDR-TB in 2015 (WHO 2016)







# ANTI-RETROVIRAL THERAPY

In 2015, the global number of HIV-positive TB patients on ART was 33% of the estimated global number of incident HIV-positive TB cases, indicative of the fraction of estimated “missing” cases who are HIV positive. At the same time, the coverage of ART for notified TB patients who were known to be co-infected

with HIV reached 78% (WHO 2016). Twelve (55%) CTB countries were above the global average for coverage of ART for notified TB patients co-infected with HIV. The average ART coverage for notified TB patients who were known to be co-infected with HIV increased from 77% to 80% from 2014 to 2015.

Percentage of HIV-positive TB patients on ART of the estimated number of incident HIV-positive TB cases and coverage of ART for notified TB patients co-infected with HIV, 2015 (WHO 2016)



Tajikistan reported no data to WHO



## SAVING LIVES DOOR-TO-DOOR

Mwika Suzanne, age 37 and mother of three, lives in the town of Kampemba, in the city of Lubumbashi, Haut-Katanga province of the Democratic Republic of Congo. For years she lived in despair with undiagnosed TB, she continued getting sicker and her family were sure that she would die. Kampemba is within a health zone where the TB detection rate was low due to a lack of awareness surrounding the disease.

Challenge TB funded campaigns by the National League Against Tuberculosis and Leprosy (LNAC) in the various health zones to improve the quality and access to care for TB and TB/HIV patients. They strengthened outreach by going door-to-door, and by doing so the rate of TB detection has improved.

Martin, the coordinator of LNAC in Lubumbashi said: "We found Suzanne after we visited another patient in the same area. We immediately collected a sputum sample which was tested at the hospital, but the results were negative". "Given how sick Suzanne was, we decided to take her to the hospital for further testing. After a clinical examination and further sputum testing, she was diagnosed with both TB and HIV and remained at the hospital to undergo treatment. After several weeks she had regained enough strength to return home and continued treatment as an outpatient". "Now I am much better and I am working again", says Suzanne, "I am so grateful, because it is through this campaign that I was found and treated. Previously my family had kept me at home and a traditional healer had treated me, without any success. Now I am getting the right treatment and I feel so much better".

During the campaigns, 18 people including members of LNAC and community relays (volunteers who often provide health support on community activities) were briefed on sputum collection, the signs and symptoms of TB and on the use of collection tools. They then visited 3,838 homes in the target geographic area,



where 15,299 people were screened, 1,387 people with TB symptoms were tested, and a total of 46 TB cases were ultimately diagnosed within the Kampemba and Ruashi health zones. Suzanne is one example of the community outreach program's success. It is in light of this that a contract has been signed with LNAC whose objective is to improve the management, detection and treatment of TB and TB/HIV through the involvement of communities. Dr. Hugues Kakompe, Chief Medical Officer of Kampemba said: "We welcome this awareness campaign as it has boosted TB/HIV detection in our health zone and we believe this is an effective strategy. We will sustain it because there are still many TB cases to be found".



Left: Suzanne when she was found  
Right: Suzanne well on the way to recovery





## ACHIEVEMENTS BY OBJECTIVE/SUB-OBJECTIVE

In Year 2, CTB implemented projects in 21 countries (see page 9 for basic information on individual country projects). In the following subsections, Year 2 achievements will be discussed by objective/sub-

objective. Achievements and results from country, core and regional projects are also highlighted. More detail on country-level activities and results can be found in country-specific Annual Reports.

### OBJECTIVE 1 - ACCESS TO HIGH-QUALITY TB, MDR-TB AND TB/HIV SERVICES

#### SUB-OBJECTIVE 1 - IMPROVE THE ENABLING ENVIRONMENT

CTB intervention areas/intended outputs:

1. Provision of services according to national guidelines for all care providers and risk groups
2. Community empowered, especially among risk groups
3. Health seeking behavior improved for types of services
4. Patient centered approach integrated into routine TB services for all care providers for a supportive environment.

Key results:

- A total of 3,101,191 TB cases (all forms) were notified in 2015 - 3% more than in 2014
- Private and non-NTP public sector facilities contributed 28% more notified TB cases in 2015 than in 2014.

A core mandate of CTB is to help find more of the “missing” TB cases by expanding access to and demand for high-quality TB diagnostic and treatment services. CTB works closely with NTPs to create an enabling environment to find and successfully treat more TB patients. In 2015, 3,101,191 cases (all forms) were notified across all 21 CTB countries - a 3% increase over 2014 notifications. Notable jumps in case notification include Bangladesh (8%), Afghanistan (13%), Ethiopia (14%), and South Sudan (16%) - all countries where CTB has played a substantial role in finding more cases.

Case notification also increased in India with 57,589 more cases notified in 2015 compared to 2014 (4% increase) largely due to the mandatory notification of TB (initiated in 2014) and the engagement of the private sector, as well as population increase.

Some countries saw a decrease in the number of cases notified (Cambodia, Ukraine, Uzbekistan, and Botswana), but CTB recognizes that the data for each country requires its own interpretation, and in turn its own approach to optimizing case finding in that specific setting.

Number of cases (all forms) notified and private/non-NTP sector contribution, 2014-2015, (WHO 2016)

Country	TB Cases (All forms)			Private/Non-NTP public sector			
	2014	2015	Trend (2014-2015)	2014 Number notified	% of total cases	2015 Number notified	% of total cases
India	1,609,547	1,667,136	4%	384,849	24%	469,438	28%
Indonesia	322,806	328,895	2%	85,772	27%	91,733	28%
Bangladesh	191,166	206,915	8%	25,379	13%	101,035	49%
Burma	138,352	138,447	0%	31,851	23%	29,074	21%
Ethiopia	119,592	135,951	14%	16,876	14%	15,195	11%
DRC	115,795	119,213	3%	0	0%	0	0%
Vietnam	100,349	100,780	0%	9,278	9%	9,182	9%
Nigeria	86,464	87,211	1%	13,361	15%	13,715	16%
Tanzania	61,571	60,895	-1%	4,724	8%	7,773	13%
Mozambique	57,773	58,344	1%	0	0%	0	0%
Afghanistan	31,746	35,878	13%	3,192	10%	2,294	6%
Cambodia	43,059	35,169	-18%	694	2%	191	1%
Ukraine	31,701	30,151	-5%	2,211	7%	0	0%
Zimbabwe	29,653	26,990	-9%	0	0%	0	0%
Uzbekistan	18,345	16,315	-11%	567	3%	6,141	38%
Malawi	16,267	15,737	-3%	3,500	22%	3,049	19%
South Sudan	8,335	9,657	16%	0	0%	0	0%
Namibia	9,114	9,614	5%	0	0%	0	0%
Kyrgyzstan	6,390	7,027	10%	202	3%	0	0%
Tajikistan	5,807	5,894	1%	1,077	19%	1,077	18%
Botswana	6,019	4,972	-17%	60	1%	0	0%
<b>Total</b>	<b>3,009,851</b>	<b>3,101,191</b>	<b>3%</b>	<b>583,593</b>	<b>19%</b>	<b>749,897</b>	<b>24%</b>

Countries with CTB investment in Public-Private Mix (PPM) are highlighted in green.





## PRIVATE/NON-NTP PUBLIC SECTOR ENGAGEMENT

In order to accurately capture and respond to the TB epidemic, the private sector and the public sector not traditionally affiliated with the NTP (non-NTP public sector) need to be better engaged and empowered to diagnose, notify and treat TB. CTB works in eight countries (38%) to leverage the healthcare sector outside of the traditional NTP network. The quality/availability of data reported to WHO on cases reported from the private/non-NTP public sector varies greatly by country. Based on available data (WHO 2016), the number of cases reported from the private and non-NTP public sector facilities increased from 19% (583,593) of all notified cases in 2014 to 24% (749,897) of cases in 2015 - a jump of 166,304 cases.

In **Indonesia**, although the private and non-NTP public providers' contribution to national level case notification did not change substantially between 2014 (27%) and 2015 (28%), the ten CTB-supported districts saw an increase in these sectors' involvement. A variety of interventions were implemented (in addition to mandatory notification) such as enhanced case finding, TB distance learning for general practitioners and PPM establishment. CTB provided continuous support to those approaches, including technical assistance on TB surveillance to new facilities that had never reported TB cases before. As a result, 3,420 more cases were notified by non-NTP facilities in CTB districts in 2015 (21,109) than in 2014 (17,689), making up 48% of all cases notified in 2015 (vs. 44% in 2014).

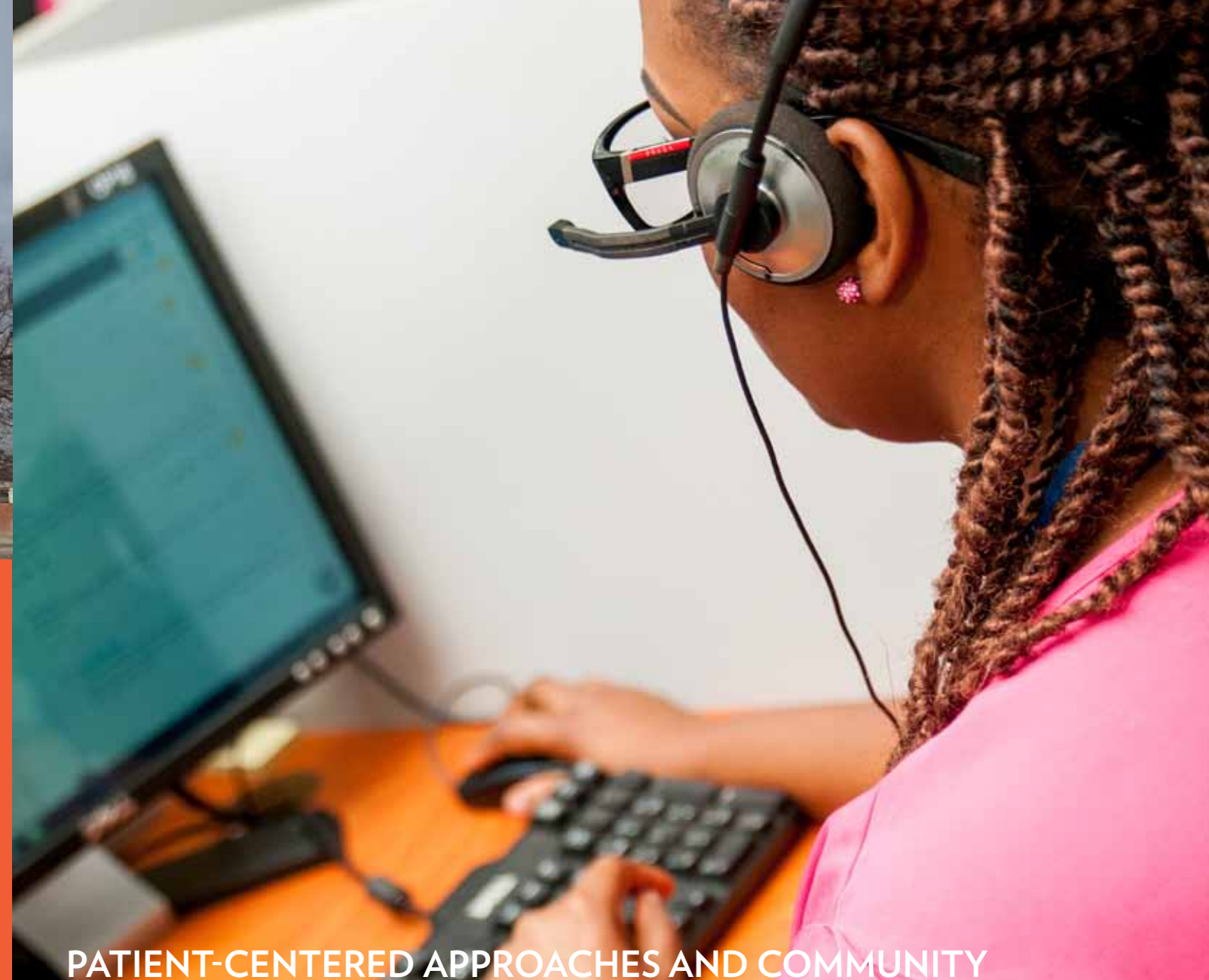
Additional examples of private sector engagement under CTB:

In **Afghanistan** Urban DOTS covered 169 (39%) health facilities (92 in Kabul and 77 in four other

Urban DOTS cities - Jalalabad, Kandahar, Herat, and Mazar-e-Sharif), compared to 120 health facilities in Year 1. With the implementation of SOPs for TB case finding, treatment, infection control and sputum smear microscopy in urban settings, Urban DOTS facilities identified 59,374 presumptive TB patients and diagnosed 11,458 TB cases (19%) including 3,850 bac+ TB cases. Urban DOTS implementation contributed 30% of all TB cases in Afghanistan (23% of bac+ cases).

In **Bangladesh**, CTB helped the NTP develop a new Public-Private Mix Strategic Plan involving all relevant stakeholders. The strategic plan is a four-year framework aligned with the NTP's National Strategic Plan for TB for 2016-2020 and will guide the NTP in strengthening and expanding the engagement of private sector providers, selected public institutions, NGOs, and other stakeholders to reduce the estimated 47% gap in case detection and other NTP priorities.

**Cambodia** continued to implement the hospital linkage approach in five high-volume regional hospitals by introducing TB symptom screening and referral systems in all departments within the hospitals (out-/in-patient, pediatric, diabetes clinics, etc.). In Year 2, 151,645 patients visited these hospitals and patients exhibiting TB signs and symptoms were referred for screening to TB units within the hospitals; 2,915 (2%) of all patients who visited these hospitals were diagnosed with TB and initiated on treatment - an increase of 73% compared to the previous year (1,499). Other regional hospitals outside the CTB area are now using the tools demonstrating a scalable, practical solution for facility-based case-finding across Cambodia.



## PATIENT-CENTERED APPROACHES AND COMMUNITY ENGAGEMENT & EDUCATION

CTB takes a comprehensive approach to patient-centered care and community empowerment by engaging a diverse group of partners - including patients - in the delivery of high-quality services:

In **Indonesia**, CTB played a key role in establishing the national TB patient organization (POP TB) that is comprised of eight patient organizations. POP TB aims to provide a platform for the voices of TB patients, represent TB patients in national level discussions, contribute to planning and decision making, and to participate in the monitoring of national policy implementation.

**Tanzania** engaged healthcare workers (HCWs), ex-TB patients, traditional healers, drug dispensers from private pharmacies, and community volunteers from

three priority districts to increase TB case finding at the community level. CTB reached approximately 3,000 community members through advocacy, communication and social mobilization (ACSM) activities. In Year 2, 1,338 people were screened for TB symptoms and 722 presumptive TB patients were referred for evaluation. Thirty-three patients out of 722 people (5%) were diagnosed with TB and started on treatment.

In **Nigeria**, CTB developed and aired a total of 4,087 radio messages across the supported states. CTB also setup a TB call center with the aim of creating a way for the general public to seek more information about free TB treatment services in their local vicinity. Through a toll free call number (CALL CTB 0800-2255-282) a total of 3,769 calls were received.





## SUB-OBJECTIVE 2 - ENSURING A COMPREHENSIVE, HIGH QUALITY DIAGNOSTIC NETWORK

CTB intervention areas/intended outputs:

1. Access to quality TB diagnosis ensured
2. EQA network for laboratory diagnostics & services functioning
3. Access to quality culture/drug sensitivity testing (DST) ensured
4. Access, operation and utilization of rapid diagnostics (i.e. Xpert) ensured for priority populations
5. Laboratory information management system operational and utilized
6. Expedient laboratory specimen transport and results feedback system operational
7. Biosafety measures in laboratories ensured

Key results:

- More than half (14/21, 66%) of the CTB countries reported having a national TB laboratory operational plan in place as of September 2016.
- Nineteen out of 21 CTB countries have at least one reference laboratory implementing a laboratory quality management system.
- The majority of CTB countries (71%) met four or more of the GLI approved standards, with Zimbabwe meeting the most with 10/11.

CTB is supporting country-specific approaches to laboratory capacity-building in 18 countries, aligned with NTP needs and strategic plans, and building on best practices and tools to address both managerial and technical aspects of laboratory strengthening. Beginning in Year 2, common areas

for strengthening across countries included quality assurance, laboratory data management, specimen referral systems, expansion of culture and DST to support the programmatic management of drug-resistant TB (PMDT), and increased access to rapid diagnosis (e.g. GeneXpert, LED microscopy, etc.).

In Year 2, 14 countries (67%) reported that a national TB laboratory operational plan was in place, compared to only eight in Year 1. From Year 1 to Year 2, six countries - Cambodia, DRC, India, Indonesia, Malawi and Namibia developed national TB laboratory

operational plans, with the CTB projects in DRC and Malawi investing substantially in their development. Additionally, Burma supported further laboratory plan development that increased their rating from level 2 to 3.

A current national TB laboratory operational plan exists and is used to prioritize, plan and implement interventions

- Operational plan not available
- Operational plan available
- Operational plan available and follows standards
- Operational plan available and meets annual implementation targets

	Year 1	Year 2		Year 1	Year 2
Afghanistan	●	●	Mozambique	●	●
Bangladesh	●	●	Namibia		●
Botswana	●	●	Nigeria	●	●
Burma	●	●	South Sudan	●	●
Cambodia	●	●	Tajikistan	●	●
DRC	●	●	Tanzania	●	●
Ethiopia	●	●	Ukraine	●	●
India	●	●	Uzbekistan		●
Indonesia	●	●	Vietnam	●	●
Kyrgyzstan	●	●	Zimbabwe	●	●
Malawi		●			

Year 1 data for Malawi, Namibia and Uzbekistan were not available.





# LABORATORY QUALITY MANAGEMENT SYSTEMS

The number of reference laboratories implementing laboratory quality management systems (LQMS) has more than tripled from 21 to 70 over the last year. In Year 2, Afghanistan, Bangladesh, Namibia, Nigeria and Uzbekistan implemented their first LQMS systems, while Mozambique and India expanded their networks to reach 100% LQMS coverage. In Ethiopia, reference laboratory expansion proceeded with LQMS implementation and in Zimbabwe LQMS implementation took a step backwards due to a reassessment of the system itself.

Number and percentage of TB reference laboratories (national and intermediate) within the country implementing a TB-specific LQMS

CTB Country	Year 1			Year 2		
	Total number of TB reference labs	Number of TB reference labs implementing LQMS	Percentage of TB reference labs implementing LQMS	Total number of TB reference labs	Number of TB reference labs implementing LQMS	Percentage of TB reference labs implementing LQMS
Afghanistan	2	0	0%	2	1	50%
Bangladesh	3	0	0%	3	1	33%
Botswana	1	1	100%	1	1	100%
Burma	3	0	0%	3	0	0%
Cambodia	1	0	0%	0	0	0%
DRC	3	1	33%	3	1	33%
Ethiopia	9	8	89%	11	8	73%
India	33	1	3%	37	37	100%
Indonesia	3	0	0%	—	—	0%
Kyrgyzstan	2	1	50%	2	1	50%
Malawi	0	0	0%	2	0	0%
Mozambique	3	1	33%	3	3	100%
Namibia	0	0	0%	1	1	100%
Nigeria	6	0	0%	8	8	100%
South Sudan	1	0	0%	1	0	0%
Tajikistan	1	0	0%	1	0	0%
Tanzania	6	6	100%	6	6	100%
Ukraine	33	0	0%	33	0	0%
Uzbekistan	0	0	0%	2	2	100%
Vietnam	2	0	0%	2	0	0%
Zimbabwe	2	2	100%	2	0	0%
Total	114	21	18%	123	70	57%

Indonesia data not reported in Year 2





# QUALITY MICROSCOPY NETWORKS

While investment in microscopy networks was made in high-volume health facilities in Ethiopia, Nigeria, Mozambique and Indonesia in Year 1, it is hard to maintain the quality of microscopy networks after many years as the primary TB diagnostic tool. Only 12% of CTB countries (with evaluations in Year 2) met the requirements for a sufficient number of qualified and competent staff per workload (GLI standard 4) and only 18% with AFB microscopy labs that are considered safe according to WHO recommendations (GLI standard 10). In addition, rollout and supervision of EQA to all labs including private providers remains a challenge (GLI standards 5 and 8).

Number of GLI-approved TB microscopy network standards met, 2015

	GLI Standard											
	1	2	3	4	5	6	7	8	9	10	11	
Country	Network and services are well defined in National strategy	Microscopy manual and SOPs align with WHO recommendations	Coverage by population is documented	Sufficient number of qualified and competent staff per workload	All Microscopy labs are in the EQA program and receive regular supervision	Global reporting and recording templates are used at all levels	Procurement and distribution of supplies is ensured	EQA policy includes private sector labs	Dedicated budget for quality assured AFB Microscopy	AFB Microscopy labs are safe with practices according to WHO recommendations	National specimen referral policy is in place to ensure additional testing for high risk groups (MDR-TB/HIVTB)	Total Number of Standards Met - Year 2
Afghanistan	✓	✗	✓	✗	✓	✓	✗	✗	✗	✗	✗	4
Bangladesh	✗	✓	✗	✗	✗	✓	✓	✗	✓	✗	✓	5
Botswana	✓	✓	✓	✗	✗	✓	✗	✓	✗	✗	✓	6
Burma	✓	✓	✓	✗	✗	✓	✓	✓	✓	✗	✗	7
DRC	✓	✗	✓	✗	✗	✓	✗	✓	✗	✗	✓	5
Ethiopia	✓	✓	✓	✗	✓	✓	✓	✓	✓	✗	✓	9
Indonesia	✗	✓	✓	✗	✗	✓	✗	✗	✗	✗	✓	4
Kyrgyzstan	✗	✗	✓	✗	✗	✗	✗	✗	✓	✗	✓	3
Malawi	✗	✗	✓	✓	✗	✓	✓	✗	✓	✗	✓	6
Mozambique	✗	✗	✓	✗	✗	✓	✓	✗	✗	✗	✓	4
Namibia	✓	✗	✓	✗	✗	✓	✗	✗	✗	✓	✓	5
Nigeria	✓	✓	✗	✗	✓	✓	✓	✗	✗	✗	✓	6
South Sudan	✓	✗	✓	✗	✗	✓	✗	✗	✗	✗	✗	3
Tajikistan	✗	✓	✓	✗	✓	✓	✗	✗	✗	✗	✓	5
Tanzania	✓	✗	✗	✗	✗	✓	✗	✓	✗	✗	✗	3
Ukraine	✗	✓	✓	✗	✓	✓	✓	✗	✓	✓	✓	8
Zimbabwe	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10
Total	9	9	14	2	6	16	8	6	7	3	13	

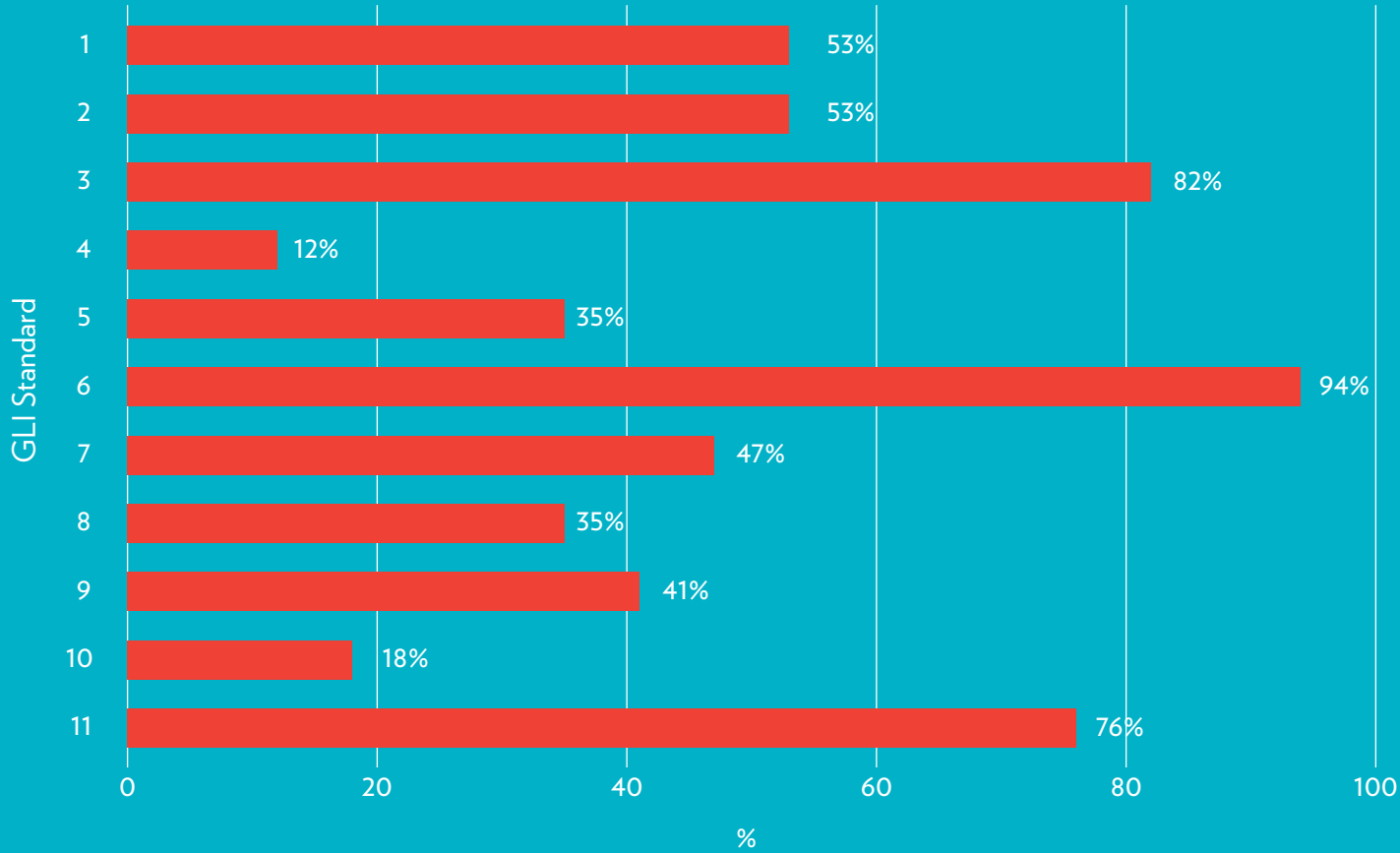
Cambodia, India, Uzbekistan, and Vietnam were not evaluated in Year 2







Proportion of countries that meet each GLI-approved TB microscopy network standard (of countries that evaluated their networks in Year 2, n=17)



Cambodia, India, Uzbekistan, and Vietnam were not evaluated in Year 2

CTB-specific achievements:

In **Burma**, which has 52 GeneXpert machines to date, CTB provided TA towards LQMS introduction and biosafety officer training as well as, GeneXpert trainings based on the GLI package, and finally the hiring of a Senior Laboratory Technical Advisor to oversee culture and DST activities at the NTRL.

Similarly, in **Mozambique**, long-term TA and follow-up monitoring visits from both the NRL and the CTB laboratory officer helped the Nampula and Beira reference laboratories to score one star out of the five SMLTA/FOGELA requirements for laboratory accreditation, with the implementation of a LQMS.

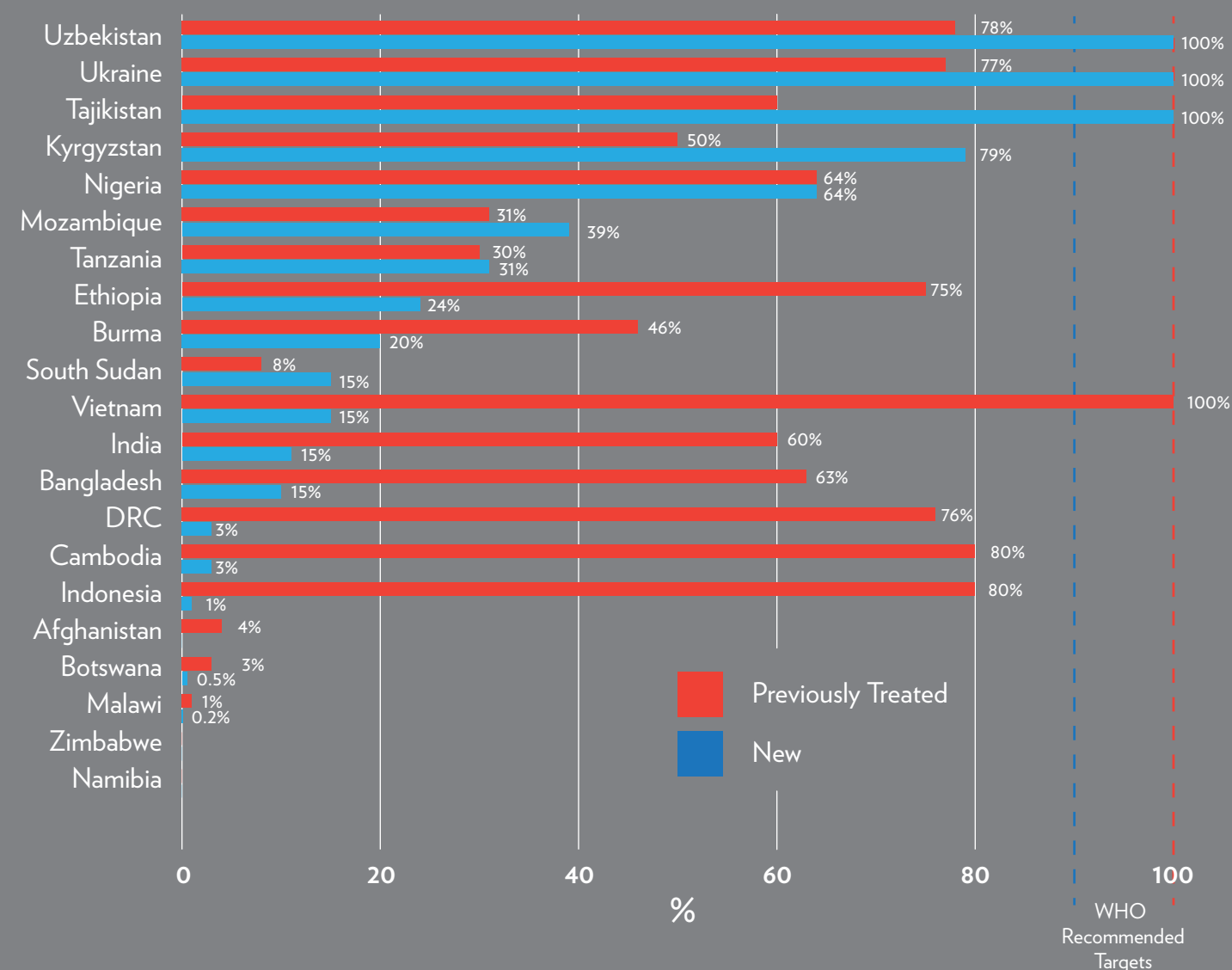
DRUG RESISTANCE TESTING

In 2015, 30% of the 3.4 million new bacteriologically confirmed and previously treated TB cases notified globally were reported to have had DST or GeneXpert testing for rifampicin resistance, with coverage of 24% for new TB patients and 53% for previously treated TB patients (WHO 2016). Based on WHO data, drug resistance testing coverage expanded in CTB countries in 2015, as nine countries (Uzbekistan,

Ukraine, Tajikistan, Kyrgyzstan, Nigeria, Mozambique, Tanzania, Ethiopia and Burma) tested >20% of new bacteriologically positive TB cases for MDR/RR-TB - up from 5% in 2014. In addition, 12 (57%) countries tested >50% of previously treated bacteriologically confirmed TB cases tested for MDR/RR-TB - up from ten countries in 2014.



Percentage of bacteriologically confirmed TB cases (new and previously treated) who are tested for MDR/RR-TB, (WHO 2016)



## STRENGTHENING XPERT DIAGNOSTIC NETWORKS

In Year 2, CTB efforts across the 21 countries significantly increased their focus on strengthening Xpert diagnostic networks to ensure machines are properly maintained and to expand their use for rapid and more accurate diagnoses.

In **Bangladesh**, CTB improved the functionality of the GeneXpert network through a country-wide inventory assessment performed jointly with the NTP and Cepheid. Thirty-eight out of a total of 39 machines were restored to working order through necessary maintenance, calibrations and module upgrades, compared to only 74% of the units (29 machines) in working order in Year 1. In addition, CTB Bangladesh supported the establishment of a GeneXpert repair and maintenance center, which will open at the beginning of Year 3.

Similarly, CTB-**Indonesia** provided TA to the NTP for GeneXpert placement, installation, and training for laboratory technicians. These efforts increased the network from 41 to 82 machines across 33 provinces. In addition, 300 machines procured through GF grant acceleration and 31 machines supported with the domestic budget will be installed in the first half of Year 3. It is anticipated that this network expansion will increase RR-TB testing, particularly for new cases.

In **Malawi**, to address challenges identified in an Xpert network assessment, CTB supported the NTP to develop and implement an action plan focused on training clinicians and laboratory staff to improve use of Xpert and its associated diagnostic algorithms, develop a system for accurate forecasting and cartridge supply management, as well as the procurement of four additional machines (giving a total of 48 machines in the country). CTB also supported the placement and installation of four machines that were handed over from the TB CARE II project.

In **Vietnam**, where GeneXpert rollout began in 2012 under TB CARE I, an additional 20 new machines were provided by the GF to the existing network (71 machines). The total number of tests done with GeneXpert in 2015 was 30,138 (an increase of 38%); 46% were MTB+ (13,910) and 2,229 RR-TB cases (7.6%) were detected. The total number of tests done with GeneXpert since its introduction in 2012 until September 30 2016 was 85,854. Among these, 7,080 tests were RR-TB cases.





## STRENGTHENING SPECIMEN TRANSPORT SYSTEMS

CTB activities are also focused on strengthening specimen transport systems to increase access to and utilization of Xpert testing. For example, in CTB-supported provinces in **DRC**, a total of 3,153 sputum samples were transported from health facilities through the collection of sputum samples. Among the 2,585 samples transported to Xpert sites, 96% (2,576/2,585) were tested; 28% (728/2,576) were bac+ TB, of which 17% (123/728) were RR-TB. In total, 97% (119/123 RR-TB) initiated second line treatment (59 are on shorter MDR-TB regimens [50%]).

In addition, **Nigeria** instituted sample movement to GeneXpert sites, facilitating the transport of 17,891 samples by the end of Year 2. As a result, there was an average increase of about 30% in GeneXpert assays performed. Additionally, CTB Nigeria hired 23 ad hoc laboratory personnel to support the processing of samples, and supplied 13 solar panels to facilities to ensure uninterrupted power and thus more reliable diagnostic services.

Similarly, through CTB, **South Sudan** established sample transport from TB management unit laboratories to the central reference laboratory for testing using motorcycles, resulting in a 26% increase in GeneXpert tests from 403 in September 2015 to 513 in January 2016. Out of 513 samples tested, 32% (164/513) were MTB positive with 60% (99/164) newly confirmed. Seven percent of the cases detected (11/164) were rifampicin resistant.

### OPERATIONS RESEARCH ON SPUTUM TRANSPORT

In Ethiopia eight cold chain vehicles and developed specimen referral software to facilitate better communication between referring and testing facilities, and the new system was monitored over a six-week period.

At baseline 363 (75%) samples were delivered to the regional laboratory within seven days. Under the new system vehicles carrying 550 specimens, traveled between duty stations and specimen referral health facilities 32 times, 24 of which (75%) achieved same day delivery of sputum samples to testing facilities.

In the remaining eight, sputum samples were collected and delivered to testing sites within two days, showing that the use of cold chain vehicle sample transportation significantly reduces sample delivery times.



### IMPROVING CONNECTIVITY

Countries with Xpert networks already established in Year 1, focused on connectivity and centralized monitoring. For example, in **Botswana**, where GeneXpert is functional in 34 health facilities, with each district maintaining at least one GeneXpert machine to use as the 'initial' diagnostic test for all presumptive TB cases, CTB in collaboration with the NTP, introduced and implemented GxAlert, that connects GeneXpert

devices via a secure network and allows automatic real-time reporting of test results. To date, GxAlert rollout is complete in 30/34 facilities, with more than 21,000 test results already reported. The in-country team also established national-level notifications to MDR-TB coordinators for all newly identified DR-TB cases through both SMS and e-mail.

### IMPROVING SECOND LINE CULTURE AND DST CAPACITY

Advances in second line culture and DST have finally been achieved. In **Mozambique** for example, the CTB-supported first national meeting of all three reference laboratories resulted in the decision to expand second-line DST/line probe assay (LPA) to the NRL in Nampula. In addition, with support from CTB, two regional laboratories in **Indonesia**, BBLK Jakarta (DKI Jakarta) and Adam Malik Hospital (North Sumatera) were certified on second-line anti-TB DST

during Year 2 bringing the total number of certified laboratories for 2nd line DST in Indonesia to seven (the national target for 2016). In **Botswana**, CTB made a significant contribution to the refurbishment of the NTRL to reactivate services for routine culture monitoring and DST. The renovation of the NTRL was successfully completed in August 2016 with the laboratory fully operational as of September 1st, 2016.





## MARY'S STORY - SOUTH SUDAN

When Mary Yeno was one month old she wasn't breast feeding properly, she was very thin and had developed a cough which won't go away. She was diagnosed with pulmonary TB when only four months old, and at the time of diagnosis she only weighed 4.2 kg. When Challenge TB-trained community TB mobilizers searched for the source of Mary's infection through contact investigation, they discovered that her father had infectious pulmonary TB.

Mary and her father were started on anti-TB treatment in November 2015, and Challenge TB-supported TB community mobilizers in Lainya followed-up to make sure they both finished the six-month course of treatment.

Both Mary and her father completed their treatment in April 2016 and have been declared cured of TB. Their treatment success has helped to reduce the stigma surrounding TB in their community and also removed the myth that the disease is the result of witchcraft. Mary's appetite has returned to normal and her weight has increased to 7.6 kg, she is healthy and is having fun playing with the neighboring children.

Her mother said peace has finally come back to their family, and she thanked the Challenge TB team and the community mobilizer for diagnosing and treating their sickness and saving both her husband and daughter's lives.







## SUB-OBJECTIVE 3 - STRENGTHENING PATIENT-CENTERED CARE AND TREATMENT

CTB intervention areas/intended outputs:

1. Ensured intensified case finding for all risk groups by all care providers
2. Access to quality treatment and care ensured for TB, DR-TB and TB/HIV for all risk groups from all care providers

Key results:

- In 2015, 7.2% of notified cases in CTB countries were among children, which is higher than the global average of 6.3%;
- Community referral contributed roughly 22% of all cases notified in Year 2 (31,559 cases); with six CTB countries having with substantial investment in community referral;
- In Year 2, more than 855 TB cases were diagnosed in prisons with CTB support;
- Three CTB countries maintained treatment success rates (TSR) above 90% (Bangladesh, Cambodia and Tanzania);
- Fifteen countries maintained or improved on 2013 TSRs.

As previously mentioned, in 2015 a total of 3,101,191 cases (all forms) were notified across CTB countries, while around 3.2 million cases (from an estimated 6.3 million incident cases in CTB countries) were not notified. In addition to the work done to develop an enabling environment, and based on country/community-specific evidence, CTB has prioritized key populations to intensify case finding,

both in health facilities and beyond. Based on the identified gaps and this evidence base, CTB targets key populations such as children, miners and the urban poor, works in prisons, and applies case finding approaches such as intensified case finding (health facility-based), contact investigation and active case finding (ACF)/community referral.

## CHILDHOOD TB

In CTB countries in 2015, 7.2% of notified cases were among children, which is higher than the global average of 6.3%. Although children also made up 7.2% of cases in CTB countries in 2014, increases were recorded in several countries including Bangladesh (3% to 4%), Ethiopia (13% to 14%), Indonesia (7% to 9%), and Kyrgyzstan (7% to 8%). Conversely, in Cambodia the proportion of TB cases among children decreased

from 28% in 2014 to 20% in 2015 indicating a possible reduction in over-diagnosis of pediatric TB. Burma is working to reduce the high number of children 5-9 years of age particularly wrongly diagnosed with pulmonary TB based on inaccurate interpretation of chest X-rays, after an assessment by a CTB-supported pediatrician.

Number of TB cases (all forms) diagnosed among children (0-14) and proportion of childhood cases among all notified cases, 2014-2015 (WHO 2016)

CTB Country	2014		2015	
	#	%	#	%
Burma	36,301	26%	34,930	25%
Cambodia	12,050	28%	6,885	20%
Afghanistan	4,454	14%	4,951	14%
Ethiopia	15,917	13%	18,444	14%
Uzbekistan	1,913	10%	1,795	11%
Malawi	1,827	11%	1,562	10%
Tanzania	6,463	10%	5,703	9%
Indonesia	23,170	7%	28,412	9%
Namibia	877	10%	823	9%
Kyrgyzstan	438	7%	537	8%
Zimbabwe	2,290	8%	1,820	7%
Botswana	419	7%	296	6%
India	95,709	6%	99,133	6%
Tajikistan	334	6%	328	6%
Nigeria	5,463	6%	4,773	5%
Bangladesh	6,262	3.3%	8,073	4%
DRC	3,438	3%	3,062	3%
Ukraine	532	2%	568	2%
South Sudan	0	0%	138	1%
Vietnam	144	0%	124	0%
Mozambique	N/A	N/A	N/A	N/A
<b>Total</b>	<b>218,001</b>	<b>7.2%</b>	<b>222,357</b>	<b>7.2%</b>

Countries with CTB investment in childhood TB highlighted in green.



CTB works in 13 countries to address childhood TB:

In **Bangladesh**, where pediatric case finding was low (3% nationwide in 2014), CTB engaged the Bangladesh Pediatric Association to train pediatricians in Sylhet District. In 2015, in Sylhet more than 5% of the TB cases notified were among children, compared to the national average (3.6%). Overall CTB's local partners found around 5,600 (86%) of the 6,500 pediatric cases notified nationwide between Jan-Sep 2016.

In **India**, the pediatric initiative to improve the diagnosis of TB in children using GeneXpert was extended from four to nine sites/cities. Facilities linked to the project increased from 272 to 747 during the year, including an increase from 90 to 395 in the private sector. A total of 30,963 presumptive pediatric TB cases were provided up front access to Xpert testing - a major increase compared to Year 1 (15,345); 2,146/30,936 (7%)

pediatric TB cases were detected of which 185 (9%) were RR-TB.

Through the CTB **East Africa Regional** project, the Union's Desk Guide on the management of TB in children, originally published in 2010, has been updated with dosage charts for the newly available fixed-dose combination formulations for the treatment of TB in children, the use of Xpert in the diagnostic approach for children, and the approach for the management of a child with presumptive MDR-TB.

[http://www.challengetb.org/publications/tools/ua/Deskguide\\_Childhood\\_TB\\_2016.pdf](http://www.challengetb.org/publications/tools/ua/Deskguide_Childhood_TB_2016.pdf)

An e-learning tool for the management of MDR TB in children was also developed:  
<https://childhoodtb.theunion.org/courses/CTB2/en/intro>



## CB-DOTS/COMMUNITY REFERRAL

The engagement of the community to help find, treat and care for TB patients is a priority for CTB. Working across more than six countries (Afghanistan, DRC, Ethiopia, Mozambique, Nigeria, and South Sudan), the project takes a country-specific/locally owned approach, with community-based organizations (CBOs), community health workers (CHWs) or community volunteers. At the national level in 2015, documented community referral contributed 9% of all TB cases in comparison to only 6% in 2014 - an increase of 104,628 cases. Of particular note are the major

jumps in the contribution in Ethiopia (12% in 2014 to 41% in 2015), Nigeria (0% to 23%), and Indonesia (3% to 17%). One limitation of these data that are newly reported to WHO is that only 47% of notified cases have recorded data on referrals by CHWs (34% in 2014), which means recording/reporting systems need to be improved to better capture the communities' involvement in case notification efforts.

Number and percentage of notified cases (all forms) being referred by the community, 2014-2015 (WHO 2016)

CTB Country	2014		2015	
	Number of cases community referred	Percentage of notified, community referred cases	Number of cases community referred	Percentage of notified, community referred cases
Bangladesh	79,477	42%	85,676	41%
Indonesia	8,707	3%	57,217	17%
Ethiopia	14,399	12%	56,267	41%
Nigeria	—	0%	19,755	23%
India	19,713	1%	18,739	1%
Burma	1,304	1%	12,631	9%
Tanzania	10,416	17%	8,570	14%
Cambodia	14,115	33%	6,634	19%
DRC	12,649	11%	5,629	5%
Mozambique	2,868	5%	3,439	6%
Zimbabwe	—	0%	1,242	5%
Afghanistan	1,088	3%	1,146	3%
Ukraine	—	0%	563	2%
Uzbekistan	7,191	39%	0	0%
Botswana	—	0%	—	0%
Kyrgyzstan	—	0%	—	0%
Malawi	—	0%	—	0%
Namibia	—	0%	—	0%
South Sudan	—	-	—	—
Tajikistan	883	15%	—	0%
Vietnam	—	0%	—	0%
Total	—	6%	—	9%

No data reported by South Sudan to WHO; countries with CTB investment in CB-DOTS highlighted in green.



A major scale-up of community-based activities under CTB occurred in Year 2, which will be reflected in 2016 national data. However, in CTB-supported areas across six countries, CTB-supported community referral contributed roughly 17% of all cases notified in Year 2 (Oct 2015 - Sep 2016) - 63,971 cases from Afghanistan, Bangladesh, DRC, Ethiopia, Mozambique, and South Sudan. Country-specific achievements on the expansion of community engagement in TB care and prevention activities in Year 2 are summarized below.

In **Afghanistan**, CTB assisted the NTP to ensure access to TB services in hard-to-reach areas in 15 provinces. CTB subcontracted CB-DOTS implementing organizations offering a basic package of health services in 14 provinces with the aim of increasing local capacity for TB and ensuring sustainable DOTS implementation (CTB and the NTP directly implemented the DOTS activities in one province, Pakiya). In Year 2, DOTS coverage increased by 11%, from 391 (45%) HFs providing CB-DOTS in September 2015 to 493 (56%) in September 2016. At the same time the number of presumptive TB patients referred by CHWs more than doubled from 10,378 in first three quarters of 2015 to 21,413 in first three quarters of 2016. Furthermore, the number of bac+ TB cases referred by CHWs and diagnosed with TB increased by 94%, (from 535 cases in 2015 to 1,036 cases in 2016) and the number of TB cases put on treatment increased by 102% (from 873 in 2015 to 1,765 in 2016). Lastly, although at a national level community-referred TB cases make up only 3% of all notified cases, in CTB areas 9% of all cases were community-referred in Year 2.

In **Bangladesh**, CTB has been supporting eight local NGOs to implement community-based TB control activities, particularly in underperforming districts and targeted at populations living in urban slums and inaccessible rural areas. After a rapid scale-up at the end of Year 1, 32,412 TB cases were diagnosed CTB sub-grantee screening and referral efforts.

In **DRC**, CTB engaged four local partner NGOs to improve TB case-finding by raising TB awareness, conducting CI and transporting sputum within target communities. Case notifications by these four local partners more than tripled from 1,250 in Year 1 to 3,853 in Year 2. A total of 219,765 persons were screened for TB of which 11% (24,457/219,765) were identified as presumptive TB cases; 97% (23,687/24,457) were tested for TB. Of these, 16% (3,853/23,687) persons were diagnosed with TB, 84% of whom were bac+ (with an additional 9% clinically diagnosed, and 7% extra-pulmonary TB).

In **Mozambique**, the team strengthened CB-DOTS implementation and provided TA to provincial, district and HF staff in TB prevention and care activities through training and supportive supervision visits, including on-site mentoring and on-the-job training. Since January 2016, 18,204 presumptive TB cases have been referred by CHWs and peripheral health nurses to HFs for TB screening; 17% of the successful referrals (2,825/16,538) were diagnosed with TB (all forms), with 54% (1,530/2,825) having bac+ TB.

For the first time, CTB-**Nigeria** supported CBOs in 14 hard-to-reach local government areas, which reported 131 diagnosed cases in Year 2.

## PRISONS

CTB works in six countries (Afghanistan, Cambodia, DRC, Malawi, Mozambique, Nigeria, and Zimbabwe) to improve case detection and the quality of treatment in prison settings. In Year 2, more than 973 TB cases were diagnosed in prisons in these countries with CTB support.

CTB-**Cambodia** conducted annual screening in ten target prisons using CXR and Xpert. A total of 6,768 inmates (100% of those incarcerated) were screened using a CXR (and when applicable, Xpert) from which 87 TB cases (1.3%) were diagnosed and put on treatment. In addition, throughout the year 1,125 inmates who had TB symptoms were screened for TB resulting in 31 patients diagnosed (3%). A total of 118 TB patients were diagnosed and initiated on TB treatment, and the TSR was maintained at higher than 90% in all ten prisons.

In **DRC**, CTB worked to improve TB care and prevention in prisons and as a result the number of

notified TB cases in prisons increased by 55% from 139 in Year 1 (16% of 900 screened) to 216 in Year 2 (4% of 5,375 screened). In addition, RR-TB detection increased by 24% from 99 to 123 cases through CTB-supported sputum sample transportation for Xpert testing; 97% of these RR-TB cases were initiated on second-line drugs.

In **Mozambique**, CTB led the *TB in Prisons Working Group*, which includes the National Prison Service, NTP and other stakeholders. The CTB led group developed prison information, education and communication flyers, which are now in use across the country. CTB trained prison guards and inmates on the referral system, TB prevention, and the identification of presumptive TB cases. From a total target prison population of 2,930, 250 self-presented with symptoms and were screened, of whom 161 presumptive cases were identified. Of the presumptive cases referred to a nearby HF, 30 (19%) were diagnosed with TB and started on treatment.

## IMPROVED ACCESS TO QUALITY TREATMENT

Between 2013 (baseline) and 2014 cohorts, four CTB countries maintained TSRs above 90% (Bangladesh, Cambodia, Tanzania, and Vietnam). Fifteen countries maintained or improved on the 2013 cohort TSR and 191,182 more patients were successfully treated from the 2014 cohort than the year before. A notable drop in TSR was recorded in India (88% to 74%), likely a result of the large number of notifications received from the private sector with generally poor follow-up of patients during treatment as well as poor recording of treatment outcomes from private health facilities (related to the launch of mandatory reporting in 2013). The large number of evaluated patients in India results

in a significant drop of the overall TSR. Although the national TSR dropped slightly in Afghanistan, the TSR has remained steady at 90% in the 15 CTB-supported provinces, likely in part due to CB-DOTS efforts. National level TSR for HIV positive TB patients was available from 12 CTB countries. The major jump in numbers treated (and also the treatment cohorts) in Ethiopia and Mozambique may be a result of delayed transition to reporting on all TB cases (not just bac+ before 2013). National TSR data was not disaggregated by other populations (i.e., children, gender) or settings (i.e. private sector).





## Number and percentage of TB cases successfully treated (new cases), 2013-2014 cohorts (WHO 2016)

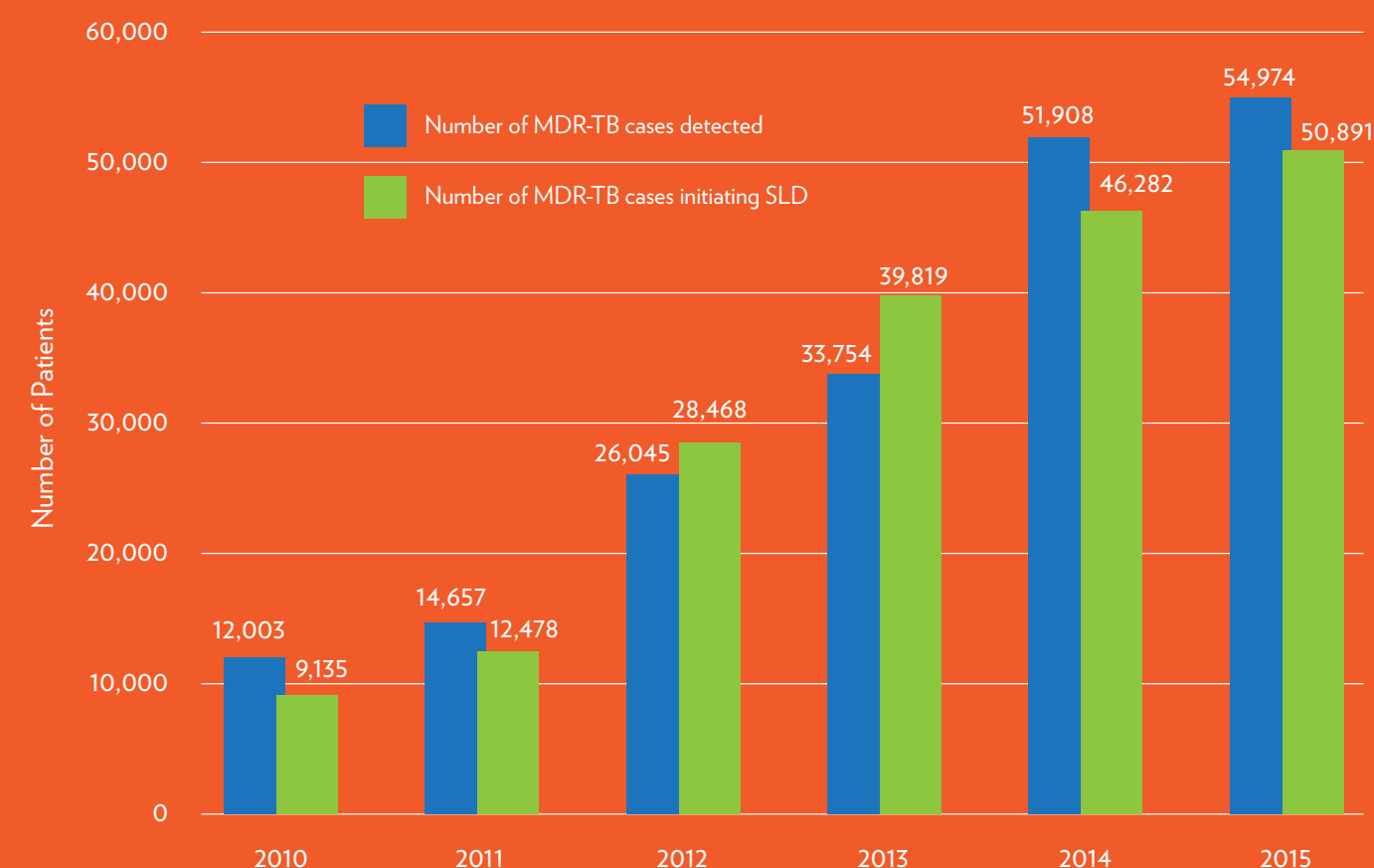
CTB Country	2013			2014		
	Number successfully treated	Treatment success rate	Treatment success rate (HIV+)	Number successfully treated	Treatment success rate	Treatment success rate (HIV+)
Bangladesh	170,893	93%	75%	177,715	93%	62%
Cambodia	33,048	93%	—	40,119	93%	—
Vietnam	91,051	89%	71%	91,561	91%	75%
Tanzania	57,989	91%	44%	55,399	90%	35%
DRC	97,862	87%	—	100,163	89%	—
Ethiopia	39,247	89%	76	108,612	89%	76%
Mozambique	20,196	88%	—	49,558	89%	70%
Tajikistan	4,619	88%	66	4,606	89%	—
Afghanistan	26,733	88%	—	27,553	87%	—
Burma	117,883	87%	—	117,986	87%	—
Namibia	7,261	86%	81	6,968	87%	80%
Nigeria	79,080	86%	80	74,824	87%	79%
Uzbekistan	14,457	83%	—	14,215	87%	—
Malawi	14,506	82%	—	13,867	85%	—
Indonesia	285,935	88%	—	271,494	84%	—
Kyrgyzstan	4,797	85%	—	4,837	84%	—
Zimbabwe	28,348	80%	—	24,067	81%	68%
Botswana	5,298	73%	71	4,990	77%	77%
India	1,090,159	88%	49	1,196,147	74%	56%
Ukraine	20,959	71%	72	16,109	72%	87%
South Sudan	5,190	72%	62	5,903	71%	71%
<b>Total</b>	<b>2,215,511</b>	<b>88%</b>	<b>—</b>	<b>2,406,693</b>	<b>80%</b>	<b>—</b>

## DIAGNOSING AND TREATING MDR-TB

In 2015, 21 CTB countries reported a total of 55,170 MDR/RR-TB cases (roughly 18% of the estimated total of 300,000 MDR-TB cases); and 50,990 were started on second-line treatment. Although the cohorts of MDR/RR-TB patients diagnosed and initiated on

treatment in 2015 are not necessarily the same (the treatment cohort may include patients diagnosed in the previous year), a rough comparison of the groups shows a gap of only 8% in 2015 compared to 11% in 2014.

### MDR/RR-TB cases notified and initiated on MDR-TB treatment across all 21 CTB countries, 2010-2016 (WHO 2016)



According to available 2016 NTP data (not yet complete) collected through CTB, an estimated 42,398 patients have so far been diagnosed with confirmed RR-TB and MDR-TB, and a total of 38,650 (roughly 88%) patients initiated treatment for unconfirmed and confirmed MDR-TB between January-September 2016.

It is important to note that full data are not available for a number of countries including India and Uzbekistan. When extrapolated out for all of 2016, the levels of MDR/RR-TB diagnosis (~56,500) and second-line treatment initiation (~51,500) will surpass the 2015 totals.





Diagnosis of confirmed RR-TB and MDR-TB (Xpert and Culture/Drug-Susceptibility Testing) as well as treatment initiation for unconfirmed and confirmed MDR-TB, 2015 and January-September 2016

CTB Country	Number of MDR-TB cases detected					Number of MDR-TB cases initiating SLD				
	2015	Jan-Mar 2016 (CTB)	Apr-June 2016 (CTB)	Jul-Sept 2016 (CTB)	To date in 2016 (CTB)	2015	Jan-Mar 2016 (CTB)	Apr-June 2016 (CTB)	Jul-Sept 2016 (CTB)	To date in 2016 (CTB)
Afghanistan	81	20	22	25	67	81	20	22	25	67
Bangladesh	954	242	280	228	750	880	208	273	203	684
Botswana	57	14	14	14	42	61	15	15	15	45
Burma	2,793	755	708	732	2,195	2,207	500	621	561	1,682
Cambodia	77	29	29	20	78	75	29	29	20	78
DRC	499	126	128	149	403	413	118	121	90	329
Ethiopia	597	278	278	278	835	597	223	223	223	893
India	28,876	7,219	7,219	7,219	21,657	26,966	6,742	6,742	6,742	20,226
Indonesia	2,135	436	415	446	1297	1,519	265	230	207	702
Kyrgyzstan	1,116	360	383	372	1115	1,158	341	381	361	1,083
Malawi	93	0	35	18	53	65	0	23	12	35
Mozambique	646	150	172	161	483	646	146	168	157	471
Namibia	320	79	79	79	237	308	71	76	85	232
Nigeria	1,241	349	369	359	1,077	656	265	304	285	854
South Sudan	20	1	10	10	21	0	0	0	0	0
Tajikistan	675	175	210	197	582	636	175	210	197	582
Tanzania	178	49	45	50	144	123	40	40	44	124
Ukraine	9,397	2,481	2,493	2,051	7,025	9,787	2,453	2,479	2,028	6,960
Uzbekistan	2,149	537	537	537	1,611	2,149	537	537	537	1,611
Vietnam	2,602	818	674	746	2,238	2,131	542	572	456	1,570
Zimbabwe	468	193	132	163	488	433	166	115	141	422
Total	54,974	14,311	14,232	13,854	42,398	50,891	12,856	13,181	12,389	38,650

(2015: WHO Global TB Report 2016; 2016 data reported from the NTP via CTB; data that are not yet available have been extrapolated and appear in red).

In Year 2, only three CTB countries exceeded a TSR of 75% for MDR/RR-TB (2013 cohort). Globally, only 49% of patients on MDR-TB treatment were successfully treated, largely due to high rates of mortality and loss to follow-up (WHO 2016 report). CTB needs to continue to address the high rates of mortality and loss to follow-up to raise the TSR to 75% and higher

in all CTB countries. As already discussed, DR-TB testing (using GeneXpert and second line LPA testing) first needs to be accelerated for high-risk MDR-/RR-TB patients (retreatment patients in particular), and eventually rolled out to all patients evaluated for and diagnosed with TB.

Number and percentage of MDR-TB cases successfully treated, WHO 2015 data

CTB Country	Cohort 2012		Cohort 2013	
	Number Successfully Treated	Treatment Success Rate	Number Successfully Treated	Treatment Success Rate
South Sudan	–	–	–	–
Burma	351	79%	552	83%
Nigeria	96	62%	260	77%
Bangladesh	364	72%	513	75%
Cambodia	87	79%	91	75%
Botswana	44	70%	72	71%
Vietnam	503	71%	661	69%
Ethiopia	224	83%	270	68%
Tanzania	33	73%	63	68%
Namibia	142	68%	118	64%
Afghanistan	27	71%	29	63%
DRC	86	64%	169	63%
Tajikistan	351	66%	375	60%
Zimbabwe	175	75%	207	59%
Kyrgyzstan	486	63%	611	57%
Malawi	12	63%	10	53%
Uzbekistan	737	49%	1,390	53%
Mozambique	60	28%	163	52%
Indonesia	235	54%	412	51%
India	6,433	46%	7,318	46%
Ukraine	1,909	34%	2,948	39%
Total	12,382	47%	16,251	49%

Data not yet available for South Sudan.





Global and CTB country-specific data on ART coverage for the estimated number of incident HIV-positive TB cases as well as for notified TB patients who were known to be co-infected with HIV is presented on page 16. Highlights of CTB support to intensified case finding and improved access to quality treatment and care for TB/HIV in Year 2 include the following:

For the first time in Mumbai, **India**, the project has engaged 58 doctors working in 24 private healthcare facilities for HIV screening among TB patients. So far, 2,295 TB patients have been screened free of charge, from April-September 2016 using rapid HIV diagnostic tests. A total of 36 (1.6%) patients tested positive for HIV and were referred to the nearest HIV care center. CTB also established a data sharing mechanism between 23 of the 24 engaged private facilities and the local government in order to improve disease surveillance.

In **Namibia**, CTB supported the decentralization of

ART for stable patients to TB DOT sites, by optimizing the utilization of DOT containers, which were procured under TB CARE I. In the Engela district a total of 2,721 stable PLHIV, who originally received their ART at Engela District Hospital, are now receiving ART from six TB DOT points. This decentralized approach will be gradually rolled out nationally in Year 3 and Year 4.

In cooperation with the NTP, CTB-**Tanzania** updated the different programmatic documents needed to facilitate the implementation of TB and TB/HIV activities including the national TB/HIV policy, and the comprehensive supportive supervision and mentorship training package for TB/HIV.

In **Zimbabwe**, HIV testing became routine for patients undergoing TB screening. Through CTB support, a total of 6,854 patients who did not know their status were tested for HIV and 254 (5%) tested positive and were referred for services.

## NEW DRUGS AND REGIMENS

Building on Year 1 investment in the introduction of shorter MDR-TB regimens and new anti-TB drugs BDQ) and DLM for pre-XDR and XDR-TB patients, the core BDQ project rolled out the generic implementation planning tool and the programmatic and clinical guide for the introduction of new drugs and regimens (ND&R). Adaptation of these generic documents has been done in Indonesia, Kyrgyzstan, Nigeria, Tajikistan, Ukraine, and Vietnam, while adaptation is in process in Botswana, DRC, Mozambique, and Uzbekistan. As part of this preparatory process, countries are calculating drug needs, establishing basic safety monitoring measures and planning to start enrollment in the first six months

of 2017. Other countries such as Kyrgyzstan (funded through core project support) and Tajikistan are ready to introduce ND&R having gained approval from the MoH and trained staff in early diagnosis, early treatment initiation and monitoring of treatment safety and efficacy. Patient enrollment will start by the end of 2016 in both these countries. By the end of September 2016, 13 countries had developed their country-specific strategic documents, and 489 patients had been enrolled on a regimen containing BDQ, 32 patients were enrolled on DLM containing regimens, and 464 patients were enrolled on shorter regimens (including patients receiving BDQ and DLM from Kazakhstan).







## OBJECTIVE 2 - PREVENTION OF TRANSMISSION AND DISEASE PROGRESSION

### SUB-OBJECTIVE 4 - TARGETED SCREENING FOR ACTIVE TB

CTB intervention areas/intended outputs:

1. Contact investigation implemented and monitored
2. TB social determinants identified, appropriate interventions designed, implemented and monitored

Key results:

- CTB is implementing contact investigation in seven countries (33%)
- In Year 2, contact investigation led to more than 2,468 TB cases being diagnosed in CTB-supported areas
- Active case finding is being implemented by CTB in seven countries (33%).

## CONTACT INVESTIGATION

Contact investigation is a strategy to identify, locate, evaluate and, as needed, provide treatment for latent TB infection (LTBI) or active TB disease for contacts of known TB patients. CTB worked in eight countries in Year 2 to introduce or scale-up contact investigation (Afghanistan, Bangladesh, Ethiopia, Mozambique, Nigeria, South Sudan, Tanzania, and Ukraine). Although sometimes introduced as a standalone strategy, CI is often implemented in

conjunction with other community-based approaches (i.e., CB-DOTS, community referral, active case finding and IPT). In Year 2, a total of 2,468 TB cases were diagnosed in CTB-supported areas from CI efforts.

In **South Sudan**, CTB continued supporting CI in seven health facilities in five counties. A total of 1,654 index TB cases were registered, with HCWs visiting 333

(20%) of their households to offer screening, despite the security situation. Seventeen percent (476/2,824) of the contacts screened were referred for TB microscopy and clinical examination, out of whom 28% (131/476) were diagnosed with TB and linked to care including 37 (28%) bac+ and 76 (58%) clinically diagnosed cases.

In **Nigeria**, CTB engaged HCWs, local government supervisors and CBOs to investigate contacts of bac+ TB patients in the 12 CTB-supported states. Households of 1,917 index TB patients were visited from which 6,260 contacts were screened for TB. Of those screened, 1,701 (27%) presumptive TB cases were identified and samples were obtained for investigation. In total, 224 (13%) bac+ cases were identified. All patients diagnosed were assisted and linked with TB services.

CTB-Afghanistan assisted the NTP to conduct contact evaluation of 4,228 (37% of all) index TB cases in five provinces. Sixty percent more contacts were identified in Year 2 (42,842) than in 2014 (25,318). Through TB symptoms screening, 6,564 presumptive TB patients were identified and tested for TB in Year

2, from which 931 TB cases (all forms, 14%) were diagnosed including 354 bac+ cases (5%). Compared to 2014, 59% more bac+ TB cases were diagnosed in Year 2.

In **Ukraine**, CTB developed and pretested a draft algorithm of CI, clarifying the roles of all stakeholders (service providers, NTP, etc.) in TB contact investigation and management. As a result, during the three months of implementation the average number of screened contacts increased by 40-50% in project oblasts and reached 2.8-3.2 contacts per MDR-TB case.

CTB-Bangladesh helped to finalize an NTP-endorsed CI mechanism including SOPs and updated recording and reporting formats, which will be piloted in Year 3. Through local NGOs, CTB also has been focusing on scaling-up CI for pediatric contacts as another priority category of index cases (beyond bac+ patients); in Year 2, 31,323 presumptive pediatric TB cases were identified through CI, resulting in 672 (2%) being diagnosed with TB (all forms).





ACTIVE CASE FINDING

CTB works in seven countries (Afghanistan, Bangladesh, Cambodia, DRC, Ethiopia, Mozambique, and South Sudan) to implement ACF initiatives. It is difficult to calculate the specific number of cases notified from ACF activities across all CTB countries given the synergies and overlap with community referral and contact investigation activities described above. Below are some key achievements from Year 2:

CTB-Cambodia implemented ACF targeting the elderly population, a population at increased risk for TB as demonstrated in the prevalence survey. Using pagodas as a contact point, 7,747 elderly people, including monks and Ajars (lay person who acts as a liaison between the Buddhist clergy and the public), were screened for TB symptoms, of which 60% (4,667/7,747) had at least one symptom suggestive of TB. A total of 97 active TB cases were identified (2% of presumptive TB patients), 76% of whom were bac+ (24% clinically diagnosed). In May 2016, an interval review of this ACF was conducted, which suggested ACF resulted in the identification of TB

cases among elderly persons at a prevalence level of 2,000 per 100,000 population, in the context of a national notification rate of 390 per 100,000. CTB also partnered with the Cambodia Anti-Tuberculosis Association to conduct ACF using mobile CXR and on-site Xpert testing. Since March 2016, 99 HFs and village health support group staff were trained and engaged to conduct ACF. A total of 26,085 presumptive TB cases among the elderly were identified and referred to HFs for further investigation. Among those, 62% (16,215) were eligible for CXR screening and 18% (4,610) of those who completed a CXR with unclear findings were tested with Xpert. As a result, 1,217 (26%) TB cases were identified and initiated on treatment, including 394 bac+ cases (32%), 67% clinically diagnosed, and four RR-TB cases.

In Malawi, CTB is launching a multi-phased approach in two districts (Blantyre and Lilongwe), focusing first on intensified case finding in ART clinics and outpatient departments (facility-based), followed by ACF in the community. The groundwork was laid in Year 2 and implementation will start in Year 3.







## SUB-OBJECTIVE 5 - IMPLEMENTING INFECTION CONTROL MEASURES

### CTB intervention areas/intended outputs:

1. Compliance with quality TB-IC measures in health care, community and congregate settings ensured
2. TB surveillance among HCWs ensured

### Key result

- Twelve (57%) CTB countries reported number of HCWs notified with TB disease in 2014

According to WHO and NTP 2015 data, 12 (57%) CTB countries reported on the numbers of HCWs with TB disease, which indicates that TB surveillance systems among HCWs are improving (eight CTB countries reported these data in 2014); nonetheless HCW TB surveillance is not yet functional in half of CTB countries, and within countries it is often not

reflecting data of a well working national surveillance and systematic screening program. CTB will discuss with counterpart NTPs initiation of relevant operations research (OR) to prepare a foundation for building TB surveillance systems among HCWs in these countries.

Number and percentage of health care workers diagnosed with TB during reporting period, WHO 2016

CTB Country	Total number of HCWs working in the public and private sector	Number of HCWs diagnosed with TB	Percentage of HCWs diagnosed with TB
Botswana	18,715	77	0.41%
Burma	—	51	—
Kyrgyzstan	71,335	49	0.07%
Malawi (NTP data)	3,377	58	1.72%
Mozambique	—	231	—
Namibia	—	48	—
Nigeria	—	80	—
South Sudan	—	3	—
Tajikistan	68,133	34	0.05%
Ukraine	726,188	399	0.05%
Uzbekistan	17,464	85	0.49%
Zimbabwe	28,591	101	0.35%
<b>Total</b>	<b>—</b>	<b>1,158</b>	<b>—</b>

Data not yet available for Afghanistan, Bangladesh, DRC, Ethiopia, India, Indonesia, Tanzania, and Vietnam.

### Highlights of CTB support of TB-IC in Year 2 included:

**Afghanistan** - A total of 330 health staff were trained on TB-IC strategies and standards. The structural design and engineering approaches were assessed in 60 HFs to reduce airborne infections (primarily TB transmission) within the settings. Plans for re-designing and improving engineering approaches were developed and shared with partner NGOs and the NTP for implementation. TB-IC committees were established and 400 monthly meetings were conducted in the same HFs to strengthen the integration of the TB-IC plan into the general infection prevention plan and to track the progress. These TB-IC efforts have resulted in reduced time from diagnosis to treatment initiation among TB patients.

**Burma** - CTB contributed to the revision and update of TB-IC Guidelines. CTB also provided training for

trainers on these guidelines to 36 NTP officials, who will subsequently cascade these trainings in all states and regions in Year 3. CTB-Burma also supported GF and the three millennium development goal projects by advising on TB-IC related issues such as building layout, floor plan and construction design, equipment maintenance and ultraviolet germicidal irradiation procurement and installation.

**Nigeria** - Through the implementation of the FAST strategy in 15 facilities in three states, CTB-Nigeria was able to reduce the time to diagnosis (i.e., the time a presumptive TB case sees a HCW, test is carried out and result received). Frequency of time to diagnosis = <2 days increased to 85% (19% at baseline), 80% (50% at baseline), and 67% (50% at baseline) in Lagos, Benue, and Akwa Ibom, respectively.





## SUB-OBJECTIVE 6 - MANAGEMENT OF LATENT TB INFECTION

CTB intervention areas/intended outputs:

LTBI diagnosis and treatment among high risk groups ensured

Key results:

- Fifteen (71%) CTB countries reported on the number children under the age of five who initiated IPT in 2015
- A total of 47,526 children under the age of five initiated IPT in 15 CTB countries in 2015

Globally, a total of 87,000 children under five (7% of those eligible) were started on Isoniazid preventive therapy (IPT) in 2015 (WHO 2016). Based on NTP data, 15 (71%) CTB countries reported on the number of children under the age of five who initiated IPT in 2015 (such data were reported by only eight CTB

countries in 2014), with a total of 47,526 reported in these 15 countries (the highest numbers were reported in Ukraine and Afghanistan), compared with 35,371 who were reported to have started on IPT in 2014.

### Number of children under the age of five who initiated IPT, NTP 2016

CTB Country	Number of children under the age of five who initiated IPT	
	Year 1	Year 2
Ukraine	11,440	10,054
Afghanistan	8,792	10,048
Bangladesh	3,848	6,521
Nigeria	3,811	6,254
Vietnam	2,134	3,390
Tajikistan	2,496	2,271
Malawi	0	1,947
Uzbekistan	0	1,842
Zimbabwe	0	1,608
Cambodia	2,300	1,104
DRC	0	951
Kyrgyzstan	550	737
Burma	0	553
Tanzania	0	160
Namibia	0	86
<b>Total</b>	<b>35,371</b>	<b>47,526</b>

*Data not yet available for Botswana, Burma, Ethiopia, India, Indonesia, Mozambique and South Sudan. Data was not collected in Zambia. Ukraine reported data for children under 14*

CTB efforts made in this area in Year 2 include:

**Afghanistan** - CI has increased by 60% (from 25,318 individuals in 2014 to 42,842 in Year 2). In Year 2, 6,380 children under the age of five were identified and put on IPT, which shows an increase of 98% child household contacts identified and put on IPT compared to 2015.

**Cambodia** - TB screening among child contacts became routine practice at both the community level and in referral hospitals. In Year 2, a total of 7,283 children were screened, of which 1,666 (22.8%) had TB signs and symptoms requiring further investigation at referral hospitals. Of these presumptive TB patients, 186 children (11.2%) were diagnosed with TB and were

initiated on treatment. A total of 1,552 child (under the age of five) contacts (21.3%) were enrolled on IPT.

**Ethiopia** - Children under five years of age who are contacts of TB cases have been identified as a key risk group for developing TB, and CTB has been instrumental in building the capacity of TB officers to screen close contacts and diagnose or rule out TB in children. In Year 2, from a total of 1,038 children under the age of five who were identified as household contacts, 941 screened negative from which 425 (45%) were put on IPT. Of the total number of children evaluated, 43 (11%) children with presumptive TB were identified and 13 (30%) were diagnosed with TB and put on treatment.





## OBJECTIVE 3 - STRENGTHENED TB PLATFORMS

### SUB-OBJECTIVE 7 - ENHANCING POLITICAL COMMITMENT AND LEADERSHIP

CTB intervention areas/intended outputs:

1. Endorsed, responsive, prioritized and costed strategic plan available
2. In-country political commitment strengthened
3. Leadership and management competencies and capacities of NTPs ensured

Key result

- Two (10%) CTB country projects had private sector partners providing cost-share to CTB project activity budget in Year 2

Health reform, including financing, poses a constant challenge to NTPs trying to sustain and increase their budgets. Central units of NTPs often have insufficient skills in areas such as planning, financial management, and outreach to private partners, which are hampering their leadership and management capacity. Compared with Year 1 when there were no countries with local private sector partners providing cost-share to CTB project activity, two CTB country projects (India and Afghanistan) were successful in

engaging such partners in CTB activities in Year 2. In India, over US\$1 million of estimated private sector cost share was leveraged for the TB Free India campaign including free radio airtime and celebrity Amitabh Bachchan's time. In Afghanistan, private health facilities engaged with the Urban DOTS initiative contributed an estimated five percent of intervention costs by covering TB Focal Point staff salaries and providing a DOTS room for TB services.

CTB efforts in this area included the following:

**India** - Under the stewardship of MoH, CTB-India successfully engaged a wide range of stakeholders in the TB-Free India campaign including celebrities, parliamentarians, businesses and industries, media, and representatives of the private health sector, research and academia, and the affected community.

- Bollywood celebrity Amitabh Bachchan came on board as a brand ambassador for the TB-Free India campaign. He revealed himself as a TB survivor for the first time, and talked about his own struggle with the disease. He offered to help in any way to spread awareness and reduce the stigma associated with TB.
- CTB collaborated with the Indian Association of Parliamentarians for Population and Development to sensitize more than 30 parliamentarians and 31 legislators from the state of Himachal Pradesh on TB. As a consequence of this, "TB Free Himachal" initiative was launched where the state chief minister announced free nutritional support to patients suffering from MDR-TB, and urged local action through the local governance structure, the Panchayati Raj Institutions.
- Leading businesses and public sector companies joined hands and committed resources (estimated at US\$3 million) for a TB-Free India. Five companies: National Thermal Power Corporation, DLF Foundation, TCI Foundation, Jubilant Bhartia and Johnson & Johnson announced their commitment to implement workplace interventions and support TB prevention and care efforts as a part of their corporate social responsibility initiatives. More than ten companies signed letters of intent to incorporate TB awareness and screening activities into their corporate social responsibility health interventions.
- Media roundtable and group discussions were held with journalists from leading publications and media houses, which led to increased visibility of TB issues (361 articles this year), including TV programs, articles and opinion/editorials in print media.
- Social media channels - a Facebook page (200,000 followers), Twitter account (4,741 followers) and a YouTube channel - were launched to engage a wide range of stakeholders and influencers. The cascade effect resulted in increased visibility of TB on social media (increased fan base, tweets and likes).

**Indonesia** - Decentralization and district ownership of the TB program are priorities in the country and CTB proposed District Action Plans (DAP) be developed and implemented to realize this initiative. The NTP has adopted this approach and has included TB district planning as a priority in the National Action Plan for TB Elimination. In Year 2, Provincial level DAP meetings were conducted in four CTB provinces and nine non-CTB provinces. In Year 3, CTB will support and facilitate capacity building at the national and provincial levels, using the planning in six CTB-supported provinces (16 Districts) as a demonstration.

**Vietnam** - To ensure the provision of TB diagnosis and treatment for patients, CTB provided financial and TA to the MoH to assess TB diagnosis and treatment under health insurance in five provinces, followed by the development of new rules governing the provision of health insurance for TB diagnosis and treatment. The new regulations on medical examination and treatment, and the payment of health insurance-related TB diagnosis and treatment took effect on May 1, 2016. TB patients can now have shorter waiting times for diagnosis by being referred directly from the commune level to district or provincial TB care and prevention facilities. The circular also promotes PMDT by allowing MDR-TB patients to be referred from one province to another province with full health insurance benefits. Health insurance now also covers IPT.

**Zimbabwe** - Following the engagement with parliament in Year 1, the government of Zimbabwe with support from CTB launched the National TB Caucus in July 2016 as part of the country's commitment to the global declaration to end TB. The number of parliamentarians who have since signed up to the declaration has risen from an initial 14 (4%) in August 2015 to 137 (39%) out of 350 by September 2016. A total of 50 parliamentarians were engaged in Year 2. The parliamentarians have pledged to engage the National AIDS Council to apportion part of the National AIDS Trust Fund to the TB program.





# SUB-OBJECTIVE 8 - BUILDING COMPREHENSIVE PARTNERSHIPS AND INFORMED COMMUNITY ENGAGEMENT

CTB intervention areas/intended outputs:

1. National partnership and coordinating bodies functioning with appropriate representation and capacity
2. Global Fund grant ratings improved

Key results:

- Six (29%) CTB countries have an established national Stop TB Partnership in Year 2
- Eight (38%) CTB country projects engaged local partners in project implementation in Year 2
- Seventeen (47%) out of 36 grants implemented in 21 CTB countries with GF had a grant rating B1 (adequate) or better as of September 2016.

It is critically important to establish effective partnerships with the government, other key stakeholders and affected communities, such as active national TB partnerships that include public, private, and civil society members. Seven (33%) CTB countries had national Stop TB partnerships in place by the

end of Year 2, although these partnerships only had adequate organizational structures in five countries. Between Year 1 and Year 2, the number of countries with a score of zero decreased from 15 to 12, and the number of countries with a score of two increased from two to four.

Eight (38%) CTB country projects (compared with five [24%] CTB country projects in Year 1) reported local partners being engaged in project implementation. A total of 24 and 59 local organizations were contracted in these countries in Year 1 and Year 2, respectively.

Data from 26 (out of 59) local partners on the percentage of local partners operating budget covered by diverse non-USG funding sources is presented below.

Percentage of local partners' operating budget covered by diverse non-USG funding sources

CTB Country	Percentage of local partners' operating budget covered by diverse non-USG funding sources in Year 2
Bangladesh	98% (average for eight partners)
Cambodia	90% - Partner 1 20% - Partner 2
DRC	55% - Partner 1 43% - Partner 2 48% - Partner 3 56% - Partner 4
India	25% - Partner 1
Namibia	97% - Partner 1 87% - Partner 2
Nigeria	29% - Partner 1
Tanzania	84% - Partner 1 0% - Partner 2 13% - Partner 3
Ukraine	58% - Partner 1 78% - Partner 2 73% - Partner 3 79% - Partner 4 95% - Partner 5





As of September 2016, 36 GF TB grants were signed in 21 CTB countries, 17 (47%) were reported as having a B1 rating (adequate) or better, two (6%) were reported to have a B2 or C rating, and the ratings of 17 (47%) were not available.

- A1

Exceeds expectations
- A

Good performance
- A2

Meets expectations
- B1

Adequate
- B2

Inadequate but potential demonstrated
- C

Unacceptable

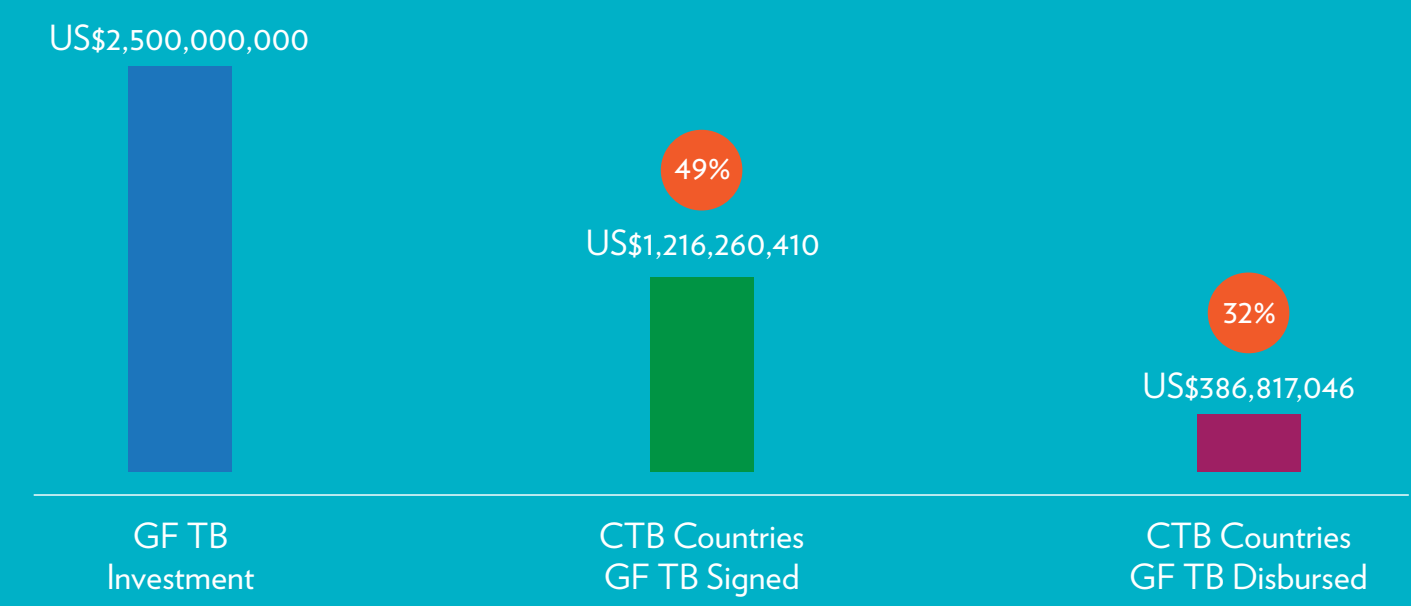
	NFM Start Date	NFM End Date	Grant	Grant Rating		NFM Start Date	NFM End Date	Grant	Grant Rating
Bangladesh	July-15	December-17	BGD-T-BRAC	A1	Mozambique	July-15	December-17	MOZ-C-FDC	C
Burma	January-13	December-16	MYN-T-UNOPS	A1	Botswana	February-16	December-18	BWA-C-ACHAP	N/A
India	October-15	December-17	IDA-T-IUATLD	A1	Botswana	February-16	December-18	BWA-C-BMOH	N/A
Ukraine	January-15	December-17	UKR-C-AUA	A1	DRC	July-15	December-17	COD-T-CARITAS	N/A
Bangladesh	July-15	December-17	BGD-T-NTP	A2	DRC	July-15	December-17	COD-T-MOH	N/A
Burma	January-13	December-16	MYN-T-SCF	A2	Ethiopia	July-15	December-17	ETH-T-FMOH	N/A
India	October-15	December-17	IDA-T-CTD	A2	Indonesia	January-16	December-17	IDN-T-MOH	N/A
Indonesia	January-16	December-17	IDN-T-AISIYIYA	A2	Kyrgyzstan	July-16	December-17	UNDP	N/A
South Sudan	July-15	December-17	SSD-T-UNDP	A2	Malawi	January-16	December-17	MWI-C-MOH	N/A
Zimbabwe	January-15	December-17	ZWE-T-MOHCC	A2	Malawi	January-16	December-17	MWI-C-AA	N/A
Afghanistan	April-15	December-17	AFG-T-UNDP	B1	Nigeria	July-15	December-17	NGA-T-IHVN	N/A
Afghanistan	February-15	December-17	AFG-T-MOPH	B1	Nigeria	July-15	December-17	NGA-T-ARFH	N/A
Cambodia	January-15	December-17	KHM-T-CENAT	B1	Tajikistan	January-16	May-18	Tjk-T-RCTC	N/A
India	October-15	December-17	IDA-T-WVI	B1	Tajikistan	January-16	May-18	Tjk-T-HOPE	N/A
Namibia	October-13	December-17	NMB-T-MOHSS	B1	Tanzania	July-15	December-17	TZA-T-MOH	N/A
Ukraine	January-15	December-17	UKR-C-AUN	B1	Tanzania	July-15	December-17	TZA-C-STC	N/A
Ukraine	January-15	December-17	UKR-C-UCDC	B1	Uzbekistan	July-16	July-18	UZB-T-RDC	N/A
Mozambique	July-15	December-17	MOZ-T-MOH	B2	Vietnam	July-15	December-17	VNM-T-NTP	N/A

A major achievement in Year 2 was the rollout of the GF Hub. In March, 2016 the GF Hub was officially established with the recruitment of a GF Officer, who is based within the CTB Project Management Unit. The primary role of the GF Hub and the GF Officer is to ensure that CTB contributes to the success of GF grants in CTB countries (from grant making through to implementation).

Through a general mapping exercise, CTB now has an overall picture of grant performance in the 21 countries where it operates. At the end of Year 2 there were 35

signed grants in the 21 CTB countries with a majority ending in December 2017. The full GF TB allocation of US\$2.5 billion has been signed into grants, of which US\$1.2 billion (49%) is in CTB countries. Within CTB countries only 32% of the GF TB grant signed amounts are disbursed to the country level. With December 2017 in view, absorption is a major concern. Of the three disease portfolios, TB is facing the most challenges and in the next 15 months it is estimated that approximately US\$750-900 million will need to be spent to close the current gap.

Global Fund TB Investment in CTB countries



The disbursement of funds in most of the 36 grants in CTB countries runs from 48% of the signed amount down to 3%. Many grants have experienced start-up challenges due to long grant negotiations, delayed disbursement of funds, setting up new teams to manage grants at principal recipients and delayed approvals of first annual work plans. Furthermore, there are cumbersome administrative processes at the country level to approve activities, to disburse funding from national to provincial levels, and to report; these create additional bottlenecks.

The coordination between CTB and the GF at the country level is good, but there is some room for improvement. Based on the results from a simple survey among CTB countries, the GF Hub found that only half of CTB countries reported that they received a copy of the GF grant annual work plan. Several reasons for not sharing include not being a member of the country coordinating mechanism, not having principal recipients or sub-recipient status or just a simple reluctance to openly share plans.

However, over the last year CTB has been effective in several countries at significantly supporting GF implementation and in particular at increasing spending and accelerating implementation for results. For example, CTB is playing a pivotal role in accelerating Xpert implementation and PMDT scale-up in Indonesia, maintaining a joint GF/USAID coordinating

mechanism in Nigeria and supporting Burma in the development of the first concept note for a funding request for the next GF funding cycle.

In addition to continuous monitoring of GF implementation status in CTB countries, the GF Hub is focused on getting CTB countries ready for the new funding cycle that will start in 2017. A key operational component within the new strategy is “differentiation”, which will be applied to the management of GF grants and application processes. Based on lessons learned from the current funding cycle, there was an outspoken need to simplify processes while understanding that one size does not fit all. The approach to manage grants and the application process will be based on the country portfolio categorizations. The GF Hub is taking an active approach to keep CTB countries informed of these changes and what they mean in terms of developing new concept notes and managing grants in the new funding cycle.

Although countries will need to wait for the allocation letters from the GF to know which application modality will be recommended, during Year 2 the GF Hub has already taken steps to jump-start planning and better understand the potential TA needs for concept note development at country level. All CTB countries are mapped and country teams have initiated discussions with their NTP counterparts to start planning for concept note development.





## SUB-OBJECTIVE 9 - STRENGTHENING DRUG AND COMMODITY MANAGEMENT SYSTEMS

CTB intervention areas/intended outputs:

1. Well-functioning procurement and supply chain management system in place
2. New and ancillary drug regimens for TB/MDR/LTBI patients available, as appropriate

Key result

- Fourteen (67%) countries reported data on stockout of anti-TB drugs in Year 2; out of these, four (28%) countries reported actual stockout.

Efficient procurement and distribution mechanisms have to be in place to avoid shortages of medicines and commodities that undermine TB care and prevention. Based on NTP data, 14 (67%) CTB countries (compared with 11 [52%] CTB countries in Year 1) reported data on stockouts of anti-TB drugs in Year 2 (out of these 14, four countries - Botswana,

DRC, Indonesia, and South Sudan reported actual stockouts, whereas the remaining ten countries reported no stockouts), indicating that data registration and reporting gaps in commodity management remain for almost one-third of CTB countries and that systems for commodity management need further strengthening.

In the **East Africa Region**, the project supported the development of a TB commodities supply chain portal, which is a regional electronic platform to improve TB commodity data visibility and facilitate monitoring of the commodities stock situation to East, Central and Southern Africa (ECSA) countries. This portal contains two major parts: a commodities dashboard and a virtual resources center, it is already being piloted in Tanzania. There are also plans to pilot the portal in Rwanda and Uganda after which any lessons learned will be used to scale-up its use in the East Africa Region.

CTB-Mozambique provided ongoing TA to the ND&R National Core Team and the Treatment Review Technical Working Group. During Year 2, the group received approval from the MoH for the introduction of ND&R, quantified needs for new drugs, placed the drug order and prepared the country for the introduction of BDQ, DLM and a shorter MDR treatment regimen.

In **Nigeria** at baseline, a total of 1,190 DOTS sites were providing TB treatment across the 151 CTB supported local government areas in 12 States. Thus far, CTB has contributed about 16% of the site expansion (188) bringing the total number of DOT sites to 1,378. With increased support, CTB has been able to support the enrollment of 478 DR-TB patients into care in 12 states and provided patient support for 620 DR-TB patients. A major challenge has been the delay in the provision of second-line anti-TB drugs to states, thus hindering the number of patients enrolled into care. CTB continued to support the NTP in facilitating the quick delivery of anti-TB drugs where necessary.

In **Tajikistan**, 108 drug management specialists benefited from drug logistics management information system and QuanTB trainings facilitated by CTB. CTB established the platform for effective introduction of new regimens by quantifying the needs for new drugs to enroll DR-TB patients on treatment. The drugs are being procured by the GF and delivery is expected by December 2016.







# SUB-OBJECTIVE 10 - ENSURING QUALITY DATA SURVEILLANCE AND MONITORING & EVALUATION

CTB intervention areas/intended outputs:

1. Well-functioning case or patient-based electronic recording and reporting system is in place
2. Epidemiologic assessments conducted and results incorporated into national strategic plans

Key results:

- Four (19%) countries have a case-based, real-time ERR system functioning at national and sub-national levels for both TB and MDR-TB (score equal or greater than 3) in Year 2
- Two (10%) countries performed WHO standards and benchmarks assessments to certify surveillance and vital registration systems for the direct measurement of the TB burden.

Efficient data collection and analysis systems have to be in place to assist leaders and managers to use data for decision-making and prepare for rapid adoption of new technologies, tools, policies, and best practices. By the end of Year 2, seven (33%) countries reported aggregate electronic reporting to national level (score=1); in ten (48%) countries, a case-based real-time ERR system was implemented in pilot sites (score =2); and in only four (19%) countries, a case-based real-time ERR system was functional at national

and sub-national levels for both TB and MDR-TB (score=3). Between Year 1 and Year 2, the number of countries with the score “0” decreased from five to none; and the number of countries with the score “2” increased from five to ten. Only four countries - Burma and Ukraine in Year 1 and Namibia and Zimbabwe in Year 2, performed WHO standards and benchmarks assessments to certify surveillance and vital registration systems for the direct measurement of the TB burden.

## Status of electronic recording and reporting (ERR) systems

- R&R system is entirely paper-based
- Electronic reporting to national level, but not patient/case-based or real time
- Patient/case-based ERR system implemented in pilot or select sites (TB or MDR-TB);
- Patient/case-based, real-time ERR system functions at national and sub-national levels for both TB and MDR-TB
- A patient/case-based, real-time ERR system is functional at national and sub-national levels for both TB and MDR-TB completely and meets WHO standard for TB surveillance data quality

	Year 1	Year 2		Year 1	Year 2
India	●	●	Tajikistan	●	●
Indonesia	●	●	Uzbekistan	●	●
Ukraine	●	●	Zimbabwe	●	●
Vietnam	●	●	Afghanistan	●	●
Bangladesh	●	●	DRC	●	●
Botswana	●	●	Ethiopia	●	●
Burma	●	●	Kyrgyzstan	●	●
Cambodia	●	●	Malawi	●	●
Mozambique	●	●	South Sudan	●	●
Namibia	●	●	Tanzania	●	●
Nigeria	●	●			

CTB-Afghanistan assisted the NTP to sustain high quality M&E, surveillance and OR. The electronic reporting of TB data was sustained and promoted. During Year 2, CTB assisted the health management information system and surveillance department of the NTP to train 140 NTP and other implementing organization staff such as provincial TB coordinators and health management information system officers. This training led to an improvement in TB data completeness and timeliness from 37% in quarter two of 2014 to 95% in the third quarter of 2016.

In Uzbekistan, CTB developed a case-based real-time electronic database to be used by the NTP as an interim solution to ensure R&R of relevant data on patients enrolled on ND&R. It is expected that the interim database will inform the design of a future case-based real-time electronic registry for TB and MDR-TB patients. CTB also supported the NTP to develop updated R&R forms (patient treatment card, adverse events reporting form).

In Vietnam, CTB provided TA to the Vietnam administration of HIV/AIDS care and prevention and the NTP to support the development of a draft action plan for HIV surveillance after the needs and situational assessment regarding the functioning of the HIV/ TB-HIV R&R systems in October 2015. The main activities included in the action plan are: i) Electronic Patient Monitoring System (ePMS) implementation; ii) Establishment of data exchange between ePMS and hospital information systems and the health insurance department; and iii) Establishment of data exchange between ePMS and Vitimes/e-TB Manager.

CTB-Zimbabwe supported the customization and rollout of District Health Information Software 2, ERR software to enable reporting of TB surveillance data in real time. Within four months of implementation, 1,569 (95%) out of 1,657 health facilities had their 2015-2016 data entered into the system. The TB data entered are now available online and provincial and national managers can access these data in real time.



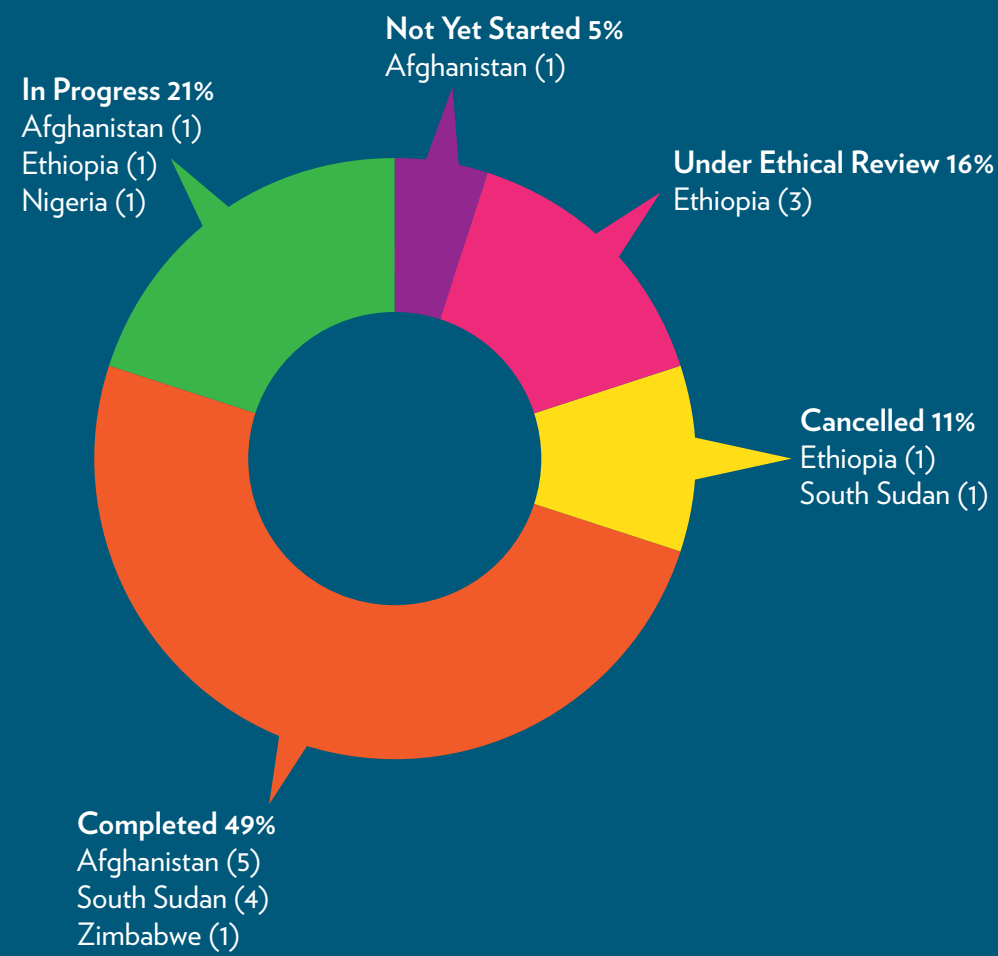
# OPERATIONS RESEARCH STUDIES

In Year 1, 20 OR studies were initiated in CTB countries. A total of ten studies - five from Afghanistan, four from South Sudan and one from Zimbabwe were completed in Year 1 and two were cancelled (South Sudan and Ethiopia). At the end of Year 1, four were “In progress”, three were “Under ethical review” and one hadn’t started (total = eight). In Year 2, an additional 19 studies\* started, of which ten involved local non-NTP partners. Of the other nine, seven involved the NTP in Afghanistan as no local partners applied, Mozambique cancelled one, and one in Zimbabwe involved the MoH and a city-level health department. Of the total studies (27) that started or extended into Year 2, six from Afghanistan were completed. In addition, two from Mozambique, two from Cambodia and one from Afghanistan were cancelled and the rest (16) were extended into Year 3.

In Year 1, seven studies were started with the assistance of a local OR partner. Similarly, in Year 2 another seven studies identified a local OR partner, however, only three countries - Zimbabwe, Ethiopia, and Cambodia provided a proportion of their OR funding to their local OR partner (71%, 33%, and 11% respectively) in Year 2.

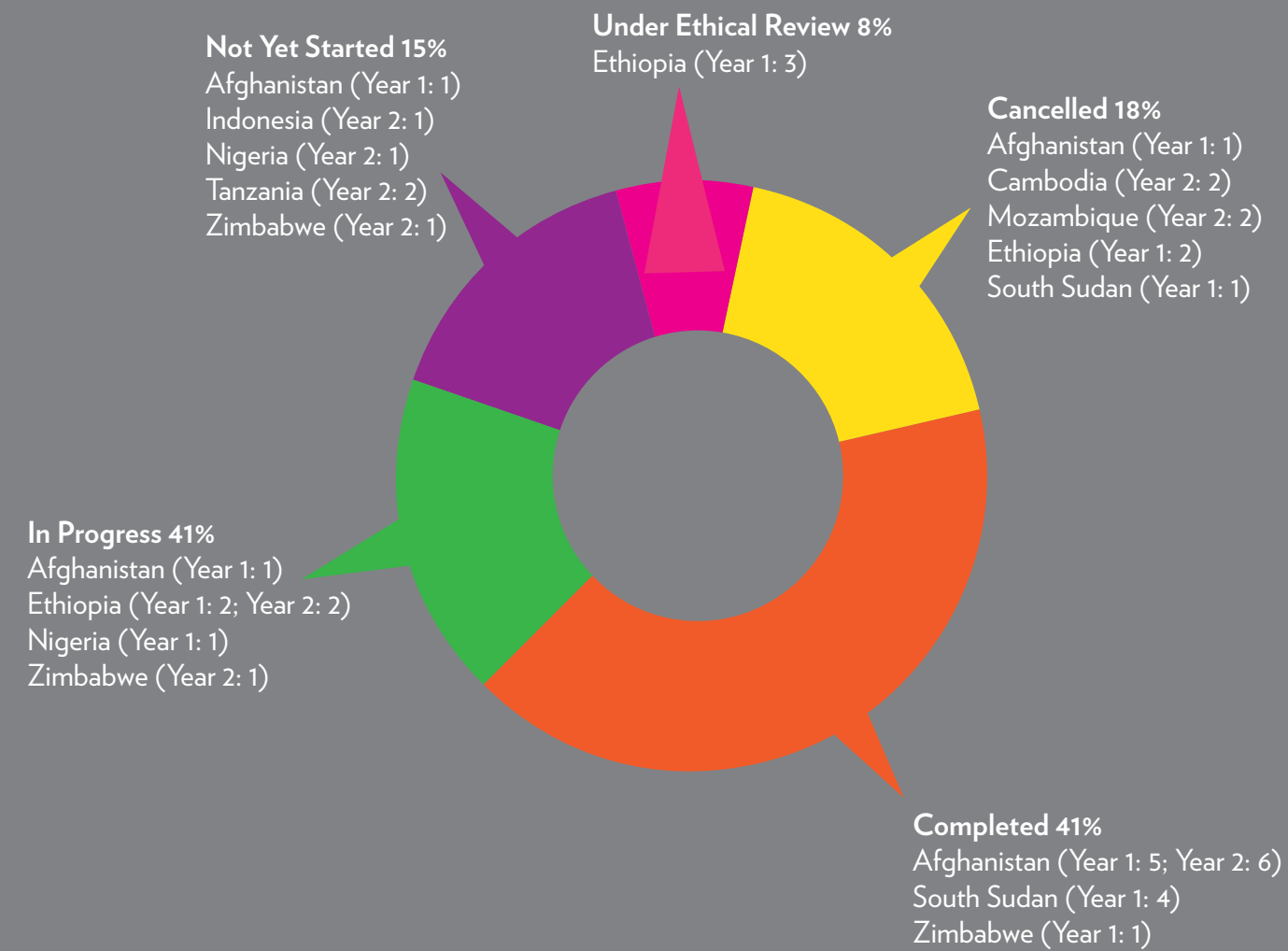
To date, a total of 16 studies (Afghanistan, South Sudan, and Zimbabwe) are completed. The results of two completed studies (13%) were used to change national level policy or practice nationally, while 14 others from Afghanistan and South Sudan were shared with an international audience at the 2016 Union Conference in Liverpool.

Status of implementation of operations research in CTB countries during Year 1 (N=20)



\* Topics related to ND&R in Bangladesh and Ukraine, were excluded from the CTB definition of OR activities, as were DRC’s sentinel surveillance for HCWs and Burma’s post media campaign survey.

Status of implementation of operations research in CTB countries during Years 1 and 2 (N=39)





The status of TB prevalence surveys and drug resistance surveys in CTB countries in Year 2 are shown below. In 18 CTB countries the surveys were either recently completed, ongoing or planned for

2016-2018, allowing these countries to use quality data for monitoring the TB epidemic as well as evidence-based program implementation and planning including the next cycle of GF concept note development.

#### Status of TB prevalence surveys and drug resistance surveys in CTB countries

CTB Country	TB Prevalence Survey	Drug Resistance Survey
Afghanistan	N/A	Conducted in 2012
Bangladesh	Conducted in 2015	Conducted in 2012 Next survey is planned for 2017
Botswana	Planned for 2017 in combination with the Botswana AIDS Impact Survey	Conducted in 2007-08
Burma	Conducted in 2009 Next survey planned for 2017	Conducted in 2012-13 Next survey planned for 2018
Cambodia	Conducted in 2011	Planned for 2017
DRC	N/A	Conducted in 2015-16
Ethiopia	Conducted in 2011	Planned for 2017
India	Planned for 2017	Ongoing
Indonesia	Conducted in 2014	Planned for 2016
Kyrgyzstan	N/A	Conducted in 2011
Malawi	Conducted in 2013	Ongoing
Mozambique	Planned for 2017	Planned for 2017
Namibia	Planned for 2017	Conducted in 2016
Nigeria	Conducted in 2012	Conducted in 2010 Next survey planned for 2018
South Sudan	N/A	Not done/planned
Tajikistan	N/A	Ongoing
Tanzania	Conducted in 2012	Planned for 2017
Ukraine	N/A	Conducted in 2014
Uzbekistan	N/A	Conducted in 2010-11 Next survey is planned for 2017-18
Vietnam	Conducted in 2007 Next survey planned for 2017	Conducted in 2006-07
Zimbabwe	Conducted in 2014	Ongoing (with CTB support)







## SUB-OBJECTIVE 11 - SUPPORTING HUMAN RESOURCE DEVELOPMENT

CTB intervention areas/intended outputs:

Qualified staff available and supportive supervisory systems in place

Key result

- 34,532 HCWs (22,443 men and 12,089 women) trained in 21 CTB countries in Year 2

There is a need for strong, competent leadership within NTPs to plan and manage human resources through appropriate human resource development strategies including a supportive supervision system in place to strengthen the capacity of staff at all levels. A total of 34,532 HCWs<sup>1</sup> (12,089 [35%] females) were

trained<sup>2</sup> through CTB support in 21 countries in Year 2, compared with 15,286 HCWs (6,290 [41%] females) trained in Year 1. CTB recognizes the gender imbalance in HCWs trained by the project and will explore ways of engaging more female HCWs in coming years.

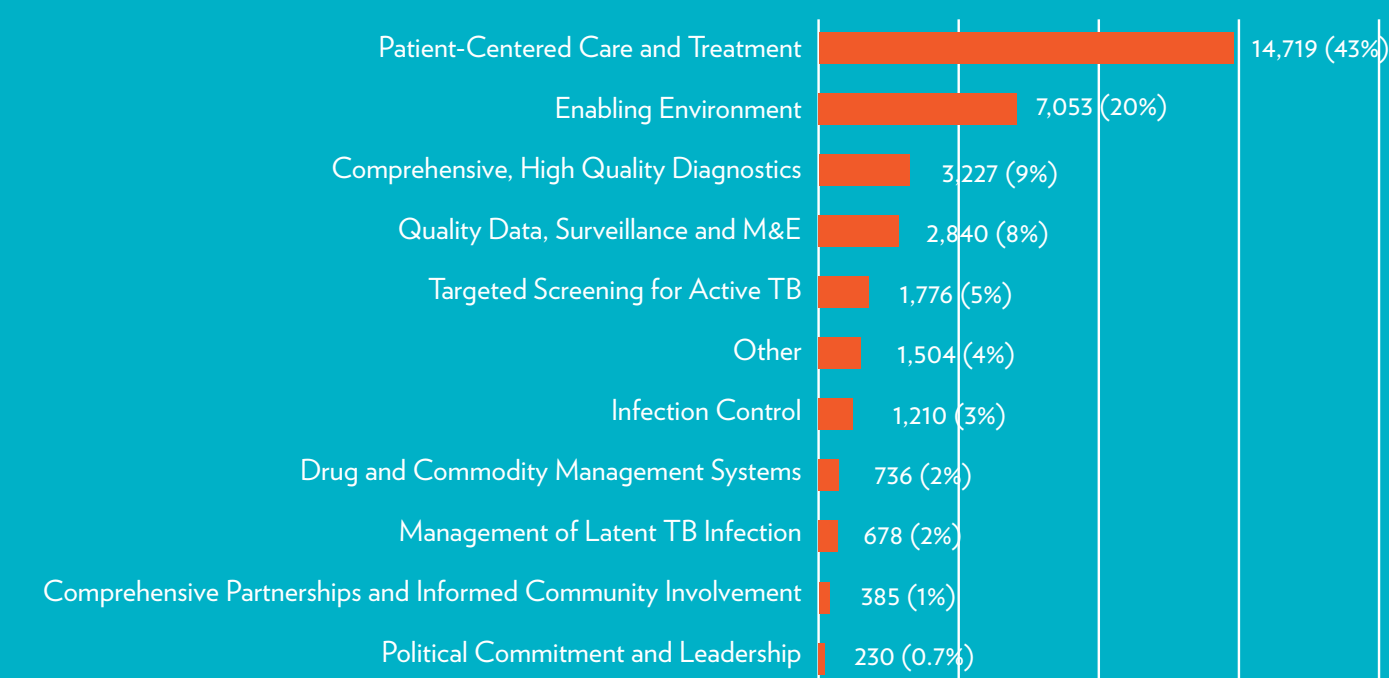
1. HCWs include health facility staff, community health volunteers, laboratory staff, sputum transport technicians, and CB-DOTS workers. Training includes any in-person, virtual, or on-the-job training that is longer than half a day and for which curriculum is available

2. Training includes any in-person, virtual, or on-the-job training that is longer than half a day and for which curriculum is available

## Number of health care workers trained by gender in Year 2

CTB Country	Number Trained (male)	Number Trained (female)	Total Number Trained
Afghanistan	1,705	572	2,277
Bangladesh	5,983	866	6,849
Botswana	28	33	61
Burma	352	759	1,111
Cambodia	2,437	1,173	3,610
DRC	1,295	479	1,774
Ethiopia	1,819	882	2,701
India	40	46	86
Indonesia	397	529	926
Kyrgyzstan	8	34	42
Malawi	1,658	916	2,574
Mozambique	1,894	1,275	3,169
Namibia	173	407	580
Nigeria	2,682	2,115	4,797
South Sudan	291	76	367
Tajikistan	159	177	336
Tanzania	390	219	609
Ukraine	59	160	219
Uzbekistan	59	54	113
Vietnam	317	241	558
Zimbabwe	697	1,076	1,773
<b>Total</b>	<b>22,443 (65%)</b>	<b>12,089 (35%)</b>	<b>34,532</b>

## Number of HCWs trained by sub-objective area (Total of 34,532), CTB (Year 2)

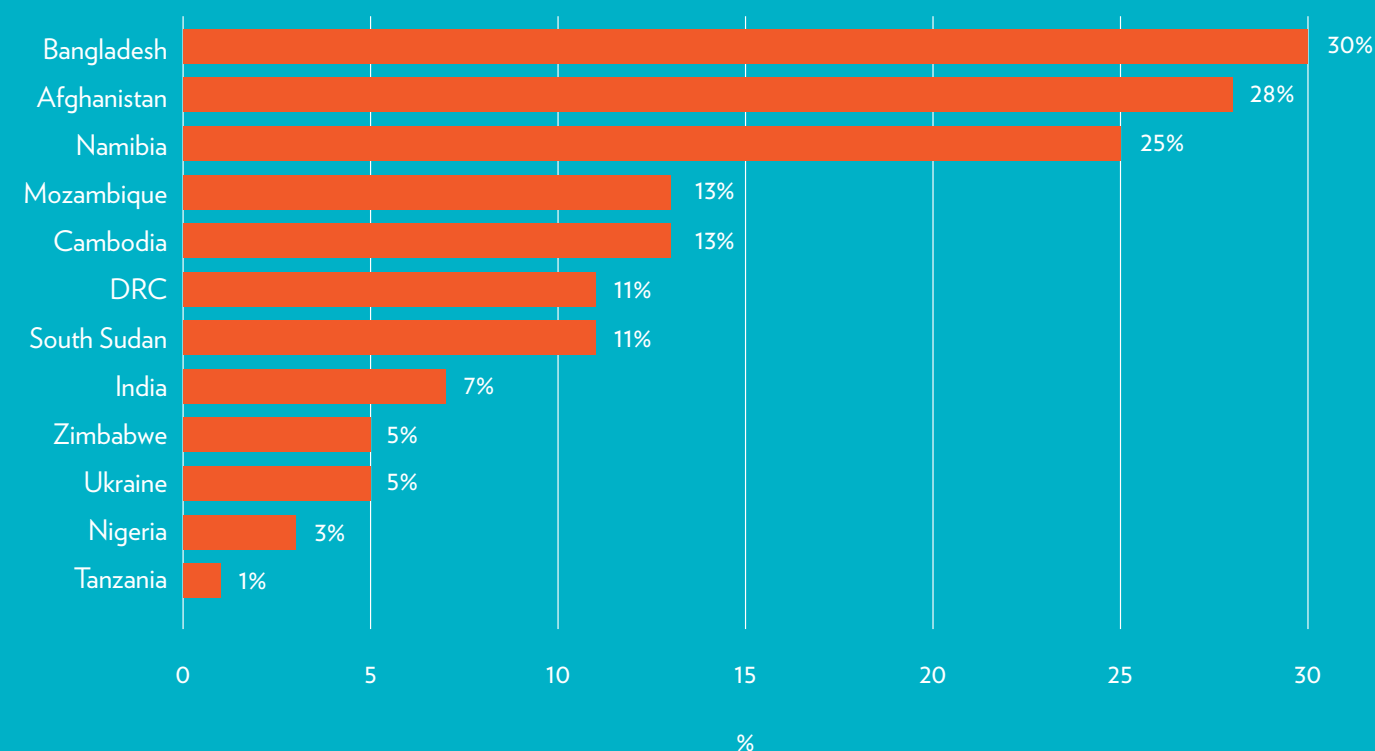




In total, 24 and 59 local organizations were contracted by CTB country projects in Year 1 and Year 2, respectively. Data on the percentage of USAID TB funding directed to local partners, were provided by 12 (57%) CTB countries in Year 2 compared with

five (24%) country projects in Year 1. This indicator measures the proportion of CTB annual country funding directed to local partners, with the results presented below, showing the highest percentage for Bangladesh, Afghanistan, and Namibia.

Percentage of USAID TB funding directed to local partners by country, CTB Year 2 data



## CORE PROJECTS

CTB is working on priority projects that have implications for TB care and prevention globally. These are outlined on the next few pages.

## BEDAQUILINE

The CTB Core Bedaquiline Coordination Project facilitates the introduction of new drugs and shorter regimens (ND&R) in 22 CTB countries (Kazakhstan included), in accordance with local legal frameworks and based on the principle of “Right Diagnosis, Right Treatment”. With USAID leading overall global coordination, CTB and Systems for Improved Access to Pharmaceuticals and Services Program (SIAPS) facilitate, coordinate and monitor the core project implementation in all CTB countries to ensure a consistent approach and comprehensive scale-up. In the last year, CTB developed a user-friendly implementation planning tool to facilitate the introduction of ND&R as well as a generic programmatic and clinical guide based on the KNCV-developed ‘Patient Triage Concept’. These generic tools assist in the introduction of ND&Rs by highlighting the gaps in existing processes, identifying TA needs, and contributing to the development of operational plans. For example, the implementation planning tool leads the user through a detailed breakdown of the required activities from the introductory steps to national scale-up, with tentative timelines for each step and a set of activities.

The project has distributed the CTB generic tool and guide to all CTB countries and tool adaptation has already been achieved in several countries (Indonesia, Kyrgyzstan, Nigeria, Tajikistan, Ukraine, and Vietnam), while continued adaptation is on-going in several other countries (Botswana, DRC, Mozambique, and Uzbekistan).

To ensure a coordinated, efficient and effective approach towards the introduction of BDQ in CTB project countries, a BDQ coordination workshop took place with the CTB coalition and partners in The Netherlands in late March 2016. The participants laid out a clear set of steps to be completed in the subsequent months, including planning a workshop for CTB country teams in June 2016 prior to the CTB Country Directors’ meeting.

The CTB Implementation Planning Tool for the Introduction of ND&R and the generic programmatic and clinical guide were introduced and used during a series of workshops for the introduction of ND&R. The first workshop, held in The Hague in June 2016, was attended by technical staff from CTB country offices and the CTB Coalition partners. A follow-on workshop held in August 2016 in Delhi, India, and organized by The Union’s South East Asian Regional Office with CTB-supported TA, brought together over 60 participants including NTP representatives and CTB in-country technical staff from Bangladesh, India, Indonesia, Burma, and Nepal. From both workshops, the gaps and next steps related to the introduction of ND&R were summarized in work plans (both national and Year 3 related).

With CTB-supported TA, thirteen countries developed their country specific strategy documents for the introduction of ND&R (compared to the start of Year 2 when just one country only had a draft document which required updating). In addition, five countries were assisted in developing their country specific programmatic and clinical guides (compared to only two countries at the start of Year 2), which included country-specific diagnostic algorithms, regimen design, aDSM and monitoring frameworks.

At least thirteen countries have introduced BDQ-containing regimens via various sources of support, including CTB, by the end of Year 2. Only nine countries had initiated BDQ use at the start of Year 2, however only two of these had patients enrolled on treatment under programmatic conditions. The remainder had patients on treatment either under compassionate use programs or individual patient care. The total baseline number of patients on BDQ-containing regimens under these various sources was likely to be less than 50. By the end of September 2016, 489 patients had been enrolled on a regimen containing BDQ.



As virtually all CTB countries were in the early stages of preparation for the introduction of ND&R, TA was provided to assist countries in the preparation for the introduction of ND&R.

In Year 2, 48 Missions to 15 countries were conducted, with 44 missions funded from CTB country project funds and one from core project funding.

The areas of work included:

Support to a DR surveillance survey (in Zimbabwe)

Assessment of the existing DR-TB situation and PMDT services (e.g., in Botswana, Cambodia, DRC, Kazakhstan, Mozambique, Nigeria, Ukraine, and Uzbekistan)

Support for the development of second line DST services in Burma and Cambodia

Facilitation of workshops for ND&R introduction, including aDSM (e.g., in Kyrgyzstan, Nigeria, and Tajikistan), and a regional workshop in India (involving Bangladesh, Burma, India, Indonesia, and Nepal).

Support to preparatory work for the introduction of ND&R, including the development of programmatic and clinical guides, and implementation activities (e.g., in Burma, Cambodia, India, Kyrgyzstan, Nigeria, Tajikistan, Tanzania, Ukraine, and Vietnam).





## STIGMA

The project aims to develop valid, feasible, and efficient methods to measure the level of TB stigma in the community, patient, and health worker populations. In Year 2, the project pinpointed the most promising and innovative tools and strategies to measure TB stigma and reduce it by partnering with TB stigma experts (quantitative and qualitative). Key activities and outputs are summarized below:

A Demographic Health Survey/Service Provision Assessment secondary data analysis was undertaken by the Royal Tropical Institute (KIT) to assess the individual and national correlates of anticipated stigma in the general population of high burden countries. It was presented at the 2016 Union conference.

The University of Vanderbilt conducted a global literature search to identify all TB stigma scales and presented this review at the 2016 Union Conference in Liverpool.

A systematic literature review of stigma reduction strategies by the University of Antwerp was conducted

with final results presented at the 2016 Union Conference. Results show that there is a lack of reliable information on evidence-based interventions for anticipated and internalized stigma, and no evidence-based intervention for enacted stigma: [http://www.crd.york.ac.uk/PROSPERO/display\\_record.asp?ID=CRD42016036670](http://www.crd.york.ac.uk/PROSPERO/display_record.asp?ID=CRD42016036670)

Two experts' meetings (a measurement meeting and a stigma reduction meeting) were held with representation from USAID Washington, WHO, Stop TB, GF, CTB, and several major players in TB care and prevention, stigma measurement and stigma reduction. The meeting generated important discussions and catalyzed several new collaborations.

In Year 2 it was envisioned to refine and test existing stigma measurement tools in Nigeria. A protocol was developed and refined during the expert meeting and a pre-pilot was conducted in Nigeria. However, for several reasons it has been decided implement this activity in Ethiopia in late 2016. The goal is to have a validated tool by mid-2017.

## UN SPECIAL ENVOY FOR TUBERCULOSIS

Dr. Eric Goosby was appointed as the UN Special Envoy on Tuberculosis (UNSE-TB) in early 2015. The mandate given by the UN Secretary General, and in conjunction with WHO, focuses on advocacy, more money for research and implementation, more commitment from the leadership in high burden countries and more awareness globally about TB. With these objectives in mind the team developed a plan that focused attention on:

- Global Fund replenishment and securing PEPFAR dollars for TB implementation
- Political engagement on Anti-Microbial Resistance (AMR) for new research money
- Country spotlights on Nigeria, India, and China
- Presence in existing forums - The Union, IAS-TB 2016, World Health Assembly, and UN General Assembly
- Lancet Commission on Tuberculosis - to raise the profile of TB challenges in the broader health community

This strategy has been largely successful and the advocacy work done by the UNSE-TB has contributed to the following achievements:

- US\$12.9 billion Global Fund replenishment
- PEPFAR policy change reinforcing the need for TB prophylaxis, testing and IPT reporting for PLHIV
- Commitment by the G20 to engage on AMR
- The UNSE co-hosted a side-event in New York at the high-level meeting on HIV and strongly supported the language eventually included in the UN Declaration which called for a 75% reduction in TB/HIV mortality in the coming five-year period
- A UN high-level meeting on AMR declaration committed member states to engage on AMR and to re-convene in 2018
- Nigeria committed to include TB in the standard of care as it revitalizes 10,000 primary health care facilities in the public sector
- To amplify the voice of TB within and outside the global health community, the UNSE developed a website, wrote articles and participated in press conferences in a variety of forums.

## CATASTROPHIC COSTS

One of the targets for the End TB strategy is that no TB patient or their household should face catastrophic costs due to TB, and this target should be achieved by 2020. To monitor progress towards this target, countries will need to measure the occurrence of catastrophic costs. This project is field testing in Vietnam a generic protocol and instrument for national TB patient costs surveys to identify patient and health system predictors and reasons for catastrophic costs in order to guide policies on cost mitigation. Starting in May 2016, the NTP and CTB began implementing a nationally representative patient cost survey involving 720 eligible TB patients - including 57 MDR-TB

patients - in health facilities across 20 clusters (with 36 patients per cluster). The survey, which be finalized by December 2016, will produce a baseline measure for the percentage of TB-affected households experiencing catastrophic costs due to TB in Vietnam. The study has a secondary objective of validating the methodology for future patient cost surveys, particularly how strategies such as borrowing or selling assets can be used as a proxy measure for catastrophic costs. The implementation of this survey is highly relevant for Vietnam who has expanded its social health insurance system with the aim of achieving universal health coverage by 2020.

## PREVENTION

The core project on prevention is a randomized, pragmatic, open-label trial, which has two objectives: (1) To compare treatment completion of a single round of 3HP to 6H; and (2) To compare effectiveness of a single round of 3HP to two annual rounds of 3HP. This multi-country study is taking place in South Africa, Mozambique, and Ethiopia with the Aurum Institute as the main research institute. The results of the trial are meant to generate evidence to guide a WHO recommendation for the use of 3HP

in high-incidence settings. In Year 2, all activities were geared towards initiating enrollment of participants in the trial, expected to start early in Year 3. Clinical trial sites were selected in South Africa, Ethiopia, and Mozambique, the Trial Steering Committee was established and agreements with Sanofi and Qiagen for donation of drugs and IGRA tests were signed. The trials will run in Years 3-5, with final analysis and reporting in Year 5.


## SHORT PROJECT IN PAPUA NEW GUINEA

CTB implemented a short but intensive core project in Papua New Guinea (PNG) from July-November 2016. In this short time period, a national system for pharmacovigilance, or aDSM, was successfully introduced to PNG. The key deliverable was the expansion of the national PMDT SOPs to

include an aDSM/pharmacovigilance section with accompanying data collection tools. aDSM is now in place for all future MDR-TB patients whether initiated on new drugs, shortened regimens or the standard 20-24 month regimen.




## SHE'S A WINNER



As a single mother of four, Blessing Ihunwo wasn't too worried when her four year old daughter Winner fell while playing and developed a lump on her back, it was nothing strange, just a bump. She did, however, become very concerned when the swelling became very painful, increased in size and Winner was unable to move her limbs properly. She decided to take Winner to a traditional healer, and when this didn't help, she sought spiritual help by visiting her church. It was there that Blessing was advised to seek medical help and she was given some money to go to the Nigeria's University of Port-Harcourt Teaching Hospital (UPTH).

At the UPTH, Winner was admitted to the chest clinic, where she was spotted by the USAID funded Challenge TB Nigeria team who were conducting their monthly supportive-supervision visit. The Challenge TB appointed pediatrician immediately recognized the swelling as a symptom of childhood tuberculosis (TB). Children are especially prone to spinal TB, which when not treated can lead to a collapse in the vertebrae and cause paralysis in one or both legs. The pediatrician's TB diagnosis was confirmed with a chest X-ray and Winner was immediately started on anti-TB treatment.

After less than two months, Winner was already showing signs of improvement, she no longer felt pain in her back and was able to walk, run and play again. The swelling had also reduced in size and the sideways curving of her spine (scoliosis) had completely disappeared.



In accordance with Challenge TB's goals, Winner's family were educated about TB, how it is transmitted and how to implement infection control measures in their home. They were also counseled on how to help her adhere to and complete the 12-months of treatment. Members of Winner's family and people who have been in close contact with her have also been traced and tested for TB, though none were found to be infected. Thanks to Challenge TB's investments in improving the healthcare system in Nigeria, Winner is now well on the way to recovery, after five months of treatment she is still monitored closely and receives orthopedic care alongside her TB treatment.



# NEW PUBLICATIONS

This is a list of tools or publications that have been developed and released in Year 2, all of which can be found on the Challenge TB website:

<http://www.challengeb.org/library>

## East Africa Brochure

[http://www.challengeb.org/publications/CTB\\_East\\_Africa\\_Brochure.pdf](http://www.challengeb.org/publications/CTB_East_Africa_Brochure.pdf)

## Challenge TB Newsletter

[http://www.challengeb.org/publications/newsletters/Challenge\\_TB\\_Newsletter.pdf](http://www.challengeb.org/publications/newsletters/Challenge_TB_Newsletter.pdf)

## Supporting Local Ownership of TB Care and Prevention Initiatives

This document summarizes the lessons learned on locally owned initiatives under the TB CARE I project. It describes the key factors for success, the risk factors and the role of TA. These lessons learned can be used under the Challenge TB project by country teams, local and international consultants and staff of the coalition partners who are involved in planning, monitoring and evaluating Challenge TB projects.

[http://www.challengeb.org/publications/tools/hss/Locally\\_Owned\\_Initiatives.pdf](http://www.challengeb.org/publications/tools/hss/Locally_Owned_Initiatives.pdf)

## Health Care Workers Desk Guide for the Management of TB in Children - Zimbabwe

This guide is mainly for health workers managing sick children at primary care level and any health worker working in outpatients' settings. It was revised and adapted from The Union's Desk-Guide for the diagnosis and management of TB in children in consultation with key stakeholders in child health activities including specialist pediatricians, policy makers and partners in child health.

[http://www.challengeb.org/publications/tools/country/Desk\\_Guide\\_Management\\_TB\\_Children\\_Zimbabwe.pdf](http://www.challengeb.org/publications/tools/country/Desk_Guide_Management_TB_Children_Zimbabwe.pdf)

## GxAlert Implementation Strategy 2016 (Archive ZIP)

A guide to the implementation of GxAlert or other connectivity devices that are capable of linking diagnostic results to patient records. GxAlert allows for fast feedback of laboratory results to patients, referring clinicians, treatment centers, Ministry of Health staff and the country's existing health information systems.

[http://www.challengeb.org/publications/tools/lab/GxAlert\\_Implementation\\_Tool\\_Box\\_Version\\_1\\_2016.zip](http://www.challengeb.org/publications/tools/lab/GxAlert_Implementation_Tool_Box_Version_1_2016.zip)

## Strategic Framework for Cross-Border and Regional Programming in TB Care and Prevention for ECSA-HC (TB CARE I)

This is a strategy on cross border & regional programming in TB care and prevention for the East, Central and Southern African Health Community (ECSA) region. It provides policy guidance for ECSA Member States to mitigate the impact of cross border TB.

[http://www.challengeb.org/publications/tools/country/Strategy\\_for\\_Cross-Border\\_TB\\_Control\\_ECSA-HC.pdf](http://www.challengeb.org/publications/tools/country/Strategy_for_Cross-Border_TB_Control_ECSA-HC.pdf)

## Regional Policy on the Management of MDR and XDR Tuberculosis Treatment Failures (TB CARE I)

This policy seeks to guide countries in the management of the challenges of MDR-TB and XDR-TB failures and to put in place strong systems that are able to address these challenges.

[http://www.challengeb.org/publications/tools/country/Policy\\_on\\_Management\\_of\\_MXDRTB\\_Failures\\_ECSCA.pdf](http://www.challengeb.org/publications/tools/country/Policy_on_Management_of_MXDRTB_Failures_ECSCA.pdf)

## TB Competencies for Pre-Service Nurses in ECSA Region (TB CARE I)

The competencies included in this document provide details of the skills, knowledge and attitudes a nurse requires to manage TB patients, contacts and significant others. The competencies provide the detail of how a nurse is expected to practice TB nursing management. These competencies address the knowledge, ability, skills and attitudes a graduate nurse in the ECSA region needs to provide quality holistic care for patients, families, and communities impacted by TB.

[http://www.challengeb.org/publications/tools/country/TB\\_Competencies\\_for\\_ECSCA\\_Nurses.pdf](http://www.challengeb.org/publications/tools/country/TB_Competencies_for_ECSCA_Nurses.pdf)

## Competency-Based TB Curriculum Outline for Pre-Service Nurses in the ECSA Region (TB CARE I)

This curriculum outline aims to integrate TB and DR-TB competencies into nursing curricula as to empower graduate nurses with the appropriate evidence based knowledge, skills and attitudes to manage TB and DR-TB effectively.

[http://www.challengeb.org/publications/tools/country/TB\\_Curriculum\\_Outline\\_for\\_ECSCA\\_Nurses.pdf](http://www.challengeb.org/publications/tools/country/TB_Curriculum_Outline_for_ECSCA_Nurses.pdf)





# PHOTO CREDITS



Patient receiving DOT, Bangladesh - Md. Kaykuzzaman



Presumptive TB patients transported for screening, Kampong Cham Province, Cambodia - Chry Monyrath



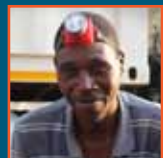
Brother and sister, Mbare, Zimbabwe - Tristan Bayly



Kids, Nigeria - Tristan Bayly



Outdoor waiting area, Namibia - Sakaria Nehale



David Jemekaya a miner who was screened and found to be TB free, Zimbabwe - Paidamoyo Magaya



World TB Day event in a children's TB hospital, Dushanbe, Tajikistan - Tatiana Abdurazakova



TB Patient, Nigeria - Tristan Bayly



A patient accompanied by a community mobilizer arrives in Yei Civil Hospital, South Sudan - MSH



Small scale miners in Geita district queuing for TB screening on World TB day, Tanzania - Patrick Magasa



Children, Uganda - Tristan Bayly



A nurse giving an MDT-TB patient his medicine, Dhaka, Bangladesh - Naoshin Afroz



Nuns, Yangon, Burma - Tristan Bayly



Semi-Active Case Finding among elderly in Ptas Check Pagoda, Pursat province, Cambodia - Ngo Menghak



Billboard with TB message installed in Ali Sher district, Khost province, Afghanistan - MSH



Bukola Osinubo, Challenge TB Call Center Operative, Abuja, Nigeria - Habiba Bello



Sputum motorbike transport, Zimbabwe - The Union



Calculating air changes per hour in a laboratory, Burma - FHI 360



Samples for GeneXpert Testing, Ethiopia - KNCV



GeneXpert maintenance, Bangladesh - MSH



Mother and children, Burma - Tristan Bayly



TB Screening during the commemoration of World TB Day, Dar es Salaam, Tanzania - Viocena Mlaki



GeneXpert diagnosis, St Peter's Hospital, Ethiopia - KNCV



Partnering with Riders for Health during an Outreach in Mkpat Enin LGA, Nigeria - KNCV



TB laboratory during an EQA visit in Katakombembe Health Zone, Mozambique - Stephane Mbuyi



TB Patient Suleiman Ibrahim, Minna General Hospital, Nigeria - KNCV



Boy with rose, Burma - Tristan Bayly



Community outreach in Akure South, Nigeria - Chidubem Ogbudebe



Home visit at Otukpo LGA, Benue State, Nigeria - KNCV



MDR-TB patient on initial phase of treatment, Tanzania - Ladislaus Ritte



Serial rapid HIV testing training for CHWs, Windhoek district, Khomas Region, Namibia - Mavis Mukamba



Women miners waiting for TB screening, Zimbabwe - Paidamoyo Magaya



Contact investigation among close contacts at household level, Cambodia - Ngo Menghak



Miner Shorai Ndalahoma waiting for TB screening, Zimbabwe - Paidamoyo Magaya



Home health promoters raising TB awareness, South Sudan - MSH



TB awareness raising banner in front of Lvea health center, Kampong Cham province, Cambodia - Ngo Menghak



Home visit to an MDR-TB patient, Nigeria - KNCV



Still from TV spot on TB starring Amitabh Bachchan, India - The Union



Community outreach in Akure South, Nigeria - Chidubem Ogbudebe



Mr and Mrs Gatsi after their chest X-ray results showed no signs of TB during the targeted screening for active TB, Zimbabwe - Paidamoyo Magaya



Social Worker provides a food certificate as treatment adherence motivation to an MDR-TB patient in Poltava, Ukraine - Inessa Protaschuk



Patient focus group discussion on quality of care, part of a Quote TB Light Assessment, Tanzania - Rose Oluto



Evaluation of a child during contact investigation in Geita Region - Viocena Mlaki



Minister of Health making a keynote speech on World TB Day in Palapye District, Botswana - Mr. Kololo



Mural painted by students to commemorate World TB Day 2016, Bangladesh - Zakia Siddique



Nurses trained to provide Psychology & Social Support to M/XDR patients on new regimens, Tajikistan - Saodat Qosimova



Workshop on the development of the operations research protocol for the introduction of Bedaquiline, Kyrgyzstan - Bakyt Myrzaliev



An MDR-TB and a pre-XDR-TB patient, Indonesia - Trishanty Rondonuwu



CTB staff with the Minister of Health and DKI Jakarta Governor during World TB Day, Indonesia - Teuku Nasrullah



Girl, Pyay, Burma - Tristan Bayly





We would like to acknowledge all the people across the world who make Challenge TB possible; our gratitude and thanks go out to all our partners and everyone in the field.

Design and layout - Tristan Bayly

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**CHALLENGE** TB