

# TDR

Building the science  
of solutions

# 2019

## Annual Report



World Health  
Organization



For research on  
diseases of poverty

UNICEF • UNDP • World Bank • WHO





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of the Special Programme for Research  
and Training in Tropical Diseases 2020**

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## Our Vision

The health and well-being of people burdened by infectious diseases of poverty is improved through research and innovation.

## Our Mission

To support effective and innovative global health research, through strengthening the research capacity of disease-affected countries, and promoting the translation of evidence into interventions that reduce the burden of infectious diseases and build resilience in the most vulnerable populations.

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## Dr Soumya Swaminathan

TDR Special Programme Coordinator  
Chief Scientist, World Health Organization

A year after WHO unveiled a transformative re-organization plan, I have been very pleased to see extensive collaboration between TDR, WHO regional and country offices, and other research entities at WHO. This is especially critical as we work together to accelerate progress toward achieving Universal Health Coverage and the health-related Sustainable Development Goals.

For example, the Structured Operational Research and Training Initiative (SORT IT), which is designed to support research on a variety of health topics, has a particular focus on tackling antimicrobial resistance (AMR). TDR has been working closely with WHO country offices and national AMR committees to identify SORT IT projects that fit with national AMR priorities. TDR has also joined forces with WHO regional offices for Africa, the Americas, Europe and South-East Asia on research grants for operational research on AMR.

TDR has also been collaborating with the Pan American Health Organization (PAHO) and the UNDP/UNFPA/UNICEF/WHO/World Bank Special Programme of Research, Development and Research Training in Human Reproduction (HRP) on a joint initiative to support research on the Zika virus to improve interventions in real-time and prepare countries to respond more effectively to future epidemics. This has included training to address issues such as surveillance, patterns of virus spread, and social and cultural issues related to outbreaks. The current COVID-19 outbreak has reminded us of the need for such robust research capacity in countries to support implementation of public health measures for infection prevention and control.

These are just a few examples of the broad range of research and training initiatives that TDR has been supporting to tackle infectious diseases of poverty. I congratulate TDR on the many achievements highlighted in this report and look forward to seeing continued progress across the programme.



## Dr Modest Mulenga

### TDR Joint Coordinating Board Chair

This is my final year serving as chair of TDR's Joint Coordinating Board, which has been a great honor over the last three years. This period included the establishment of the forward-looking TDR Strategy 2018-2023, which is now being implemented with great momentum.

I have been particularly impressed by TDR's regional approach to supporting research and strengthening research capacity. In Africa, this can be seen with the development of the West African Regional Network for tuberculosis control (WARN-TB) and a sister network in Central Africa (CARN-TB). TDR has been training and supporting the national TB programme teams to enhance research in close collaboration with the WHO Regional Office for Africa, WHO's Global TB Programme and numerous other partners involved with TB. There have been focused efforts to harness the collective strength of these networks to support effective implementation of WHO TB guidelines through identification of programmatic gaps and research priorities.

The postgraduate training scheme is one of TDR's flagship training programmes, focused on implementation research on malaria, TB and neglected tropical diseases. This programme is a collaboration with universities in low- and middle-income countries: in Colombia, Ghana,

Zambia, South Africa, Lebanon, Bangladesh and Indonesia. These universities act as regional hubs in Latin America, Africa, Eastern Mediterranean and Asia-Pacific, attracting hundreds of students from across these regions. It is rewarding to see these students obtain their master's degrees through TDR scholarships and go on to make a difference in their home countries.

I would like to thank Professor John Reeder and his staff for the hard work and for taking the programme to a higher level of vibrancy that has seen closer collaboration with emerging regional health care programmes. I have also been impressed with proactive efforts to promote female leadership in research activities.

I also want to thank members of the JCB and its committees for supporting the new strategic direction that has seen a turnaround in the performance of the programme. I will continue to cherish the collegial friendship I had with distinguished members of the JCB and its committees. I cannot forget the support I received from the Minister of Health, Dr Chitalu Chilufya, and my superiors in the Zambia Ministry of Health.

Even as I step down as JCB Chair, I will continue to follow closely the work of TDR, which I am sure will continue to flourish.



## Dr John Reeder

### TDR Director

I am proud to look back on many achievements for TDR in 2019.

In the area of research for implementation, our work aims to overcome barriers to support the implementation of disease control tools to combat infectious diseases of poverty. In collaboration with WHO's Department of Control of Neglected Tropical Diseases, we have collaborated with the International Atomic Energy Agency and its joint division with the Food and Agriculture Organization to develop guidance on testing the Sterile Insect Technique (SIT) to control diseases carried by *Aedes* mosquitoes such as dengue, Zika and chikunguna. Our Structured Operational Research and Training Initiative (SORT IT) is tackling antimicrobial resistance and has spurred 36 new research studies in five countries.

We continue to strengthen research capacity and develop the next generation of global health leaders in collaboration with institutions based in low- and middle-income countries. Our Massive Open Online Course on implementation research, in three languages, has seen enrolment by thousands of participants, and a new training course on ethics in implementation research has been developed with WHO's Health Ethics & Governance Unit.

As part of efforts to engage with the global health community and influence the research agenda, we also launched a Health Product Profile Directory that aims to guide smarter development

of new drugs, vaccines and diagnostics. We are championing open access to health research and supporting the development of a growing number of data sharing platforms. Research partners are piloting a new toolkit on intersectional gender analysis on infectious diseases that will be launched next year. Our Social Innovation in Health Initiative has been showcased at the World Health Assembly, and new social innovations have been identified for research. We would like to thank the many thousands of TDR Global members for their active engagement in activities such as our research crowdfunding challenge contest.

We continue to collaborate with our UN co-sponsors: we have worked with WHO regional offices to award grants to support implementation and operational research aligned with regional priorities. UNICEF is exploring collaboration with TDR's roster of operational research experts to tackle antimicrobial resistance. And with UNDP, we have been contributing to the Access and Delivery Partnership to strengthen health systems to ensure effective access to and delivery of tools to fight TB, malaria and neglected tropical diseases.

We thank all of our donors for their continued support for research to combat infectious diseases of poverty. And we would like to express our deep appreciation to all the scientists and institutions we have collaborated with in countries.



# Our Contributors

TDR is able to conduct its work thanks to the commitment and support from a variety of funders. These include our long-term core contributors from national governments and international institutions, as well as designated funding for specific projects within our current priorities.

Core contributors providing overall Programme support\*



Contributors who provided support to specific projects in 2019\*

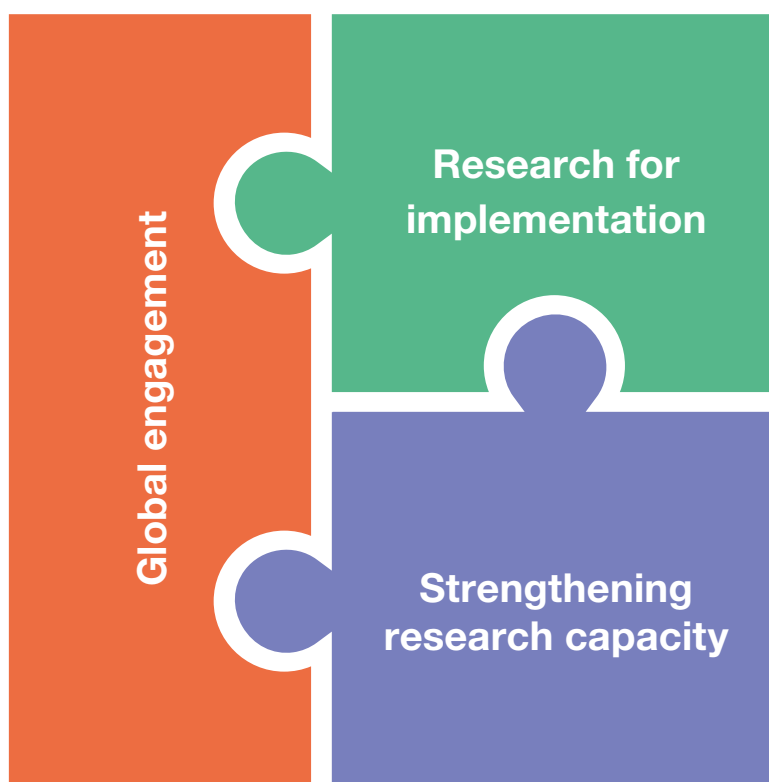


\*listed in order of level of contribution

# 2019 Highlights

Opposite are highlights from 2019 that demonstrate the impact of research supported by TDR to improve the health and well-being of people burdened by infectious diseases of poverty. This body of research is leading to new solutions for implementation and improved access to existing health solutions.

This is the result of TDR's core structure of research for implementation, strengthening research capacity and global engagement acting in an integrated manner.



<b>Testing mosquito sterilization</b>	<u><b>to control dengue, Zika and chikungunya</b></u>
	<p>TDR and WHO's Department of Control of Neglected Tropical Diseases have collaborated with the International Atomic Energy Agency and its joint division with the Food and Agriculture Organization to develop guidance on testing the Sterile Insect Technique (SIT) to control diseases carried by Aedes mosquitoes such as dengue, Zika and chikunguna.</p>
<b>Improving access to new treatment regimens</b>	<u><b>for drug-resistant tuberculosis</b></u>
	<p>TDR, in collaboration with the WHO Global Tuberculosis Programme and technical partners, has developed an implementation/operational research package (ShORRT) to support the use of all-oral shorter drug regimens for patients with drug-resistant TB.</p>
<b>Tackling antimicrobial resistance (AMR)</b>	<u><b>through operational research</b></u>
	<p>36 operational research studies are underway in Ghana, Myanmar, Nepal, Sierra Leone and Uganda as part of TDR's Structured Operational Research and Training Initiative (SORT IT).</p>
<b>Promoting gender-sensitive research</b>	<u><b>on infectious diseases</b></u>
	<p>With TDR support, the University of Ghana and the University of the Witwatersrand in South Africa have integrated TDR's training course on gender-based analysis in vector-borne disease and climate change research into their Master's of Public Health courses.</p>
<b>MOOC on Implementation Research</b>	<u><b>More than 5000 researchers</b></u>
	<p>from more than 200 countries participated in TDR's Massive Open Online Course on Implementation Research conducted in English, French and Spanish.</p>
<b>Ethics in Implementation Research</b>	<u><b>New training course on ethics in implementation research</b></u>
	<p>jointly developed by TDR and WHO's Health Ethics &amp; Governance Unit.</p>
<b>Postgraduate Training Scheme</b>	<u><b>In collaboration with seven universities</b></u>
	<p>in low- and middle-income countries, TDR has awarded a cumulative total of 237 master's fellowships since 2015 focused on implementation research.</p>
<b>Collaboration with WHO and other partners on research grants</b>	<u><b>US\$2 million was leveraged</b></u>
	<p>by partners to support 77 research grants awarded in five WHO regions.</p>
<b>Shaping the global health research agenda</b>	<u><b>A Health Product Profile Directory</b></u>
	<p>was launched to guide the development of products to combat neglected diseases and threats to global health.</p>
<b>Advancing community-engaged social innovations in health</b>	<u><b>6 country hubs</b></u>
	<p>of the Social Innovation in Health Initiative are playing a leadership role in advancing social innovations through research.</p>
<b>Leveraging the TDR Global community for mentorship and collaboration</b>	<u><b>5 researchers and 10 mentors</b></u>
	<p>were identified to pilot a TDR Global research crowdfunding challenge.</p>

# Research for implementation

to reach vulnerable populations and accelerate progress towards universal health coverage

## Contents

- Supporting research to test innovative techniques to control vector-borne diseases
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*Tuberculosis patients at Jalchatra Hospital in Bangladesh.*



## Research for implementation

Building on more than 40 years of experience, we work with our network of researchers and public health practitioners in low- and middle-income countries LMICs to ensure that scientific evidence can be translated into safe, effective, equitable and accessible health solutions for populations suffering from infectious diseases of poverty. This often means studying how interventions that work in clinical trials and pilot settings can be transferred to “real life” settings and scaled up at the national level.

*Children waiting to be screened for TB and malnutrition during a campaign in Tivaouane district, Senegal*

We fund research that national and international programmes have identified as priorities for overcoming obstacles and bridging gaps on the path from innovation to implementation, access and health impact that are not sufficiently addressed by other funders and researchers.

2019 Highlights

**Testing mosquito sterilization**

**to control dengue, Zika and chikungunya**

TDR and WHO's Department of Control of Neglected Tropical Diseases have collaborated with the International Atomic Energy Agency and its joint division with the Food and Agriculture Organization to develop guidance on testing the Sterile Insect Technique (SIT) to control diseases carried by Aedes mosquitoes such as dengue, Zika and chikungunya.

**Improving access to new treatment regimens**

**for drug-resistant tuberculosis**

TDR, in collaboration with the WHO Global Tuberculosis Programme and technical partners, has developed an implementation/operational research package (ShORRT) to support the use of all-oral shorter drug regimens for patients with drug-resistant TB.

**Tackling antimicrobial resistance (AMR)**

**through operational research**

36 operational research studies are underway in Ghana, Myanmar, Nepal, Sierra Leone and Uganda as part of TDR's Structured Operational Research and Training Initiative (SORT IT).

**Promoting gender-sensitive research**

**on infectious diseases**

With TDR support, the University of Ghana and the University of the Witwatersrand in South Africa have integrated TDR's training course on gender-based analysis in vector-borne disease and climate change research into their Master's of Public Health courses.



Mothers participating in the TB and malnutrition screening campaign in Tivaouane district, Senegal

## Supporting research to test innovative techniques to control vector-borne diseases

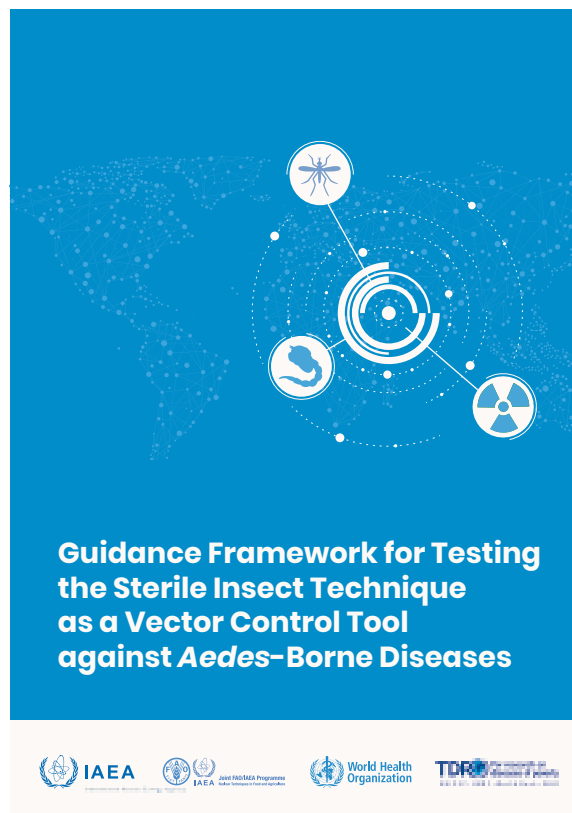
### THE CHALLENGE:

Controlling mosquito populations is currently the only measure used to reduce risk and incidence of certain vector-borne diseases such as dengue, chikungunya and Zika. So far, the use of insecticides has been the primary vector control method, but due to an increasing trend in insecticide resistance in mosquito vectors, as well as the residual effects of insecticides on the environment, there is an urgent need for alternative methods.

### THE APPROACH:

TDR, the International Atomic Energy Agency (IAEA), in partnership with the Food and Agriculture Organization of the United Nations (FAO), and WHO's Department of Control of Neglected Tropical Diseases, have developed guidance for countries interested in testing the Sterile Insect Technique (SIT) to control diseases carried by *Aedes* mosquitoes such as dengue, chikungunya and Zika.

SIT was first used by the U.S. Department of Agriculture and has been deployed successfully for more than 60 years to target insect pests that attack crops and livestock, such as the Mediterranean fruit fly, Tsetse flies and the New World screwworm fly. TDR, jointly with IAEA, plans to support three multi-country teams of research institutions, vector control agencies and public health stakeholders that will be selected to test the SIT against *Aedes* mosquitoes.

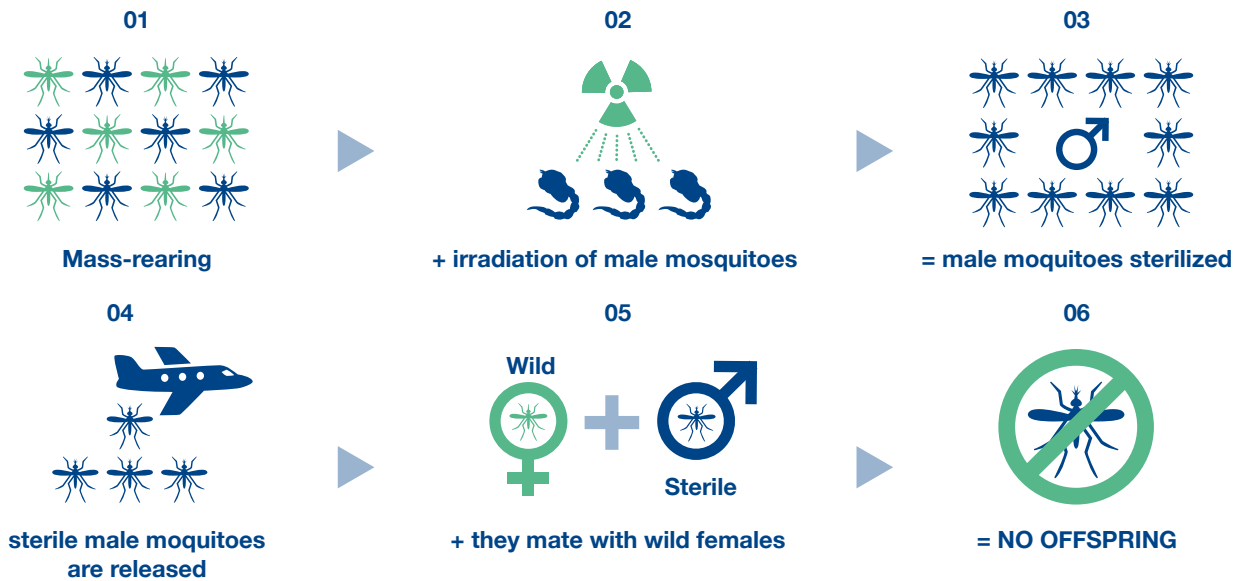


From left to right: Jérémy Bouyer of IAEA, Raman Velayudhan of WHO's Department of Control of Neglected Tropical Diseases, and Florence Fouque of TDR, at a press briefing on dengue and SIT at the Palais des Nations, Geneva, on 14 November 2019.



## Sterile Insect Technique (SIT) to control dengue, Zika and chikungunya

SIT, a form of insect birth control, uses radiation to sterilize male mosquitoes, which are then released to mate with wild females. As these do not produce offspring, the insect population declines over time.



This drone releases sterile male mosquitoes to help reduce transmission of dengue, Zika and Chikungunya.



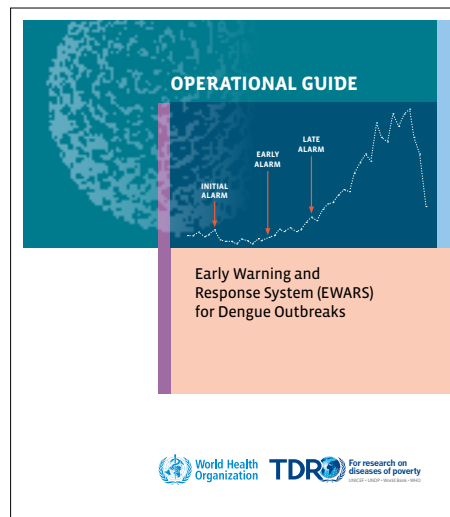
*A research team in Tapachula, Mexico, demonstrating to a group of TDR-supported experts the method for collecting entomological data as part of implementing the Sterile Insect Technique.*

## Strengthening country preparedness for disease outbreaks

TDR has been working with countries and researchers to strengthen and implement robust surveillance systems that can alert country control programmes to impending disease outbreaks. This has included the development of an Early Warning and Response System (EWARS) for outbreaks of arboviral diseases. Several countries are now testing and customizing this system to apply to dengue, Zika and chikungunya.

TDR's "Operational Guide: The Early Warning and Response System (EWARS) for Dengue Outbreaks", updated in 2018 and revised again for publication in 2020, has been disseminated through in-country training workshops in Colombia, India, Malaysia, Mexico, Sri Lanka and Thailand, as well as through TDR expert meetings.

A major development has been the successful incorporation of EWARS into the national surveillance platform in Mexico. Colombia, India, Sri Lanka and Thailand have also begun piloting EWARS as they plan to integrate it into their national surveillance systems. Pan American Health Organization has translated the EWARS guide into Spanish, which will enhance its use in Latin America. EWARS will also be tested for outbreak prediction of yellow fever, malaria, cholera and other infectious diseases.



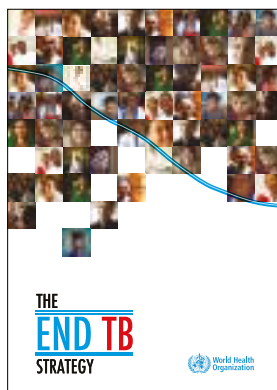
This project is being conducted in collaboration with the WHO Department of Control of Neglected Tropical Diseases and the WHO Department of Infectious Hazard Management.

New collaborations are being built with the WHO Global Programme on Climate Change and Health; the WHO Department of Public Health, Environmental and Social Determinants of Health; and the World Meteorological Organization (WMO). A joint action plan is currently being developed with all partners.



Credit: WHO / SEARO / Nimal Garnage

## Collaborations to build regional networks and research capacity to address TB control priorities



“Intensified research and innovation” is the third pillar of WHO’s End TB Strategy, and TDR has been contributing expertise in research for implementation to optimize the impact of innovations for tackling TB. Research plays a critical role in saving the lives of millions suffering and dying from this preventable and curable disease.

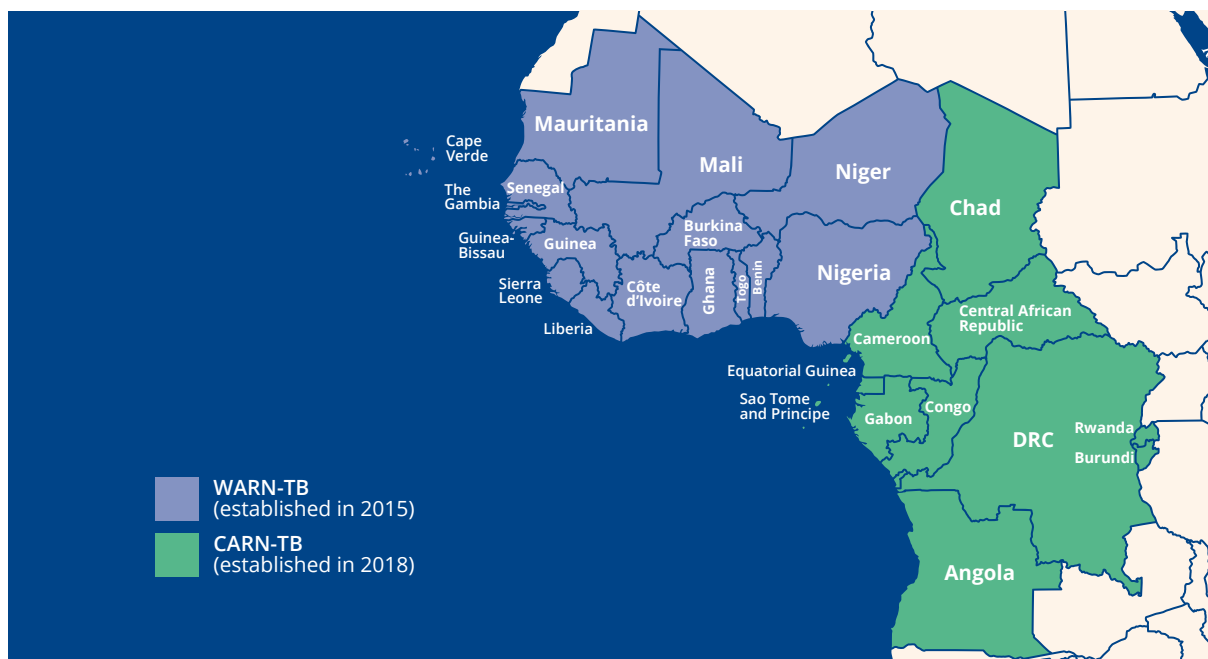
The most recent Global TB Report reported that an estimated 3 million people with TB still aren’t getting the care they need, indicating there are access barriers that need to be studied to optimize control programmes.

### *A regional network approach to supporting TB research*

In recent years, TDR has supported a number of initiatives to strengthen TB research in the WHO African Region. In 2018, 11 national TB programmes in central Africa agreed to establish a TDR-supported Central African Regional Network for TB control (CARN-TB) to boost TB research in the sub-region. Since then, TDR has been training and supporting the national TB programme teams to enhance research in close collaboration with the WHO Regional Office for Africa (AFRO) and WHO’s Global TB Programme;

the West African Health Organization; the Global Fund to Fight AIDS, Tuberculosis and Malaria; the International Union Against Tuberculosis and Lung Disease; the Damien Foundation; and European and African universities and research institutions.

CARN-TB replicates and builds on the experience and progress made through a similar regional approach in 16 West African countries (WARN-TB) since 2015.



In March 2019, TDR, the Global TB Programme, AFRO, and 44 African countries, including those participating in WARN-TB and CARN-TB, convened in Benin to tackle latent TB infection and drug-resistant TB. Countries have identified programmatic gaps and research priorities

focused on drug-resistant TB (DR-TB) and latent TB infections (LTBI), two priority areas critical to the success of the End TB Strategy. This will lead to research activities that will support effective implementation at country level of new WHO TB guidelines.

## **Facilitating operational research to improve access to new treatment regimens for drug-resistant TB**

In November 2019, TDR, in close collaboration with the WHO Global TB Programme and technical partners, launched an implementation/operational research package dubbed ShORRT (Short, all-Oral Regimens for Rifampicin-resistant Tuberculosis).

This research package assesses the effectiveness, safety, feasibility, acceptability, cost and impact (including on quality of life) of the use of all-oral shorter drug regimens for patients with drug-resistant TB.



By providing a standardized methodology, ShORRT aims to facilitate operational research on all-oral shorter regimens for multidrug-resistant or rifampicin-resistant TB by countries, and to generate data that are harmonized across different implementation settings.

ShORRT includes a master protocol, data collection tools and key study procedures that investigators can adapt. The generic protocol is currently available in English and French and will soon also be available in Spanish and Portuguese.

WHO's "Rapid Communication: Key changes to the treatment of drug-resistant tuberculosis", released in December 2019, points to ShORRT as a resource to facilitate operational research for modified shorter regimens.

TDR is currently providing technical support to the national TB control programmes of Benin, Cambodia, the Democratic Republic of the Congo and Nigeria for the adaptation of ShORRT and the future implementation of their research projects. TDR is also engaging with other countries for potential support.

Evidence from this research could play a key role in informing programmatic implementation at the country level and also provide important data to the global TB community to strengthen the evidence base and inform drug-resistant TB treatment guidance.

**“ Together with TDR, we are calling for all partners to support countries in rapidly putting innovations into practice, and to share data from operational research and clinical trials to enable updates of policies and guidelines.”**

**- Dr Tereza Kasaeva**  
Director, WHO Global TB Programme



## Improving detection of TB in children: a smarter solution

### THE CHALLENGE:

Detecting tuberculosis cases in West and Central Africa is a persistent challenge, especially in children. It is estimated that 70% of TB cases in children under five are neither detected nor treated.

### THE SOLUTION:

In Senegal, to address these missed cases, the National TB Control Programme is studying a new active case finding strategy, where TB screening is integrated into malnutrition screening campaigns. If successful, the approach will be scaled up across other regions in Senegal.

The pilot study was conducted during a one-week malnutrition screening campaign in Thiès and Tivaouane districts that gathered up more than 70000 children under five years old.

Parents were also asked to bring their children ages 5 to 14 for TB screening. Community engagement was essential to ensure broad participation.

**“ It is important that we try innovative strategies that can help us find these missing cases.”**

**- Professor Nafissatou Oumar Touré**  
President of the TB Research Taskforce of Senegal



The National TB Control Programme in Senegal is conducting the research in collaboration with district health authorities, Plan International, ChildFund, and the National Malnutrition Control Programme. The effectiveness, feasibility, cost and acceptability of this approach by the community will be evaluated.



Children were weighed to screen for malnutrition. They were also screened for TB and checked for recent close contact with TB cases. Suspected cases were referred to the nearest health centre for bacteriological tests and chest x-ray.



If this study results in positive findings, the integration of TB screening into malnutrition screening campaigns and potentially other health campaigns (such as vaccinations) will be scaled up across other regions in Senegal “to capture the maximum number of children with TB,” says Professor Touré.

## Enhancing evidence-informed decision-making through the Structured Operational Research and Training Initiative (SORT IT)

SORT IT is a global partnership-based initiative coordinated by TDR and implemented with various partners. It aims to make countries “data rich, information rich and action rich,” thereby improving health care delivery and outcomes.

Participants conduct operational research on various topics such as multidrug-resistant TB, malaria, HIV/AIDS, neglected tropical diseases, maternal and child health, outbreaks and

emergencies, antimicrobial resistance and non communicable diseases. Scaled up to 1000 research projects in 93 countries, SORT IT has proven to be adaptable to various geographic contexts, thematic areas and research methodologies. Moreover, 70% of publications generated by SORT IT participants have demonstrated impact on policy and/or practice.

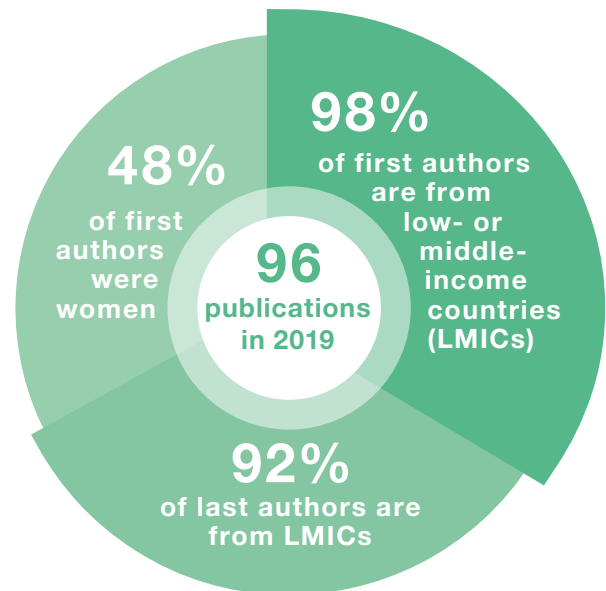
### SORT IT expansion emphasizes franchising, LMIC-led publications and gender equity

By October 2019 the sort it partnership was strengthened and franchised to include:

**35** IMPLEMENTING INSTITUTIONS

**92** COUNTRIES

**859** PARTICIPANTS TRAINED



### ***SORT IT to accelerate universal health coverage for vulnerable populations in Eastern Europe***

In Eastern Europe, SORT IT training courses funded by USAID and led by alumni of previous SORT IT courses were held in Armenia and Ukraine and led to the publication of 18 operational research studies on HIV and TB programmes in two special issues of the *Journal of Infection in Developing Countries* in July 2019.

The research and trainings were conducted in collaboration with the WHO Regional Office for Europe in the context of the European TB Research Initiative.



*On the right: Dr Olga Denisiuk, a SORT IT alumna who is now leading SORT IT training courses in Eastern Europe*



Findings from these studies are already making an impact on programmes. For example:

- The research findings are being used to optimize current programmes funded by the Global Fund and PEPFAR in Ukraine.
- The WHO Regional Office for Europe is taking up the study findings, which are informing the implementation of the Roadmap to Implement the Tuberculosis Action Plan for the WHO European Region 2016–2020.

Below are some research highlights from the two special issues:

<p><b>Strategies for active detection of tuberculosis in Ukraine: Comparative effectiveness amongst key populations (2014-2018)</b></p> <p><i>Kamenska N et al</i></p>	<p><b>Engaging people who inject drugs and their peers in HIV testing and harm reduction in Ukraine: Do they make a difference?</b></p> <p><i>Kravchenko N et al</i></p>
<p><b>Study findings:</b> Introducing active TB case finding in about 700000 people from key populations significantly increased TB detection, with 90% of detected cases starting TB treatment. The TB detection rate was 13 times higher when screening for symptoms and specimen collection was decentralized to outreach sites.</p>	<p><b>Study findings:</b> HIV testing increased by over 300% (from 164 417 to 639 685) and significantly more HIV-positive individuals were identified and referred for harm-reduction services. An operational challenge was that harm reduction services became overwhelmed, with observed declines in enrolment.</p>
<p><b>Implications:</b> Active TB case finding among key populations will increase detection of TB cases and their linkage to care. This is important to reach those who lie outside the realms of routine health services, avoid missed TB cases and reduce community transmission. Resource mobilization is needed to embed this strategy into TB programmes.</p>	<p><b>Implications:</b> Active engagement of people who inject drugs and their peers makes a real difference in improving their opportunity to access HIV prevention and harm reduction services. There is a need for parallel investments in harm reduction to accommodate enrolments pouring in from HIV testing.</p>
<p><b>Tuberculosis care services in Armenia: What has changed since the 2014 reform?</b></p> <p><i>Lylozian H et al</i></p>	<p><b>Free hospitalization for acute respiratory infections in children: What effect and how much does it cost in Armenia?</b></p> <p><i>Sargsyan S et al</i></p>
<p><b>Study findings:</b> The financing mechanism for TB care was reformed in 2014 to avoid unnecessary hospitalizations for TB patients. As a result, hospital admissions declined by 76% (from 6513 in 2013 to 1560 in 2017), and the average hospitalization period declined by 33%. There were considerable cost savings.</p>	<p><b>Study findings:</b> Free hospitalization increased access to hospital admissions by 75% in infants and 85% in children. There was an accompanying 19% decline in infant mortality and 11% decline in under-five mortality, respectively. However, the costs of hospitalizations in Armenia increased by 57% (from 2.1 to 3.3 billion Armenian drams).</p>
<p><b>Implications:</b> The 2014 TB reform fostered an ambulatory approach to TB management, improved bed-availability, reduced hospitalization costs four-fold in four years (from US\$247 038 to US\$59 170) and reduced the likelihood of TB transmission.</p>	<p><b>Implications:</b> Offering free hospitalizations improved access to care with favorable declines in infant and under-five mortality. New sources of funding are needed to sustain the gains.</p>



## SORT IT to tackle antimicrobial resistance

*A TB patient receives medication at Jalchatra Hospital, Bangladesh*

*Is overprescription of antibiotics happening in my hospital?*

*How well are my clinicians adhering to treatment guidelines for infections?*

*Are there gaps in infection prevention and control at health facilities under my supervision?*

These are some of the burning questions faced by frontline health workers and decision-makers fighting antimicrobial resistance (AMR) around the world. SORT IT is well-designed to help answer such practical questions.

At the start of 2019, TDR, with the support of the Government of the United Kingdom's Department of Health & Social Care, launched a SORT IT programme focused on tackling AMR in Colombia, Ecuador, Ghana, Myanmar, Nepal, Sierra Leone and Uganda.

Currently, 36 operational research studies are underway in five countries. These studies cover a broad range of topics including improving the quality of AMR surveillance data, understanding antibiotic consumption patterns, preventing infection in health facilities, and addressing AMR in the agriculture and environment sectors using the One Health approach.

The generated evidence will help us better understand the actual AMR situation at country level, guide control strategies and contribute to health systems strengthening. SORT IT's approach to tackle AMR is aligned with the strategic pillars of WHO's Global Action Plan on AMR which include improving awareness, strengthening knowledge through surveillance and research, reducing the incidence of infection, optimizing the use of antimicrobials, and developing the economic case for sustainable investment.

**“ TDR's approach to operational research is contributing to national efforts to fight AMR by developing the capacity to generate and use data on the emergence, spread and health impact of AMR.”**

**- Jos Vandelaer**  
WHO Representative in Nepal

# GLOBAL OPERATIONAL RESEARCH ON AMR

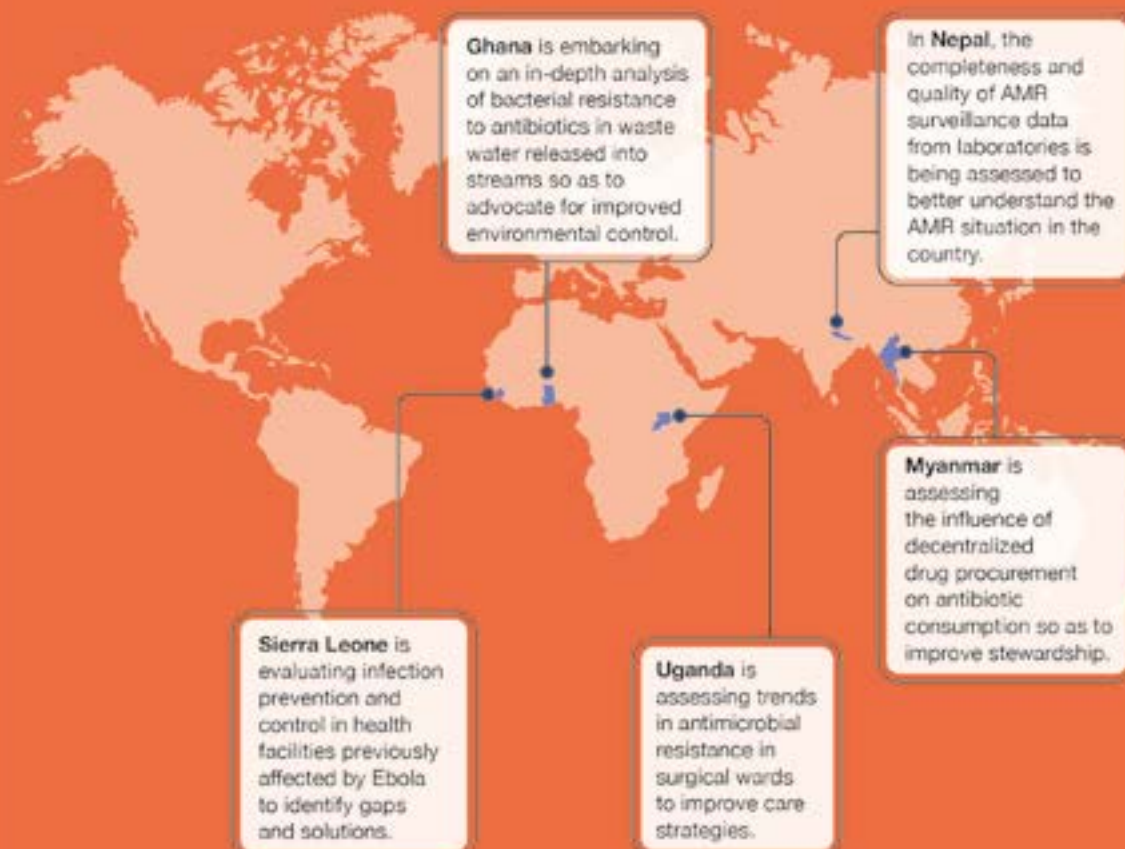
## Implementation of the Structured Operational Research and Training Initiative (SORT IT)

At the start of 2019, TDR, with the support of the UK government, launched a SORT IT programme focused on tackling antimicrobial resistance (AMR) in Colombia, Ecuador, Ghana, Myanmar, Nepal, Sierra Leone and Uganda. The following are some examples of AMR research projects in these countries using the SORT IT approach.

As of  
**DECEMBER 2019**

**36**

operational research  
projects are  
underway in five  
countries.



WHO country offices and national AMR committees have been at the forefront in identifying SORT IT projects that fit with national AMR priorities. TDR has also joined forces with WHO regional offices

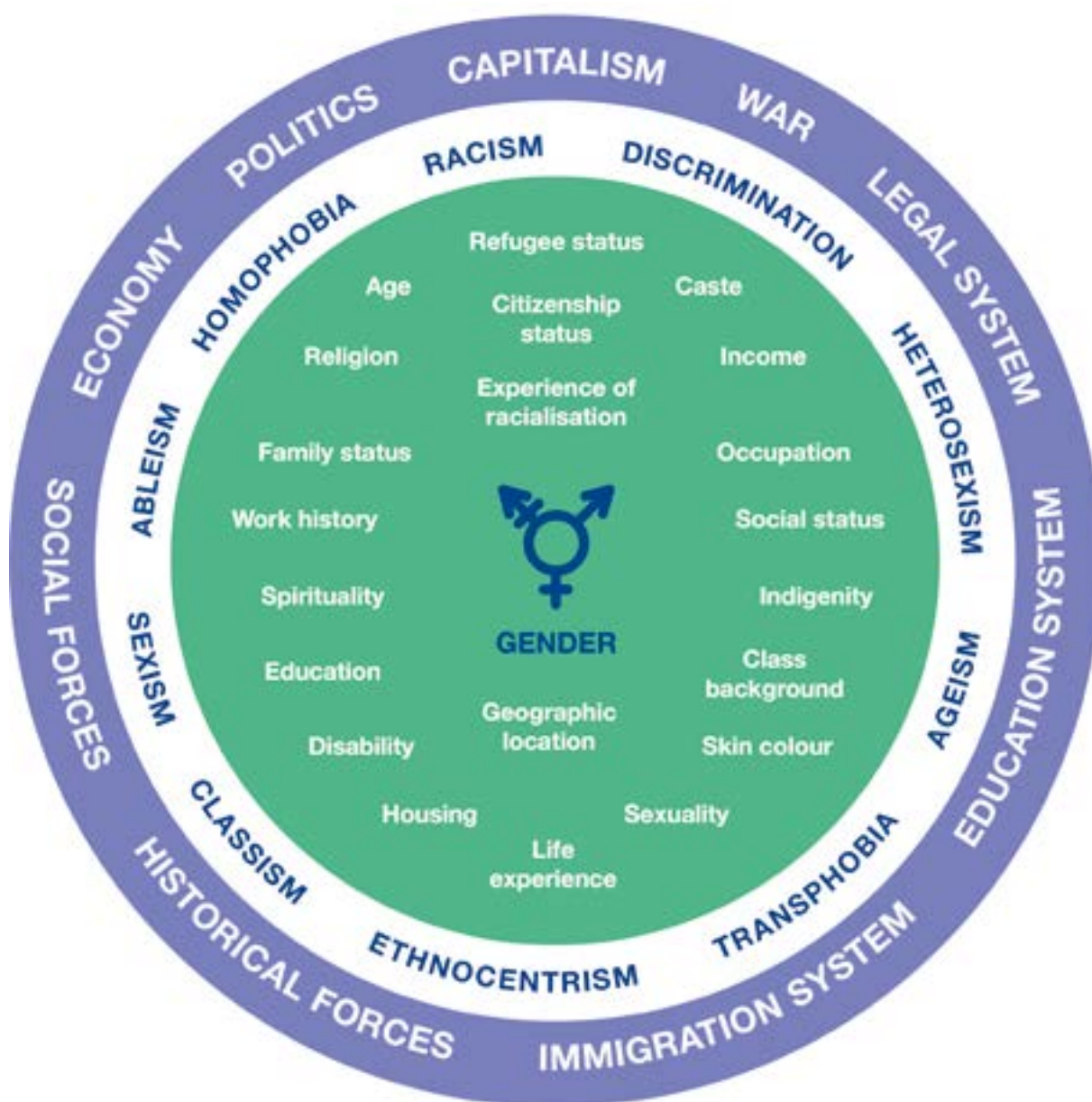
for Africa, the Americas, Europe, and South-East Asia to complement the ongoing SORT IT related research with a Small Grants Scheme for operational research to tackle AMR.

## Promoting gender-responsive health interventions to prevent and control infectious diseases

Building and sustaining research capacity of men and women scientists has been a core activity of TDR since its inception. This includes support for researchers through training courses and postgraduate programmes that develop leadership skills of scientists in low- and middle-income countries.

In recent years, TDR has also focused on building the capacity of scientists to investigate gender dimensions of health, which are often overlooked.

There is a growing recognition that gender norms, roles, power relations, socioeconomic factors, and other drivers of inequality intersect with each other and influence access to health services and health outcomes. This must be considered when designing and implementing health interventions and monitoring universal health coverage. In response, TDR has developed tools to strengthen such research capacities, including an intersectional gender research toolkit and an online course on gender-based analysis.



**Figure 1** How gender intersects with other social and economic characteristics that influence access to health services and health outcomes. From TDR Toolkit: Incorporating intersectional gender analysis into research on infectious diseases of poverty, forthcoming, adapted from Simpson, J. (2009). *Everyone Belongs: A toolkit for applying intersectionality* (1st ed.). Ottawa: Canadian Research Institute for the Advancement of Women (CRIAOW). p. 5.

## ***Institutionalizing gender-based analysis in research on vector-borne diseases and climate change***

The University of Ghana, School of Public Health, with support from TDR, has developed and pilot-tested an online course aimed at developing skills in gender-based analysis (GBA) for vector-borne diseases and climate change research.

The target audience for this training is researchers and policy-makers from disease endemic countries. Further to this, TDR supported a delivery method of learning that deviates from the traditional concept: that is, an innovative global classroom approach (use of online learning, web conferencing, video conferencing, discussion forum, blog moderation; use of social media for assignments). The course modules have gone through two rounds of peer review and have been piloted and offered at the University of Ghana and at the University of the Witwatersrand in South Africa in 2019.

Within the University of Ghana, the GBA online course has been integrated within existing gender and health courses offered at both undergraduate and postgraduate levels. This is expected to continue in 2020. In 2019, the University of Ghana also collaborated with the University of the Witwatersrand and the Association of Schools of Public Health in Africa to identify eligible African academic institutions (e.g. schools of public health) which may plan to integrate the GBA short course in one of the modalities listed above.

The University of the Witwatersrand is working to integrate modules from the GBA into a Master's of Public Health (MPH) course on the social determinants of health: Health and society (COMH7221). The course is scheduled to run in February 2020.



*Dr Chandani Kharel, who has been pilot-testing in Nepal the forthcoming TDR Toolkit: Incorporating intersectional gender analysis into research on infectious diseases of poverty, pictured here at the 2019 Annual Meeting of the American Society of Tropical Medicine & Hygiene.*

# Strengthening research capacity

## Contents

- Postgraduate training scheme
- Regional Training Centres
- Clinical Research and Development Fellowship
- Access and Delivery Partnership



*TDR fellows participating in postgraduate training scheme, in Dhaka, Bangladesh*



## Strengthening research capacity

Research Capacity Strengthening activities are at the heart of the TDR Strategy 2018–2023, which aims to contribute to the achievement of the Sustainable Development Goals (SDGs) and universal health coverage (UHC). Within the context of the TDR vision, the overall goal is to strengthen the capacity of individuals, institutions and societies to produce research evidence useful for reducing the burden of infectious diseases of poverty in low- and middle-income countries (LMICs). Collaborations with partner universities and training institutions in these countries are critical to jointly achieving this goal.

*TDR fellow Ateeb Ahmed Parray at Jalchatra Hospital, Bangladesh, where he conducted research during his master's training at BRAC University*



**MOOC on Implementation Research**

**More than 5000 researchers**

from more than 200 countries participated in TDR’s Massive Open Online Course on Implementation Research conducted in English, French and Spanish.

**Ethics in Implementation Research**

**New training course on ethics in implementation research**

jointly developed by TDR and WHO’s Health Ethics & Governance Unit.

**Postgraduate Training Scheme**

**In collaboration with seven universities**

in low- and middle-income countries, TDR has awarded a cumulative total of 237 master’s fellowships since 2015 focused on implementation research.

**Postgraduate training scheme: Building the capacity of the next generation of researchers and global health leaders**

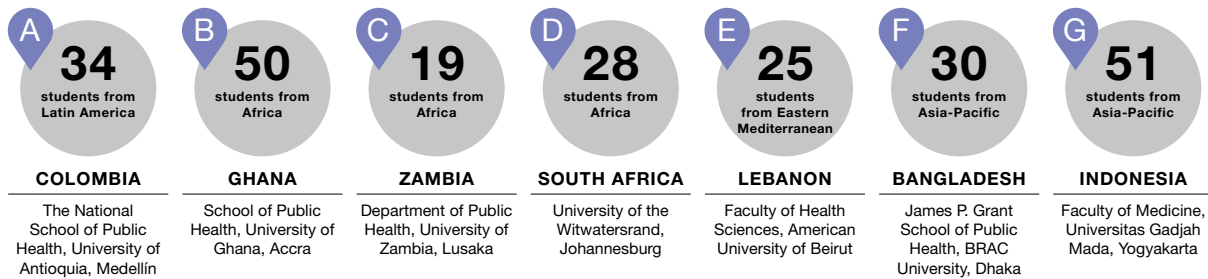
The postgraduate training scheme provides a full academic scholarship in collaboration with seven universities in low- and middle-income countries.

Students obtain master’s degrees focused on implementation research on malaria, TB and neglected tropical diseases.

**International reach of Postgraduate Training Scheme**



NUMBERS OF MASTER’S STUDENTS TRAINED AT PARTNER UNIVERSITIES IN THE POSTGRADUATE TRAINING SCHEME (AS OF SEPTEMBER 2019).



**Results**

Since the inception of the scheme in 2015, the seven universities have awarded a cumulative total of 237 master’s scholarships and eight PhD fellowships. Among the 237 master’s students, 122 (51%) are men and 115 (49%) are women. Of the eight PhD students, one is a woman.



## Spotlight



## First Global Conference on Implementation Science and Scale-up

sponsored by

For research on diseases of poverty  
TDR is a joint effort of the World Bank, WHO, and UNICEF

The role of implementation research in accelerating universal health coverage was showcased at the first Global Conference on Implementation Science and Scale-Up in Dhaka, Bangladesh, 29 June – 1 July 2019. The conference was co-hosted by the James P. Grant School of Public Health at BRAC University, Centre of Excellence for Science of Implementation and Scale-up (CoE-SISU), and UNICEF Bangladesh, and co-sponsored by TDR. BRAC is one of the seven universities TDR partners with on the postgraduate training scheme.

Seven graduates from the universities implementing the scheme - in Bangladesh, Colombia, Ghana, Indonesia, Lebanon, South Africa and Zambia – were selected to present their implementation research projects on neglected tropical diseases and TB at the conference. They are:

**Alfred Kwesi Manyeh**  
University of Witwatersrand,  
South Africa

*“Using intervention mapping to design and implement quality improvement strategies towards elimination of lymphatic filariasis in Northern Ghana.”*

**Andrés Felipe Úsuga Rodríguez**  
University of Antioquia, Colombia

*“Barriers that limit implementation of thermal fogging intervention in vector control for dengue in Medellin, Colombia.”*

**Faustina Gyimah**  
University of Ghana

*“Fear of the unknown: exploring psychosocial factors that influence implementation of DOTS strategy in Accra Metropolis, Ghana.”*

**Sabina Timilsina**  
Gadjah Mada University, Indonesia

*“The acceptability of screening of diabetes mellitus among tuberculosis patients at DOTS centres in selected districts of Nepal.”*

**Patricia Maritim**  
University of Zambia

*“Evaluating the appropriateness of a mass drug administration programme in Livingstone District, Zambia.”*

**Saha Naseri**  
American University of Beirut, Lebanon

*“Post-evaluation of a tuberculosis awareness campaign in Afghanistan using RE-AIM framework.”*

**Ateeb Ahmed Parray**  
BRAC University, Bangladesh

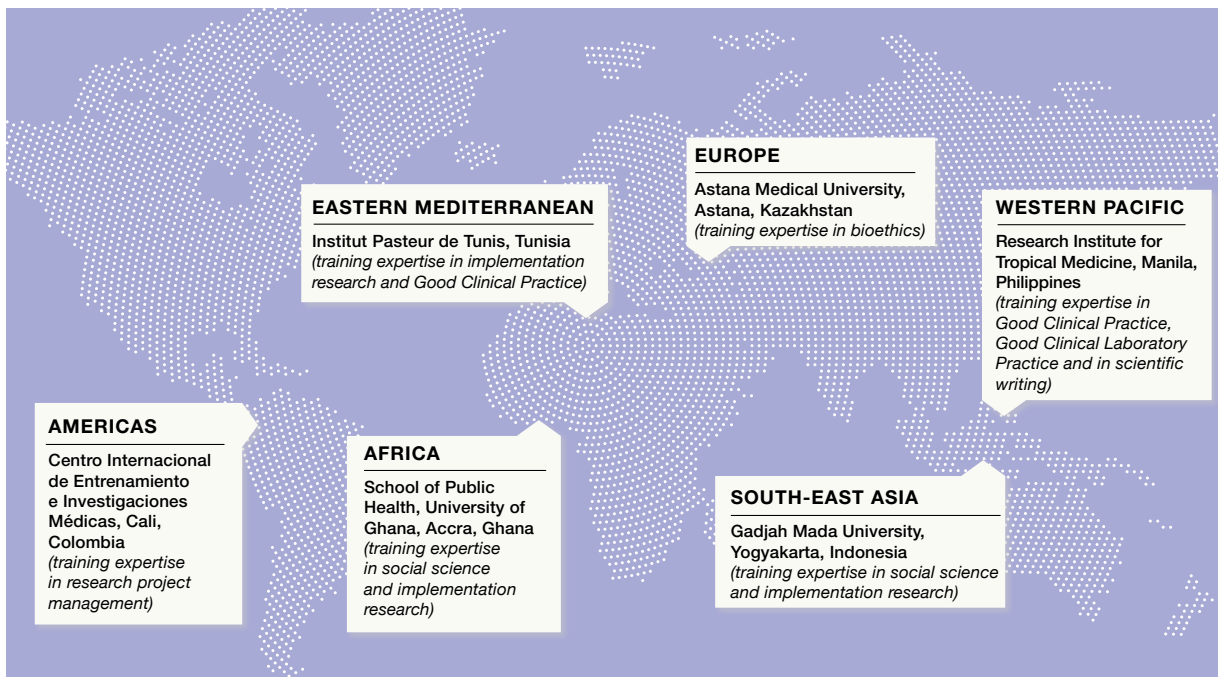
*“Hospital infection control in selected facilities managing drug-resistant tuberculosis in Bangladesh.”*

# Regional Training Centres: Fostering learning and collaboration within and across regions

TDR supports a network of Regional Training Centres (RTCs) located in each WHO region, which have been selected on a competitive basis to conduct and disseminate training courses on good health research practices and IR. The package of skills-building IR courses developed by TDR comprises: the Massive Open Online Course (MOOC) on IR, Basic Principles in IR

course, IR Toolkit and Ethics in IR training course. Regionalization of these courses using train-the-trainer (TtT) methodology and training workshops enables TDR to work more closely with the end-users and become more relevant to regional needs, empower centres based in the regions to serve as training hubs, and utilize existing expertise in disease endemic countries.

## Regional Training Centres supported by TDR



## Results

- In 2019, 744 scientists (72% women) were trained in good health research practices and 2999 (55% women) in implementation research.
- Short training courses in good health practices have been institutionalized in five regions:
  - Africa: Kenya, Nigeria, Mozambique
  - Americas: Bolivia, Ecuador, Guatemala, Honduras, Jamaica, Peru
  - Eastern Mediterranean: Lebanon
  - Europe: Armenia, Azerbaijan, Belarus, Georgia, Kazan State of Russia, Kyrgyzstan, Tajikistan, Ukraine, Uzbekistan
  - South-East Asia: India, Myanmar, Nepal



## Spotlight

## Massive Open Online Training Course (MOOC) on IR

The Regional Training Centres have played a critical role in the dissemination and management of TDR's MOOC on IR. Participants learn the core concepts of IR, including how to:

- Identify the challenges of various health settings;
- Assess the appropriateness of existing strategies;
- Develop new interventions and strategies by working with communities and stakeholders;
- Specify IR questions; and
- Design rigorous research projects. This includes how to identify IR outcomes, evaluate effectiveness and make plans to scale up implementation in real life settings.

Case studies are introduced, presented and interpreted by experienced public health researchers, practitioners and academics. The MOOC was developed in English, with subtitles available in English, French and Spanish. Translations into Chinese and Russian are under way.

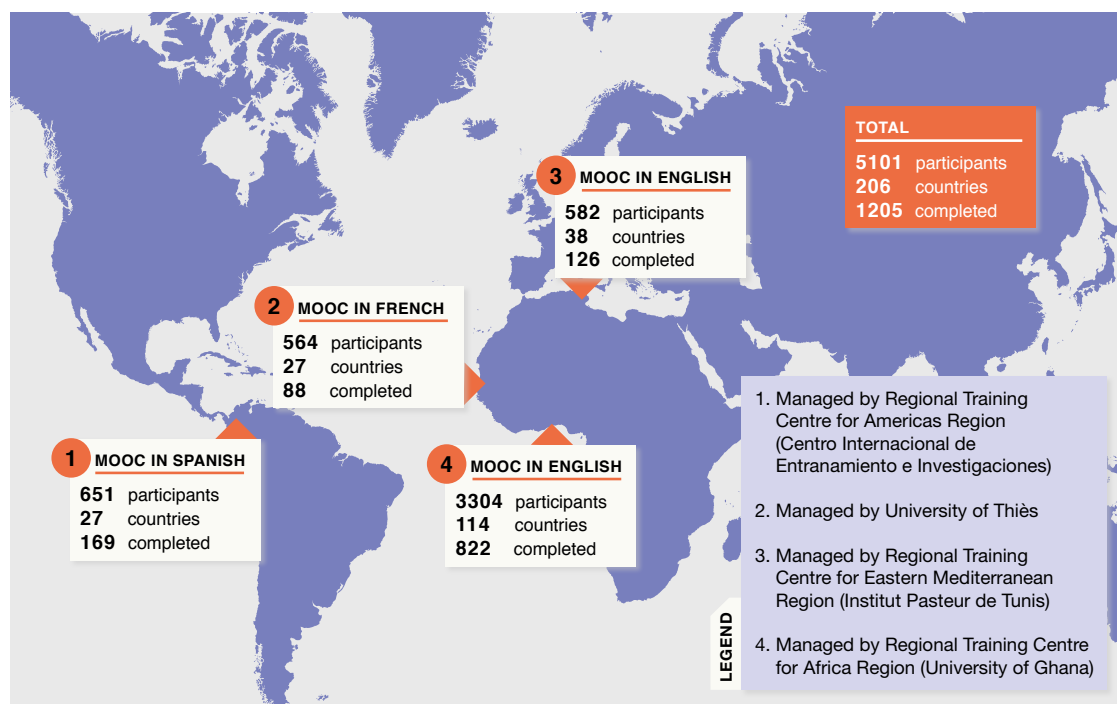


A social media announcement for the MOOC course for the Eastern Mediterranean region managed by Institut Pasteur de Tunisia.

### Results

In 2019, four sessions of the MOOC (two in English, one in Spanish and another in French) were conducted, attracting a total of 5101 participants from more than 200 countries.

#### Participation in Massive Open Online Course (MOOC) by region





# Ethics in IR training course:

## Ensuring ethical conduct of implementation research

In June 2019, TDR and WHO launched a new training course on ethics in implementation research to ensure appropriate engagement with research subjects and relevant communities and to safeguard against any potential harm.

### The challenge

As with all research involving human subjects, IR protocols must be reviewed by research ethics committees. However, given the “real life” context of IR, it is important that researchers and research ethics committees are familiar with the specific ethical issues of IR. The need was therefore identified to develop guidance for researchers and research ethics committees on the ethical implications of IR.

### The solution

TDR and WHO’s Health Ethics & Governance Unit, both part of WHO’s new Science Division, have jointly developed a training course for researchers and research ethics committees on the important ethical considerations in IR. The course comprises six interactive modules interspersed with activities including country case studies, role play and quizzes. “This training course meets an important need to address ethical considerations in implementation research conducted in real-life settings,” said WHO Chief Scientist Soumya Swaminathan. “TDR and WHO will facilitate country-led train-the-trainer workshops to help disseminate this training course.”



### Key ethical questions to consider when planning a study include:

- Does the study address a priority concern of the community?
- How should community or stakeholder engagement occur?
- Should informed consent be obtained? If yes, from whom?
- Who will own the data?
- How will privacy and confidentiality of data collected electronically be assured?
- Are there potential harms associated with the intervention? If so, for whom?

The Regional Training Centres will help disseminate this new ethics training course and facilitate train-the-trainer workshops. For example, in collaboration with WHO’s Health Ethics & Governance Unit, Gadjah Mada University of Indonesia, the Indian Forum for Medical Ethics Society and the Indian Council of Medical Research, a regional IR ethics train-the-trainers workshop will take place during the third quarter of 2020 in Mumbai, India.

**“ Implementation research is key to improving programmes for children in ‘real world’ settings, but must be done while protecting communities and children. As a TDR co-sponsor, UNICEF therefore welcomes this new training course on ethics in implementation research.”**

- Stefan Peterson  
Chief of Health, UNICEF

## Clinical Research and Development Fellowship (CRDF)

### Building capacity to conduct clinical trials in low- and middle-income countries

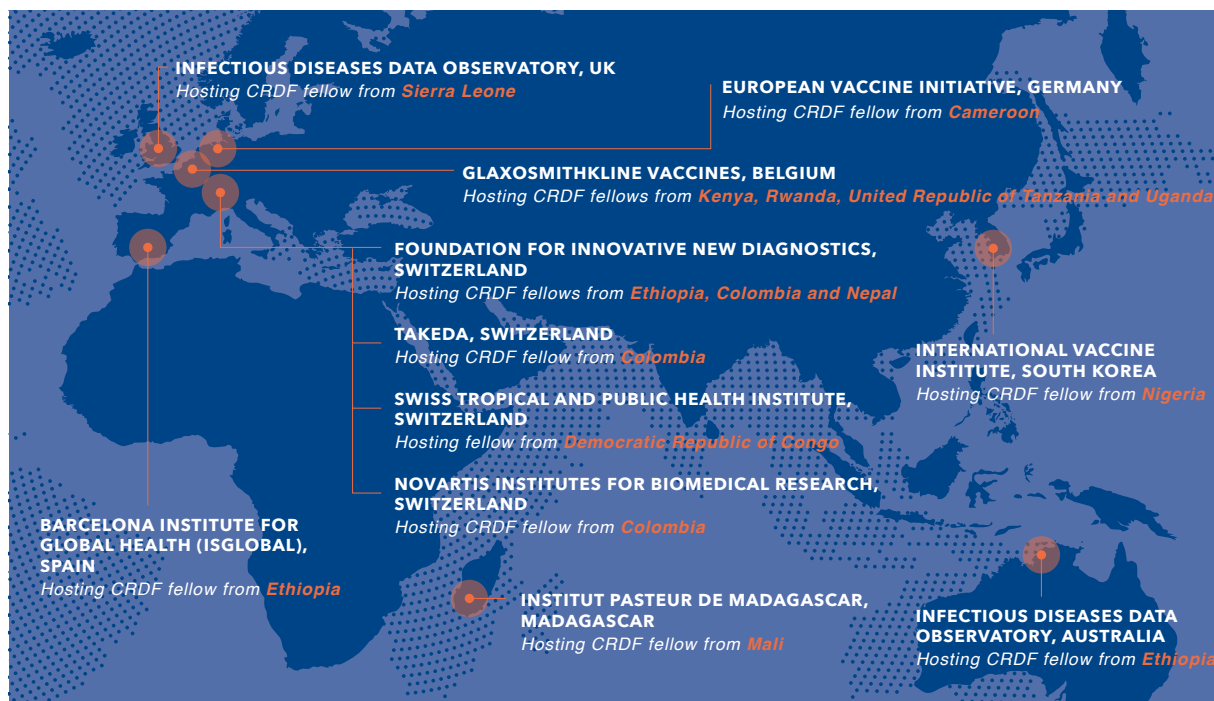
Complementing our training programmes on research for implementation, TDR also supports the Clinical Research and Development Fellowship scheme, which allows early- to mid-career researchers in low- and middle-income countries to learn how to conduct clinical trials. Participants are placed for 12 months in pharmaceutical companies, product development partnerships, or research organizations and receive a grant to reintegrate with their home institution. The fellowship is jointly implemented by TDR and the European & Developing Countries Clinical Trials Partnership (EDCTP).

Since 1999, a cumulative total of 107 fellows (28 women, 79 men) from 36 low- and middle-income countries have been selected to be placed with 27 partner organizations. All fellows have returned to their home institutions except one who has played a pivotal role in a wide range of R&D projects, including trials for new candidate vaccines and drugs.

In 2019, 16 fellows were selected to be placed with training partner organizations as illustrated below.



#### Training partner organizations hosting CRDF fellows selected in 2019





## Dr Ewurama D. A. Owusu

Bringing her CRDF experience in Papua New Guinea home to Ghana

*Dr Owusu, center, at the malaria diagnostic clinical trial site in Papua New Guinea*

### Training partner organization:

- *Foundation for Innovative New Diagnostics (FIND), Geneva, Switzerland*

### Highlight during fellowship:

- *Managed implementation of clinical trial of highly sensitive malaria rapid diagnostic test in pregnant women in Papua New Guinea*

### Post-fellowship highlights:

- *Organized seminars and workshops on diagnostic clinical trials at the Disease Surveillance Department of the Ghana Health Service and University of Ghana*
- *Appointed as Coordinator of Special Programmes/Programme Accreditation, at the Department of Medical Laboratory Sciences, University of Ghana*
- *Currently leading a multi-disciplinary research team at the University of Ghana on climate change and its effect on infectious diseases, nutrition and biodiversity*

### Clinical trial of malaria rapid diagnostic test

As a recipient of the TDR Clinical Research and Development Fellowship I worked with the Malaria Team at FIND, under the close supervision of Dr Xavier Ding. He entrusted me with a project where I managed the implementation of a clinical trial of a highly sensitive malaria rapid diagnostic test (HS-RDT) in pregnant women in Papua New Guinea. I saw the project through proposal completion, ethics approval, shipment of materials and equipment to study site, commencement of project, monitoring of project (both remotely and on-site) and close-out of study. I was also part of the team that developed the first electronic case report form (eCRF) which was used for this project.

### Sharing knowledge and experience

I organized and also facilitated a series of seminars and workshops at the Disease Surveillance Department of the Ghana Health Service and the University of Ghana respectively. These seminars and workshops focused on knowledge sharing on the conduct of diagnostic clinical trials; clinical studies monitoring; and using the Global Health Network (TGHN) website and its Professional Development Scheme (PDS) in capacity development. I have made it a habit to share tips and tricks with undergraduate and postgraduate students I supervise at my university as well.

I have now resumed my position at the University of Ghana and am leading a multi-disciplinary research team on climate change and its effect on infectious diseases, nutrition and biodiversity.

As a family woman, leaving my husband and children behind for one year was the most difficult thing for me and for them. Of course, I got the chance to return home for a visit once, and they also came over to visit during the summer, which made it easier for us. Nonetheless, the knowledge and experience I have gained from this fellowship makes all of this well worth it. I have encouraged colleagues to apply for this fellowship and will continue to do so.

“ *In the past 10 months of my being back home in Ghana, my focus has been on sharing all the knowledge and experience I gained during my fellowship with my research colleagues and graduate and undergraduate students.* ”

## Access and Delivery Partnership

The Access and Delivery Partnership (ADP) helps countries strengthen policies, human capacities, systems and regulations to ensure that effective medicines, vaccines and diagnostics reach the people who need them.

ADP is a collaboration between UNDP, WHO, TDR, and PATH and is funded by the Government of Japan. Within the partnership, TDR is working with ADP focus countries to strengthen institutional capacity in the areas of priority setting, implementation research and drug safety monitoring. The ADP focus countries are Ghana, India, Indonesia, Malawi, Senegal, the United Republic of Tanzania and Thailand.

In 2019, TDR facilitated development of implementation research capacity for an integrated rollout plan for the new RTS,S/AS01 malaria vaccine across Ghana nationally. The plan, coordinated by the University of Health and Allied Sciences (UHAS) in Ghana, was in response to an EDCTP call in 2018 on capacity development to facilitate delivery and uptake of new or improved medical interventions in African health systems. The plan involved a multisectoral working group which comprised UHAS, the Ministry of Health, Ghana National Drugs Programme and the Ghana Food and Drugs Authority (FDA). A €2.3 million grant was awarded to UHAS by EDCTP in November 2019 to fund activities in 2020.

TDR also supported Ghana to strengthen the ability to identify and address barriers to effective programme implementation in support of the roll-out of community-based mass drug administration (MDA) of preventive chemotherapy for yaws (azithromycin).

In Francophone Africa, in partnership with the West African Health Research Network, a five-day training workshop was held on implementation research methodology for malaria control stakeholders from eight countries: Benin, Burkina Faso, Côte d'Ivoire, Guinea, Mali, Niger, Senegal and Togo. The training was based on the French version of the TDR IR Toolkit.

The ADP Platform for South-South Exchange and Learning was also launched in January 2019 to leverage the experience and lessons learned from ADP focus countries, with the aim of identifying transferable lessons and tools to promote technical learning and exchange and strengthening regional partnerships and networks that sustain national level capacity development.

A more comprehensive IR Toolkit (in English and French) was published, using an online modular learning approach. Since its launch in 2018, there have been over 5000 unique user sessions and almost 6000 download requests.



*A child being tested for malaria at a clinic in Lupuna, Peru*





*Saha Naseri of Afghanistan, who received a TDR scholarship to obtain her Master's in Public Health from the American University of Beirut in Lebanon*

# Global engagement:

## Promoting innovative and inclusive approaches to research

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### Contents

- Collaboration with WHO regional offices on research grants
- Shaping the global health research agenda
- Collaborative networks on research funding
- Social Innovation in Health Initiative: transforming health care delivery so no one is left behind
- TDR Global: leveraging a global network to catalyse collaboration, mentoring and capacity building



*Tuberculosis patients at Jalchatra Hospital in Bangladesh*



## Global engagement

An essential part of TDR's work is to engage with the global health community to promote and facilitate the role of research for development and to advocate for the use of high-quality evidence to inform policy. TDR is at the interface between research and health-care delivery. Embedded within the UN family through its co-sponsors (UNICEF, UNDP, the World Bank, and WHO), this unique position allows TDR to create a bridge from local communities to the World Health Assembly to enable the broadest possible scope of dialogue and debate across the spectrum of health research – from priority setting to evidence-based policy-making at local, national, regional and global levels.

This global engagement includes collaboration with WHO regional offices on research grants, shaping the global health research agenda, leading a collaborative network on research funding, creating an enabling environment and providing evidence for community-engaged social innovations to transform health care delivery, and leveraging a global network of 7500 scientists and experts who have been associated with TDR.

2019 Highlights

**Collaboration with WHO and other partners on research grants**

**US\$2 million was leveraged**

by partners to support 77 research grants awarded in five WHO regions.

**Shaping the global health research agenda**

**A Health Product Profile Directory**

was launched to guide the development of products to combat neglected diseases and threats to global health.

**Advancing community-engaged social innovations in health**

**6 country hubs**

of the Social Innovation in Health Initiative are playing a leadership role in advancing social innovations through research.

**Leveraging the TDR Global community for mentorship and collaboration**

**5 researchers and 10 mentors**

were identified to pilot a TDR Global research crowdfunding challenge.



*TDR fellows visiting the site of a social innovation in Zumarraga, Samar, Philippines*

# Collaboration with WHO regional offices on research grants

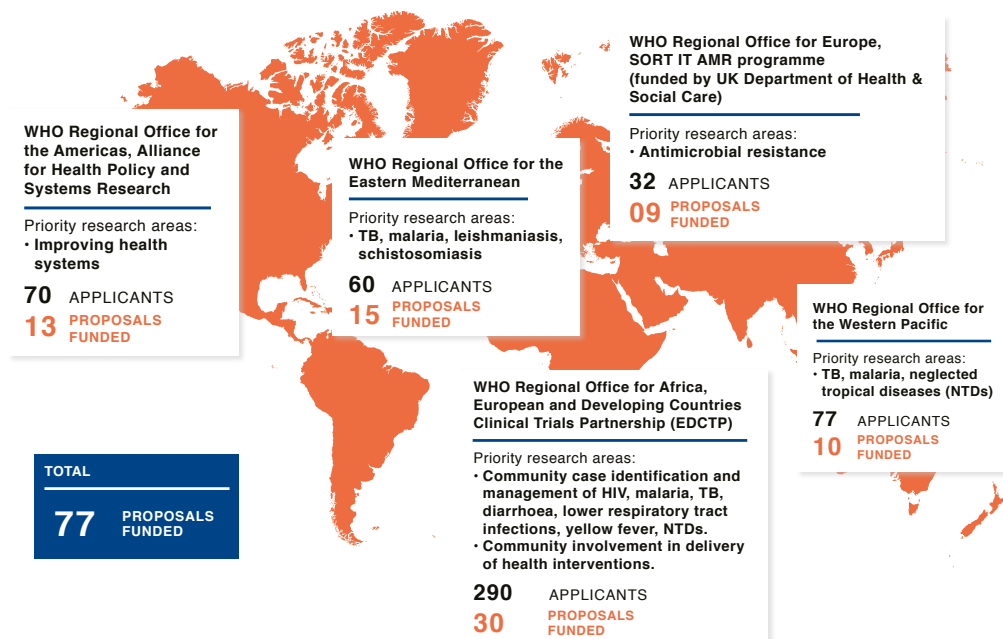
TDR has a history of supporting researchers and public health practitioners, in collaboration with the WHO regional offices, through small grants (ranging from US\$ 10000 to US\$ 20000). Since 2014 the programme's focus has been on implementation research and each region has taken more responsibility for jointly identifying with TDR the research priorities to be funded. The small grants programme embodies the overall TDR Strategy by incorporating research capacity strengthening, research for implementation and global engagement. The programme has included all WHO regions since 2016.

Other partners are increasingly collaborating with TDR to implement this programme, and in 2019 a total of US\$ 2 million was leveraged from the European and Developing Countries Clinical Trials Partnership (EDCTP), Alliance for Health Policies and Systems Research (AHPSR), the SORT IT AMR programme (funded by the UK Department of Health & Social Care) and the UNDP/UNFPA/ UNICEF/WHO/World Bank Special Programme of Research, Development and Research Training in Human Reproduction (HRP).

## US\$2 million leveraged for small grants scheme with regional offices



## 77 research grants awarded in 5 WHO regions in 2019



# Shaping the global health research agenda

## Health Product Profile Directory for smarter research and development

In May 2019, TDR launched an online resource to guide the development of new drugs, vaccines and diagnostics for which there are limited markets or incentives for research and development. An essential tool for realizing universal health coverage, the Health Product Profile Directory aims to promote research and development for products to combat neglected diseases and threats to global health, including antimicrobial resistance and diseases with pandemic potential.

The Health Product Profile Directory is a free-to-use online resource created and developed by TDR on behalf of WHO as a global public good. It provides a searchable database of profiles for health products needed to tackle pressing health issues in global health, including those prioritized by WHO. The summary of the published profiles outlines 8-10 key characteristics (such as target population, measures of efficacy and dosage) for the development of health products, including medicines, vaccines and diagnostics. Building in these characteristics at an early stage of the development process is essential to ensure that the final products will be accessible to the populations that need them.

Currently, the Directory contains 233 product profiles, with the majority describing the needs for three infectious diseases: HIV, TB and malaria. Less than 2% of these strategic documents cover noncommunicable diseases or family and women's health. Therefore, the HPPD suggests there is a clear need to improve the description of R&D needs (as product profiles) unique to the developing world in the noncommunicable disease area.

**THE CHALLENGE**

The Ebola outbreak of 2014-15 and other recent pandemics have highlighted the urgent need for centralized information at global level to guide and improve coordination of efforts to develop new health products for neglected diseases and populations.

Until now, less than 5 percent of new products that have been submitted for regulatory review have referenced product profiles in the R&D process. This has contributed to uncoordinated and ineffective research and development in these areas.

**THE OBJECTIVES**

Provide a **repository** for existing health product profiles

Introduce **standardization** in the description of health product profiles

Enable high-level **landscape analyses** of R&D activity

Emphasize **access, equity and affordability** as integral to the innovation process

**HEALTH PRODUCT PROFILE DIRECTORY**

For smarter, more efficient R&D to tackle global health priorities

The Health Product Profile Directory is an online resource that guides the development of new health products for which there are limited markets or incentives for research and development. An essential tool for realizing universal health coverage, the Directory aims to promote research and development for products to combat neglected diseases and threats to global health, including antimicrobial resistance and diseases with pandemic potential.

The Health Product Profile Directory is a **free-to-use online resource** created and developed by TDR on behalf of WHO as a global public good. It provides a searchable database that outlines the 8-10 key characteristics used to describe desired health products including **medicines, vaccines, diagnostics and medical equipment**. Links are provided to access the full product profile document where this is publicly available.

The Directory includes profiles developed by WHO and other entities. The Directory can also be accessed through the WHO Global Observatory on Health R&D, where other key resources in this area can be found.

**THE SOLUTION**

**KEY COMPONENTS OF PRODUCT PROFILES**

Indication, Intended use, Target population, Measures of efficacy, Safety, Dosage



**“ In an R&D landscape which is increasingly complicated to navigate, Medicines for Malaria Venture welcomes this new Directory, which will help us ensure that new malaria products that are developed are able to be accessed and used by the populations that need them.”**

– David Reddy  
Chief Executive Officer,  
Medicines for Malaria Venture

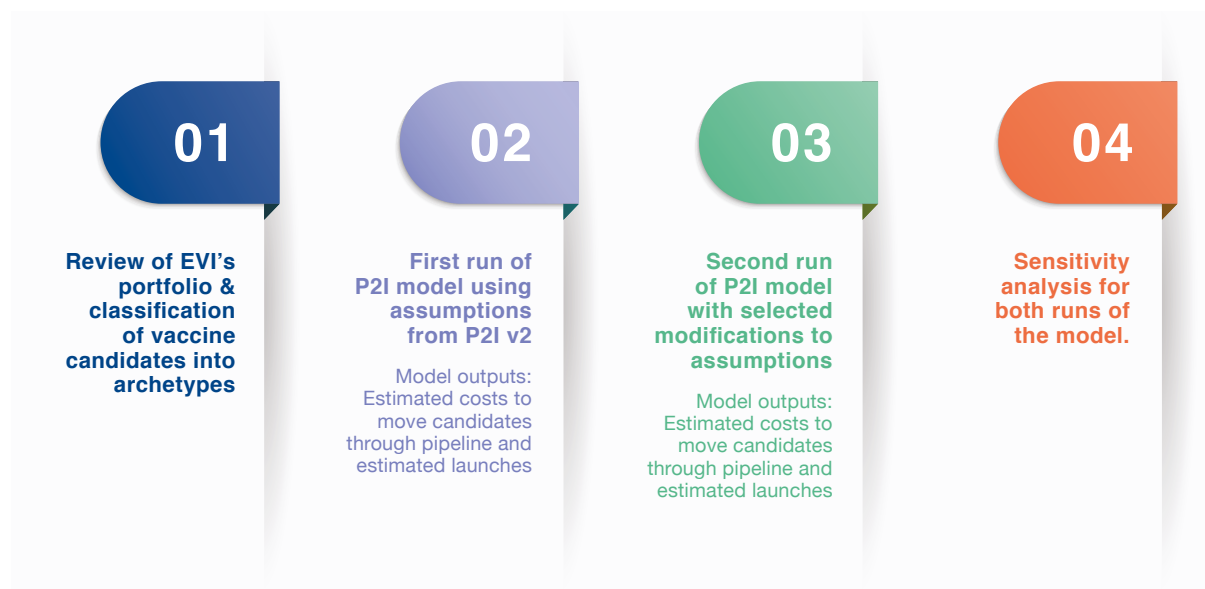
## Portfolio-to-Impact tool to analyze R&D pipelines

The Portfolio-to-Impact (P2I) tool was developed by TDR to support analysis of health product portfolios and pipelines to demonstrate the need to increase R&D activity for poverty-related neglected diseases.

Following an open call, in 2019, TDR supported the use of the P2I tool by three PDPs (TB Alliance, FIND and the European Vaccine Initiative) to analyse their portfolios. This has validated the utility of P2I as a R&D modelling tool. In addition,

the Global Health Centre, based at the Graduate Institute of International and Development Studies in Geneva, undertook a review of the findings generated by the P2I tool. The review revealed the differences between commercial and non-commercial R&D for health product development. This work has been used as a case study by UNDP as part of its Access and Delivery Programme. All of this work has been published on the new TDR Gateway open access publishing platform.

### Four key phases in a portfolio analysis conducted by the European Vaccine Initiative (EVI)



Source: Gunn A, Bandara S, Yamey G et al. Pipeline analysis of a vaccine candidate portfolio for diseases of poverty using the Portfolio-To-Impact modelling tool. *F1000Research* 2019, 8:1066 (<https://doi.org/10.12688/f1000research.19810.1>)

### EVI's cumulative cost and launch probability per disease based on P2I model projections

DISEASE	COST (US\$ MILLIONS)	CUMULATIVE EXPECTED LAUNCHES
MALARIA	165.62	0.098
LEISHMANIASIS	47.77	0.02
SHIGELLOSIS, ETEC	33.96	0.07
NIPAH	73.96	0.22
ZIKA	73.96	0.22
PLACENTAL MALARIA	75.08	0.05
<b>TOTAL</b>	<b>470.35</b>	<b>0.69</b>



# Collaborative networks on research funding

## ESSENCE on Health Research

ESSENCE is an effort to harmonize internationally-funded research programmes and align them with the priorities of disease endemic countries and the principles of aid effectiveness. While the focus of ESSENCE is on harmonization of research capacity strengthening, by doing so, it contributes positively to the more complex efforts of harmonizing research funding overall.

What has ESSENCE achieved?

- **Policy dialogue:** Enhanced policy dialogue and strategic collaboration among funders of health research, as well as between funders and recipient countries. The number of ESSENCE member agencies has doubled since its inception.
- **Better mechanisms for harmonization and alignment of funders:** Developed a new mechanism for reviewing investments in clinical research capacity in low- and middle-income countries and coordinating capacity strengthening efforts, as recommended by the World Bank and Coalition for Epidemic Preparedness and Innovation (CEPI). This new mechanism is now being piloted in collaboration with the WHO Global Observatory on Health R&D and World RePORT.
- **Country pilots:** Developed country-based pilot models of collaboration between programmes to harmonize practices and optimize resources. In the United Republic of Tanzania, this has led to the development of TASENE - a joint programme of funding between the Netherlands, Sweden and the United Republic of Tanzania.
- **Innovative approaches to optimization of resources:** Developed good practice guidance documents that detail successes and failures in strategies, approaches and support for strengthening research capacity. Below are some examples.



“Over its ten years of existence, ESSENCE has proven its unique role in facilitating enhanced policy dialogue between the funders of health research. It is unmatched by any other forum or network of funders.”

- Hannah Akuffo  
Senior Specialist, Sida, and Co-chair,  
ESSENCE Steering Committee

## Social Innovation in Health Initiative

### Transforming health care delivery through research so no one is left behind

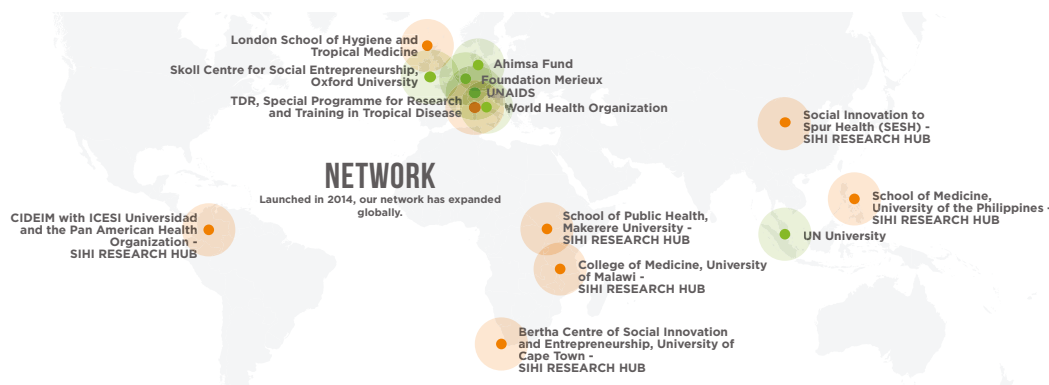
The Social Innovation in Health Initiative (SIHI) is a network of partner institutions and a community of stakeholders established in 2014 through TDR's leadership, in collaboration with the University of Cape Town's Bertha Centre for Social Innovation and Entrepreneurship, the University of Oxford, the Skoll Centre for Social Entrepreneurship, and the London School of Hygiene and Tropical Medicine (LSHTM).

In 2016, the network expanded to engage LMICs as implementing partners. SIHI country hubs were established to advance social innovation through research.

These include the University of the Philippines, the University of Malawi, Makerere University in Uganda, the Centro Internacional de Entrenamiento e Investigaciones Médicas (CIDEIM) in Colombia and the Social Entrepreneurship to Spur Health (SESH) project. In addition, SIHI collaborates with various contributing partners, such as Fondation Mérieux, the Ahimsa Fund, the WHO Department of Service Delivery and Safety, the Pan American Health Organization, UNAIDS, AFRO, the United Nations University-International Institute for Global Health and UNICEF, to advance and promote social innovation activities in the Global South.

SIHI is supported by TDR and additional funding is provided by the Swedish International Development Cooperation Agency (Sida).

#### A global network of passionate individuals and institutions



Spotlight

## Nurturing collaborations at the global level to promote and support social innovations in health in LMICs

Partnership with the Health Innovation Exchange, led by UNAIDS and launched on the sidelines of the World Health Assembly in May 2019

The Health Innovation Exchange provides a new platform aiming at leveraging the potential of innovations to improve health for all. This new initiative links innovators to investors

and innovations to implementers. Two social innovations collaborating with SIHI hubs in China and Malawi were selected and showcased at the World Health Assembly side event:



### *“Pay-it-forward: contagious kindness in health”*

- Innovative community-based financing programme for gonorrhoea/chlamydia screening (developed by SESH, the SIHI hub in China)



## “Chipatala cha pa Foni” or “Health Centre by Phone”

- mHealth initiative enabling rural residents in Malawi to access expert health care through a toll-free health and nutrition hotline (an innovation identified and studied by the SIHI Malawi hub)

A panel discussion on “Leveraging social innovation for effective systems for health” was also organized and facilitated by TDR as part of the side event. It convened various global, regional and national health actors

from public, private and civil sectors to share and discuss ways to advance social innovation in health through advocacy, capacity strengthening and research.

## Participation in Sida Science Days to showcase SIHI and promote social innovation research

Sida Science Days was hosted at the Swedish International Development Cooperation Agency (Sida) in May 2019. The event provided a platform for Sida partners to meet and share experiences and thoughts on topics such as academic freedom, open access and how science can improve the lives of the most vulnerable.

TDR contributed to the session “How can research be put to use” through a presentation and panel discussion on its work and approach to advancing social innovation in health and facilitated a group discussion on how to use implementation research and embedded research for change.

## SIHI country hubs in LMICs play a leadership role in creating an enabling environment for social innovations to thrive

SIHI country hubs play a leadership role in advancing social innovation in health through research, advocacy and capacity strengthening. As research institutions, they are well positioned to provide a unique platform to convene social innovators, government and community representatives, researchers and other stakeholders to work together and nurture social innovations. They create an enabling environment for social innovation to thrive.

They engage in a process to identify, showcase and study local community-engaged and citizen-led social innovations in health. To date more than 200 social innovations have been identified in LMICs and more than 40 case studies have been conducted.

Country hubs also build capacity and embed research in social innovations to enhance their effectiveness and identify mechanisms to replicate or scale them up. Importantly, they engage with key partners at country level to institutionalize social innovation in national systems.

**SIHI MALAWI**

**CALL FOR SOLUTIONS**

APPLY BY 28 AUGUST 2019  
[www.socialinnovationshare.org](http://www.socialinnovationshare.org)

**BENEFITS**

- Be recognised
- Gain connections
- Professional Video
- Case study

0882604735  
[malawi@socialinnovation@health.org](mailto:malawi@socialinnovation@health.org)  
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TDR For research on diseases of poverty  
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## Spotlight

## Bringing social innovation to research for TB care beyond medical treatment

**“ How can we control TB, when patients who have finished their treatment return to the same environment where they are exposed to the same risk factors that contributed to the development of their TB episode in the first place? It is time to handle the problem differently.”**

- Dissou Affolabi  
Head of Benin's National TB Control Programme

Malnutrition and precarious living conditions are social determinants that are risk factors for tuberculosis (TB). While the National TB Control Programme (NTP) of Benin is a well-functioning programme, TB incidence isn't decreasing.

The NTP of Benin, in collaboration with TDR, is thus leading a research project to explore strategies where the social and environmental circumstances of the patient -- not just medical treatment -- are prioritized. This research project, dubbed ETAP (Empower TB Patients Against Poverty), is in line with one of the pillars of

WHO's End TB Strategy that promotes a patient-centered care approach. The project consists of two phases: phase 1, conducted in 2018-2019, aimed at measuring patients' poverty level as well as understanding the multiple dimensions of deprivation, including stigma and social exclusion. In phase 2, the assessment made in phase 1 will help define what strategies (including social innovations) can be implemented and rigorously evaluated to address the social, human and financial vulnerability of TB patients while ensuring their physical recovery from the disease.



At the end of phase 1, a two-day workshop was convened by the NTP of Benin in collaboration with TDR and SIHI, the Social Innovation in Health Initiative, which involved former TB patients, representatives from various ministries (health, agriculture, sports, social affairs and microfinances), non-governmental organizations, researchers, local social innovators and entrepreneurs. This workshop was facilitated by the NGO MAD (Make A Difference), to help participants tap into their creativity to identify innovative ways of social recovery through multisectoral engagement.

## The SIHI approach



## TDR Global Leveraging a global network to catalyse collaboration, mentoring and capacity building



TDR Global is a community of passionate scientists and experts who have been working with TDR to support the global research effort on infectious diseases of poverty.

TDR Global receives input and oversight by an external working group that includes expert adviser members and observers from institutions that collaborate closely with TDR. A community engagement strategy was devised by the advisory group in 2016 and is being implemented with a specific focus on mentorship.

### Key objectives of TDR Global:

- Foster mentorship to help members of TDR Global increase their capacity and profile
- Catalyse collaborations by showcasing TDR Global members' profiles, identifying experts to be considered for review of grants or expert committees for TDR and its partners and encourage networking and connections between people.

## Fostering mentorship through community-based approaches



To strengthen community engagement related to TDR Global, and to identify creative ways to enhance research mentorship in LMICs, TDR Global worked with SESH (Social Entrepreneurship to Spur Health) to run a Crowdsourcing Research Mentorship contest. The contest's steering committee included TDR Global Working Group members and TDR Global regional leads, as well as SESH team members. The contest was launched in October with promotion on several social media platforms (Facebook, Twitter and a website).

In total, 123 entries were received from 47 countries: 49 from Asia, 38 from Africa, 26 from the Americas and 10 from Europe.

Through a selection process (detailed in the Crowdsourcing Health and Health Research Toolkit), a single global judging panel will review all eligible submissions. Exceptional submissions from regions will be given regional recognition (a trophy and support to join a regional conference) and one person will be supported to present their idea at a global conference.

The contest was run through partnerships with the U.S. National Institutes of Health, London School of Hygiene and Tropical Medicine, and the Chinese Center for Disease Control and Prevention. Results from this contest will be analysed and published in an open access, peer-reviewed journal.



## TDR Global Research Crowdfunding Challenge

*The five finalists, from left to right: Asha Wijegunawardana, Teerawat Wiwatpanit, Renata Mendizábal, Mahmud Ali Umar, and Miguelhete Joaquim Lisboa*

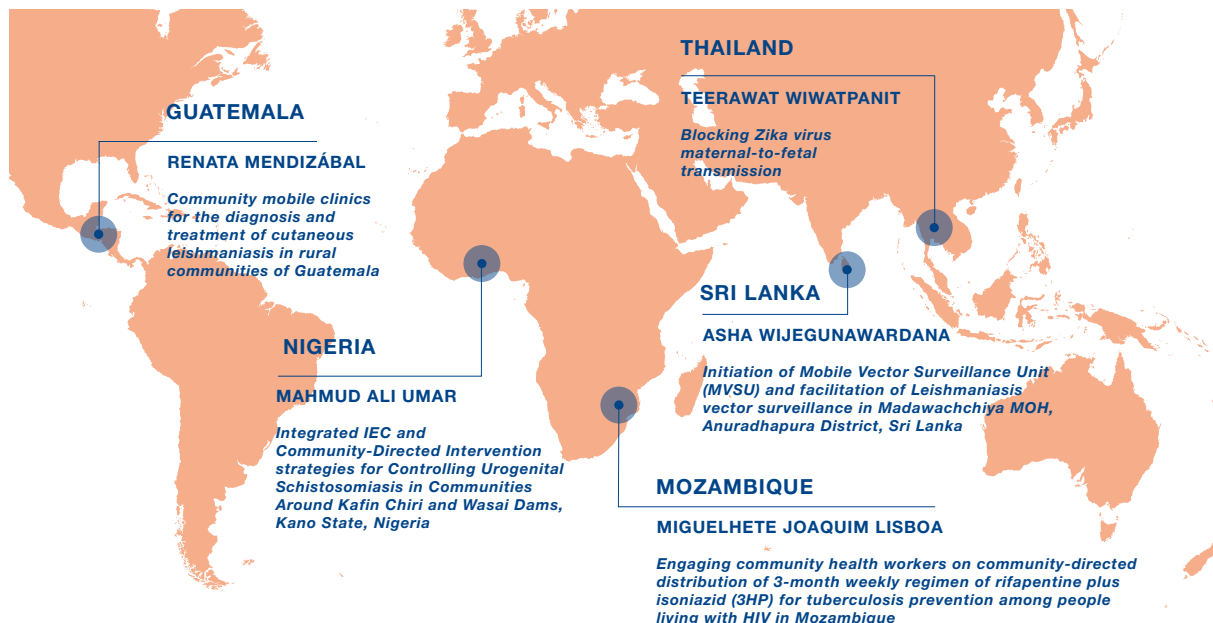
**Many infectious disease researchers in low- and middle-income countries face difficulties when applying for research grants. Crowdfunding can help address these by allowing researchers to directly raise funds for their research. In partnership with Social Entrepreneurship to Spur Health (SESH), TDR Global launched a challenge contest to build capacity for crowdfunding for infectious diseases research.**

The purpose of the contest was to solicit research proposals from LMIC researchers and then provide training and mentorship for selected finalists. TDR Global members volunteered as Steering Committee members, judges, workshop training faculty and mentors. The response from the TDR Global community was particularly enthusiastic, with 592 individuals stepping forward as volunteer judges. We sincerely thank all for their interest and the 47 judges for contributing their time and expertise.

A total of 121 researchers from 37 countries submitted proposals to the challenge contest. Five finalists have been identified, matched with 10 TDR Global mentors, and given public engagement training to prepare them for crowdfunding.

The researchers joined a capacity building workshop hosted by TDR in Geneva, in November 2019, with the goal of enhancing their proposals and developing sharp pitches. Following the workshop, finalists will obtain institutional and ethical approvals in order to prepare for the research. In addition, they will receive feedback from TDR Global mentors, communications experts and crowdfunding experts. The finalists plan on launching their campaigns in early 2020, and we invite the TDR Global community to support their fundraising efforts.

**TDR Global crowdfunding challenge finalists and their proposals**



TDR fellows during the European Congress of Tropical Medicine and International Health in Liverpool, UK



# Governance, financials and performance

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*Migrants in Cox's Bazaar, Bangladesh*



## Governance and management

TDR is co-sponsored by UNICEF, UNDP, the World Bank and WHO, and it is through these international, multilateral organizations that TDR has such an extensive reach and support. WHO acts as the executing agency of the Programme and provides close ties with its departments for a continuous loop of research informing policy and policy informing research, which in turn supports planning and priority setting at international, regional and national levels.

TDR's overall management responsibility is ensured by the TDR Special Programme Coordinator, Dr Soumya Swaminathan, who heads WHO's Science Division as Chief Scientist. Day-to-day management is provided by the TDR Director. Thirty full-time staff and additional project-specific short-term staff come from all regions of the world.

*A TDR-supported researcher at a malaria research site in Lupuna, Peru*

# Joint Coordinating Board

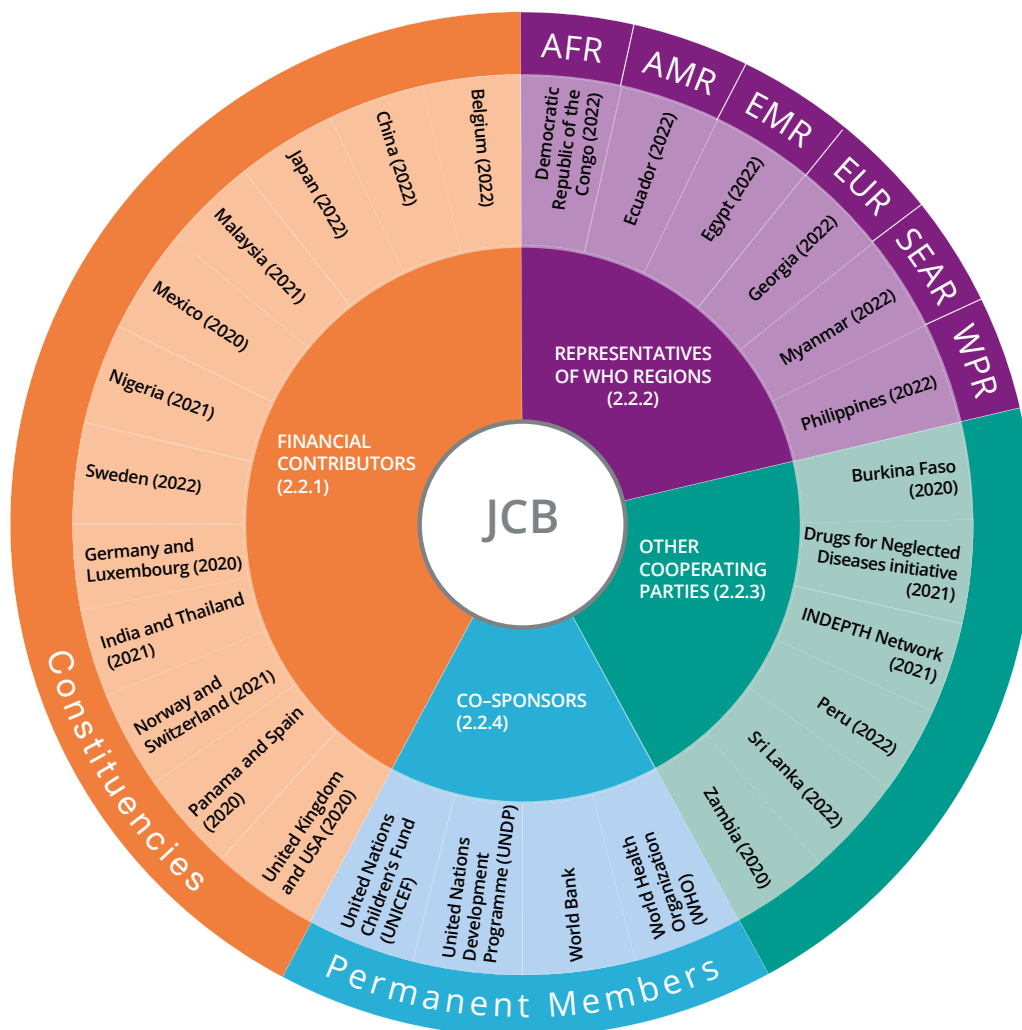
TDR's top governing body is its Joint Coordinating Board (JCB), which includes a mix of representatives from all WHO regions, including those who contribute financial resources, as well as non-State actors (see Figure 2).

The Board comprises 28 members: 12 members selected by the resource contributors to the Programme (including five constituencies of two or more governments sharing one seat); six government representatives chosen by the six regional committees of WHO; six members representing other cooperating parties selected by the JCB itself; and the four co-sponsoring agencies.

**Figure 2** JCB membership (as of 1 January 2019)

## WHO regions (Regional Offices)

- AFR:** Africa
- AMR:** Americas
- EMR:** Eastern Mediterranean
- EUR:** Europe
- SEAR:** South-East Asia
- WPR:** Western Pacific



## Standing Committee

A Standing Committee composed of representatives from the four co-sponsoring agencies, the Chair and the Vice-Chair of the JCB, the Chair of the Scientific and Technical Advisory Committee (STAC), one representative from the JCB resource contributors group (a JCB member under paragraph 2.2.1 of the

TDR Memorandum of Understanding–MOU), and one representative from a disease endemic country (which may be a JCB member under any paragraph of the TDR MOU), provides guidance and oversight on an ongoing basis.

## Scientific and Technical Advisory Committee

STAC is TDR's overarching advisory body, as foreseen in the Memorandum of Understanding, which oversees the scientific and technical strategies, directions and priorities of TDR. STAC provides its recommendations to the

JCB and the TDR Secretariat. The Committee includes up to 15 internationally recognized scientists, with members serving in their personal capacities to represent a range of research disciplines.



*TDR Director John Reeder and STAC Chair Charles Mgone, centre front, with 2019 STAC members*

## Scientific Working Groups

In addition, the TDR Secretariat convenes scientific working groups to review and provide advice on the prioritization of proposed activities and the selection of projects for funding, to review and evaluate progress in that regard and make

recommendations to the Secretariat. Reviews cover the three core areas of TDR: Research for implementation, strengthening research capacity and global engagement.

## 2019 STAC members

<b>(Chair) Professor Charles MGONE</b> , Vice-Chancellor, Hubert Kairuki Memorial University, Dar es Salaam, United Republic of Tanzania	2014-2019
<b>Dr Ayat ABUAGLA</b> , Research Fellow, Reproductive & Child Research Unit [RCRU], University of Medical Sciences & Technology, Sudan Medical Specialization Board, Khartoum, Sudan	2017-2020
<b>Professor Maria Teresa BEJARANO</b> , Senior Research Advisor, Unit for Research Cooperation, Department for Partnerships and Innovations, Swedish International Development Cooperation Agency (Sida), Stocksund, Sweden	2016-2019
<b>Professor Afif BEN SALAH</b> , Full Professor of Community Medicine, College of Medicine and Medical Sciences, Department of Community and Family Medicine, Arabian Gulf University, Manama, Bahrain	2018-2019
<b>Dr Graeme BILBE</b> , Research and Development Director, Drugs for Neglected Diseases initiative (DNDi), Geneva, Switzerland	2014-2019
<b>Professor Moses BOCKARIE</b> , Director of South-South Cooperation and Head of Africa Office, European & Developing Countries Clinical Trials Partnership (EDCTP), Medical Research Council, Tygerberg, Cape Town, South Africa	2014-2019
<b>Professor Claudia CHAMAS</b> , Researcher, Centre for Technological Development in Health, Oswaldo Cruz Foundation (Fiocruz), Rio de Janeiro, Brazil	2016-2019
<b>Professor Sónia DIAS</b> , Associate Professor, International Public Health, Institute of Hygiene and Tropical Medicine, Lisbon, Portugal	2016-2019
<b>Dr Sara Irène EYANGO</b> , Directeur Scientifique, Centre Pasteur du Cameroun, Laboratoire National de Référence et de Santé Publique, Ministère de la Santé Publique, Yaoundé, Cameroon	2016-2019
<b>Professor Simon HALES</b> , Research Associate Professor: Environmental Epidemiology, University of Otago, Otagi, New Zealand	2018-2019
<b>Dr Subhash HIRA</b> , Professor of Public Health and Senior Advisor, Public Health Foundation of India, New Delhi, India	2017-2020
<b>Dr Shagufta PERVEEN</b> , Senior Instructor, Health System and Policy Research Group, Department of Community Health Sciences, The Aga Khan University, Karachi, Pakistan	2018-2019
<b>Dr Sonia ROMERO GORSKI</b> , Facultad de Humanidades y Ciencias de la Educación, Instituto de Antropología, Montevideo, Uruguay	2018-2019
<b>Professor Bertie SQUIRE</b> , Dean of Clinical Sciences & International Public Health, Liverpool School of Tropical Medicine, Liverpool, United Kingdom	2017-2020
<b>Professor ZHOU Xiao-Nong</b> , Director, National Institute of Parasitic Diseases, Chinese Center for Disease Control and Prevention, Shanghai, China	2014-2019

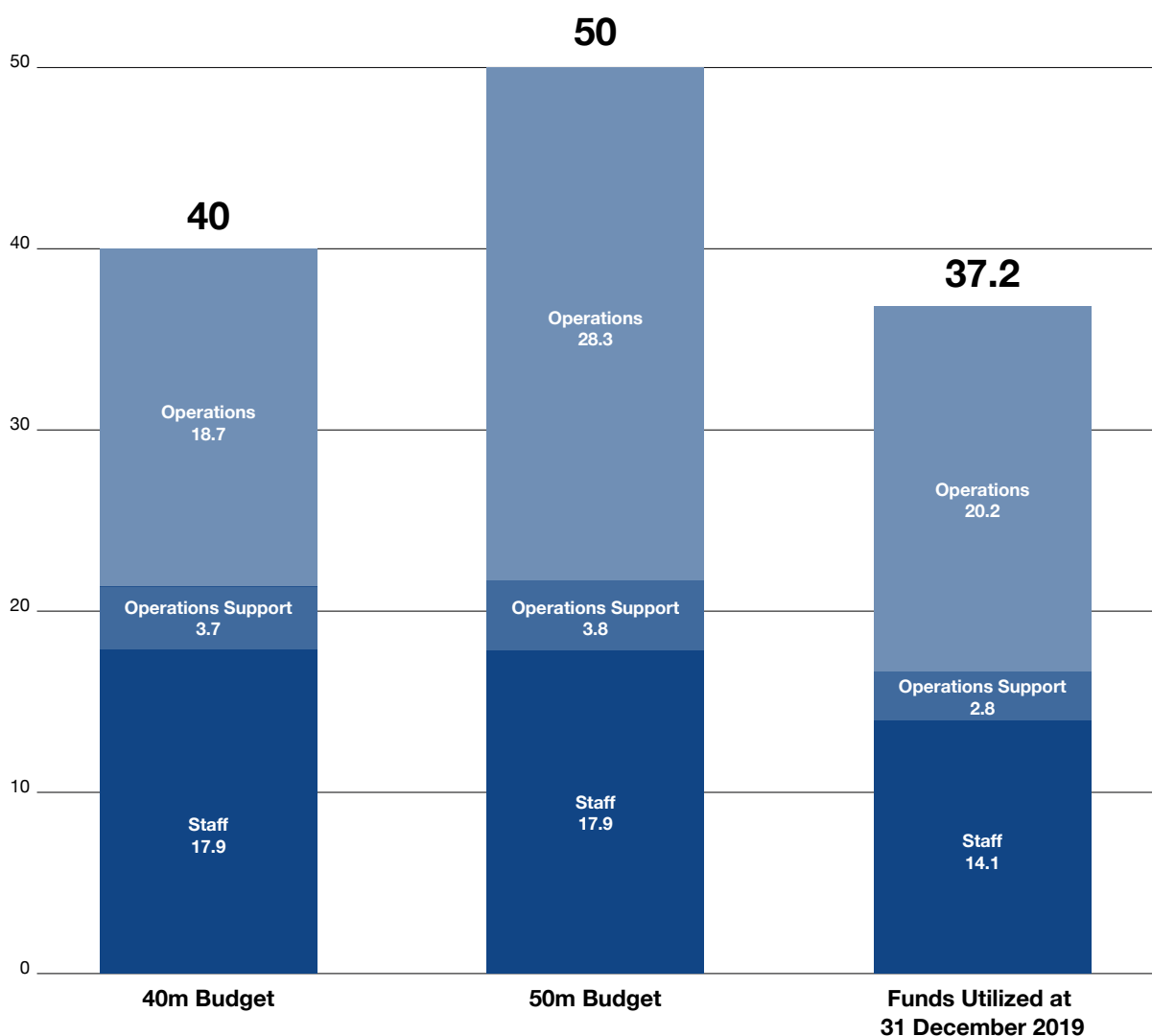
## Financial Performance Summary

Two programme budget and workplan scenarios approved by the Joint Coordinating Board for the biennium 2018-2019 included a lower scenario at US\$ 40 million and a higher scenario at US\$ 50 million. The two-scenario model was developed to help manage the uncertainty of funding and allow a confident start to implementation.

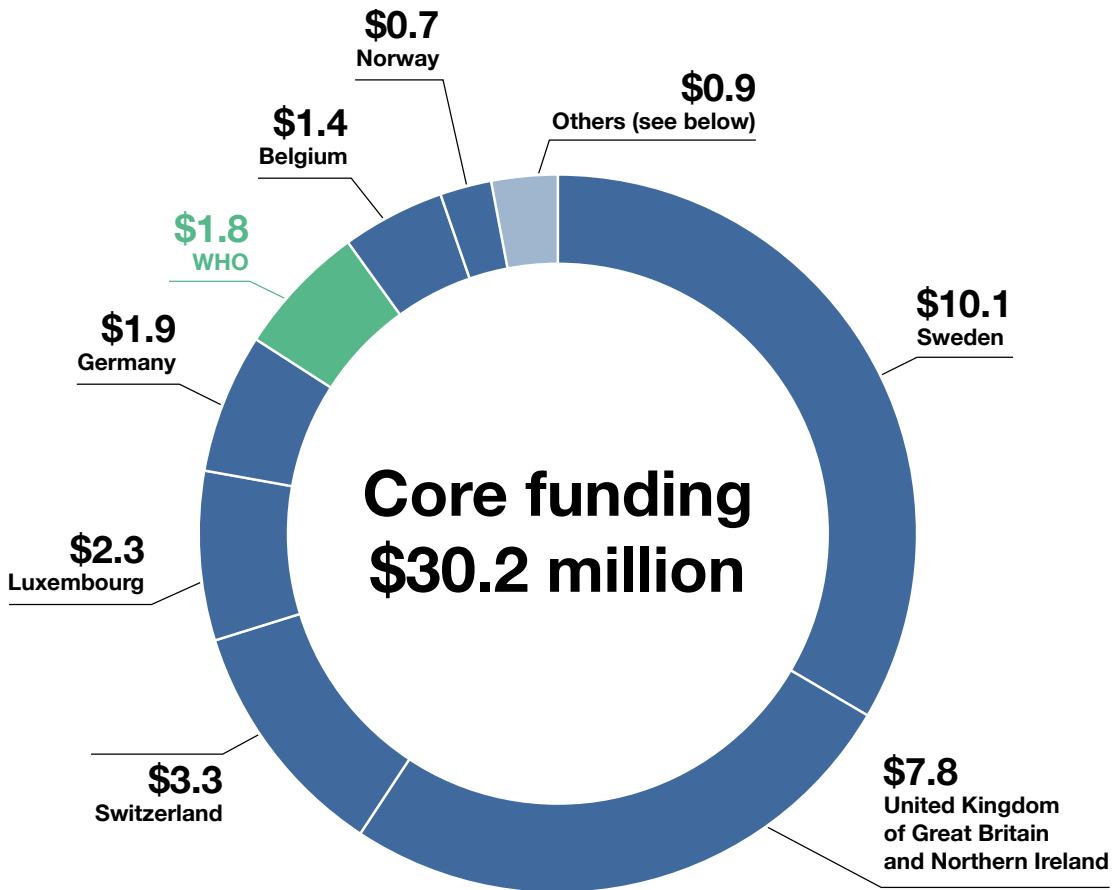
Implementation of US\$ 37.2 million was a result of savings in staff and administration costs offset in part by high implementation in operations activities supported by core funding. The two-scenario model proved successful, allowing implementation of the higher level of funding available for operations during the biennium.

Project-specific contributions were higher than anticipated in the biennium as a result of fundraising efforts. TDR continues to strengthen its fundraising efforts among both new and existing donors, focusing on the priorities of the TDR Strategy 2018-2023, aligned with the Sustainable Development Goals.

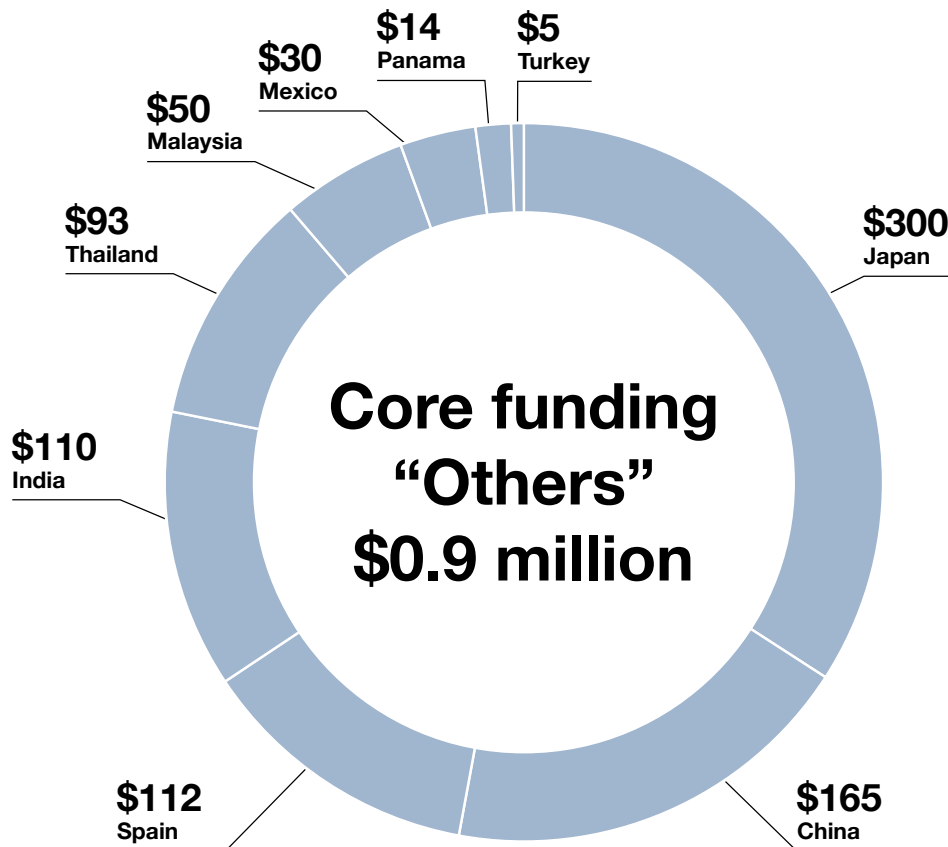
### Financial overview 2018-2019 (in US\$ million)



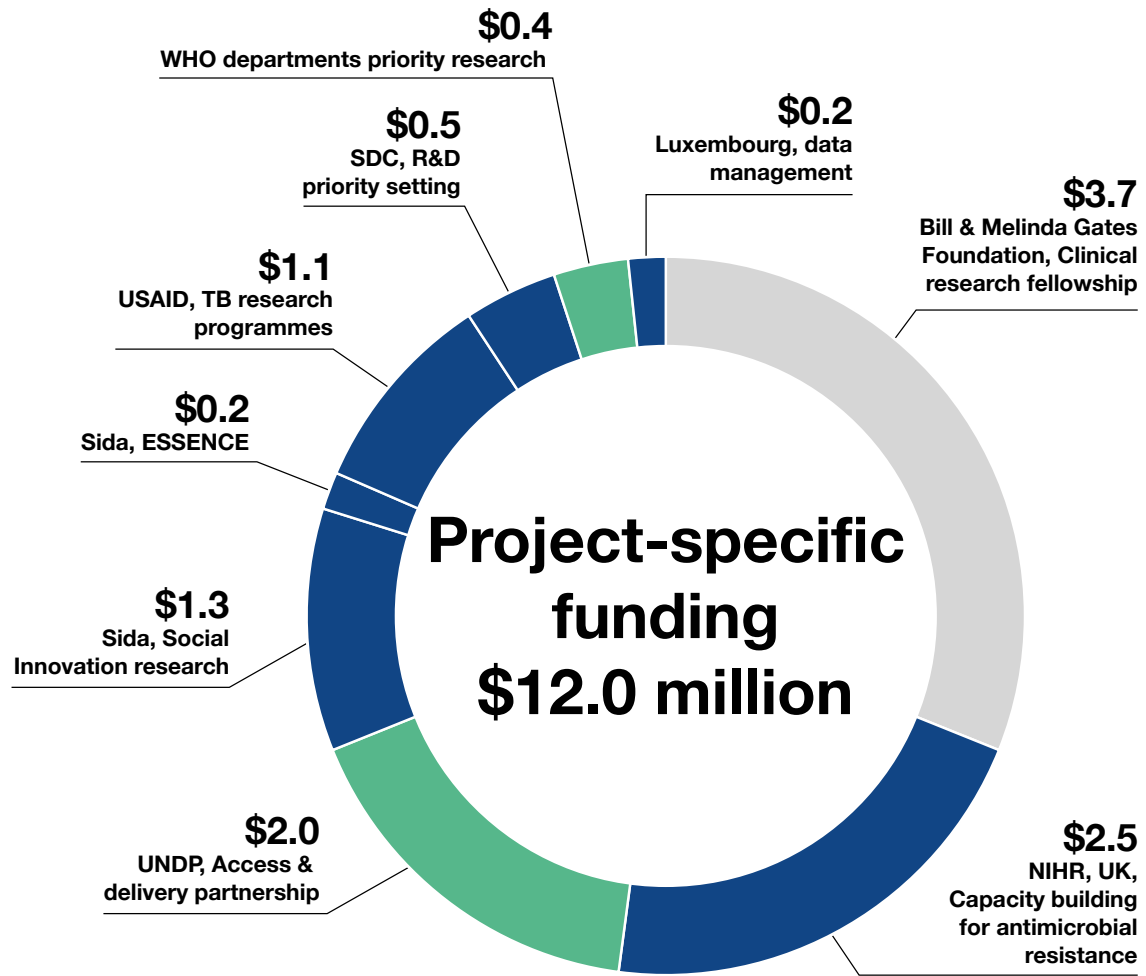
Core revenue recognized in 2018-2019 (in US\$ million)



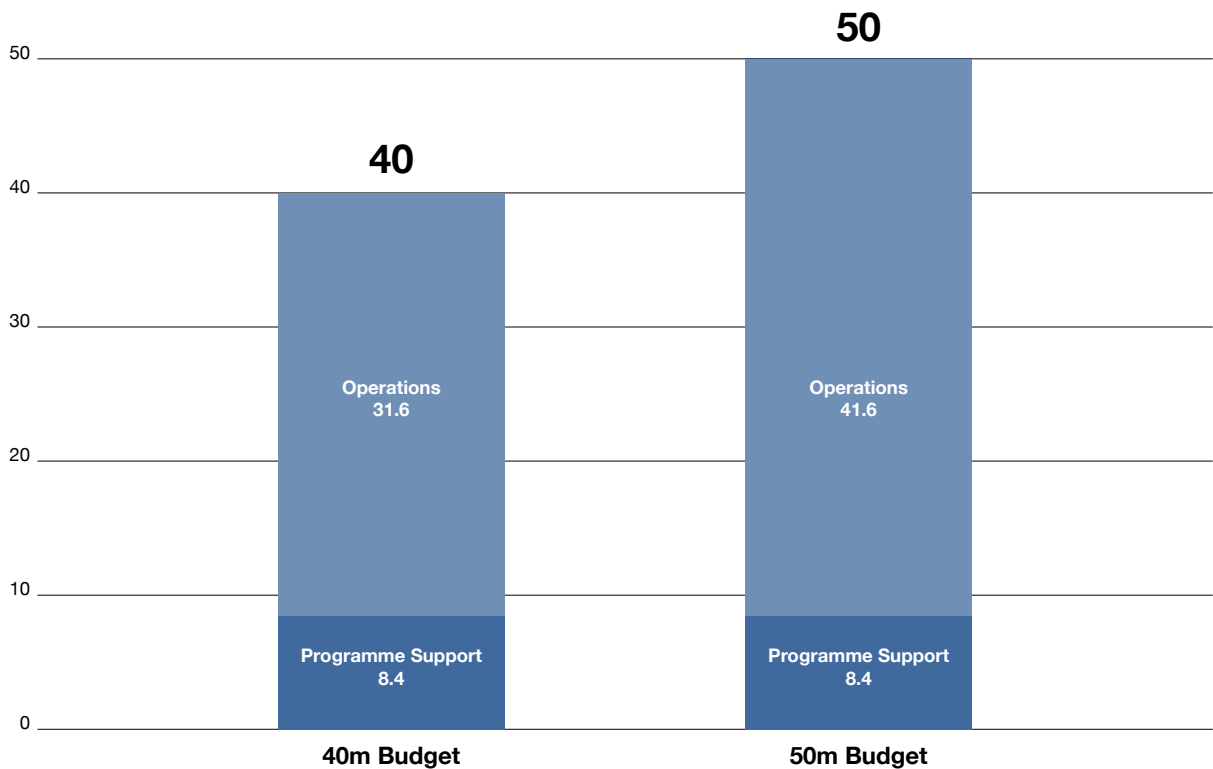
“Other” core revenue (in US\$ thousand)



**Project specific revenue recognized in 2018-2019 (in US\$ million)**



**2020-2021 budget scenarios integrating staff costs (in US\$ million)**





# Contributions Table

## TDR 2019 revenue

Contributor	
Core contributions	Amount (US\$)
Sweden <sup>1</sup>	5,037,630
United Kingdom of Great Britain and Northern Ireland	3,575,990
Switzerland	1,688,843
Luxembourg	1,114,827
Germany	1,016,387
Belgium	707,547
World Health Organization	700,000
Norway	324,957
Spain	112,083
China	110,000
Japan	100,000
India	55,000
Thailand <sup>2</sup>	
Malaysia	25,000
Mexico	10,000
Panama	7,000
Miscellaneous	1,059
<b>Subtotal</b>	<b>14,586,323</b>

Contributors providing project-specific funding	Amount (US\$)
Bill & Melinda Gates Foundation	1,771,434
United Nations Development Programme	980,000
National Institute of Health Research (NIHR), United Kingdom	967,601
Sweden	471,945
U.S. Agency for International Development (USAID)	358,175
World Health Organization departments	328,589
Luxembourg	111,483
United Kingdom of Great Britain and Northern Ireland	23,432
<b>Subtotal</b>	<b>5,012,660</b>
<b>Total contributions</b>	<b>19,598,983</b>

1. The contribution from the Government of Sweden reflects the 2019 portion of their 2018 2019 funding agreement.  
 2. The 2019 contribution from the Government of Thailand was reported in 2018.





**TDR**  **For research on  
diseases of poverty**  
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TDR  
World Health Organization  
20, Avenue Appia  
1211 Geneva 27  
Switzerland

[tdr@who.int](mailto:tdr@who.int)  
[www.who.int/tdr](http://www.who.int/tdr)

TDR, the Special Programme for Research and Training in Tropical Diseases, is a global programme of scientific collaboration that helps facilitate, support and influence efforts to combat diseases of poverty. It is co-sponsored by the United Nations Children's Fund (UNICEF), the United Nations Development Programme (UNDP), the World Bank and World Health Organization (WHO).

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