


TDR annual report 2022

Building the science of solutions



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TDR annual report 2022: building the science of solutions

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the UNICEF/UNDP/World Bank/WHO Special Programme for Research and Training
in Tropical Diseases, 2023**

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Abbreviations

ADP	Access and Delivery Partnership	OR	operational research
ADR	adverse drug reactions	PAHO	Pan American Health Organization
AEFI	adverse events following immunization	PIR	Basic Principles in IR course
AHRI	Armauer Hansen Research Institute	PMRA	Pharmacy and Medicines Regulatory Authority
AI	artificial intelligence	RTC	regional training centre
AMR	antimicrobial resistance	RTS,S	RTS,S/AS01 malaria vaccine
AVD	arboviral disease	SAAHE	South African Association of Health Educationalists
CAD	computer-aided detection	SESH	Social Entrepreneurship to Spur Health
CDD	Communicable Disease Division	ShORRT	short, all-oral regimens for rifampicin-resistant tuberculosis
CRDF	Clinical Research and Development Fellowship	Sida	Swedish International Development Cooperation Agency
CRL	Clinical Research Leadership	SIHI	Social Innovation in Health Initiative
EWARS	Early Warning and Response System	SIT	sterile insect technique
GAI	Global Arboviral Initiative	SORT IT	Structured Operational Research and Training Initiative
GBIF	Global Biodiversity Information Facility	STAC	Scientific and Technical Advisory Committee
GOARN	Global Outbreak and Response Network	TB	tuberculosis
GSK	GlaxoSmithKline Biologicals	TDR	UNICEF/UNDP/World Bank/WHO Special Programme for Research and Training in Tropical Diseases
HERMES	health research mentorship in low- and middle-income countries	TPO	training partner organization
HISP	Health Information Systems Programme	UNICEF	United Nations Children's Fund
HIV	human immunodeficiency virus	UNDP	United Nations Development Programme
HRP	UNDP/UNFPA/UNICEF/WHO/World Bank Special Programme of Research, Development and Research Training in Human Reproduction	UWC	University of the Western Cape
IPRC	International Professional Recognition Council	VBD	vector-borne disease
IR	implementation research	VL	visceral leishmaniasis
IR4DTB	implementation research for digital technologies for tuberculosis care	USSD	unstructured supplementary service data
JCB	Joint Coordinating Board	USTTB	University of Sciences, Techniques and Technologies Bamako
LMICs	low- and middle-income countries	WARN/ CARN-TB	West and Central African Regional Networks for TB Control
MOOC	massive open online course	WHO	World Health Organization
MOU	memorandum of understanding	WHO/NTD	WHO Department of Control of Neglected Tropical Diseases
MSA	multisectoral approach	WHO/WSH	WHO Water, Sanitation and Health team
NTD	neglected tropical disease		
NTP	national tuberculosis control programme		
OPT-SMC	optimizing delivery of seasonal malaria chemoprevention		

1.

Introduction and background

Vision

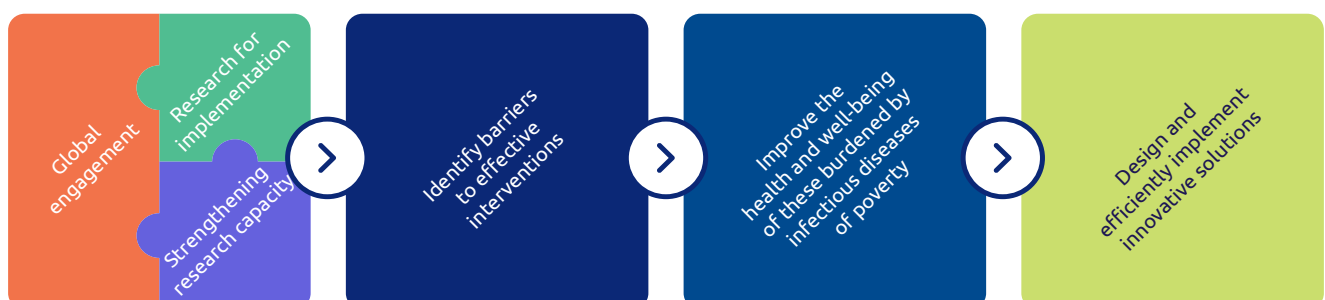
The health and well-being of people burdened by infectious diseases of poverty is improved through research and innovation.

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.

This report highlights the impact of research supported by the UNICEF/UNDP/World Bank/WHO Special Programme for Research and Training in Tropical Diseases (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 strategic priority areas of research for implementation, strengthening research capacity and global engagement acting in an integrated manner.

The TDR Impact Pathway



Opening remarks

Despite the upheaval caused by the COVID-19 pandemic, TDR has remained steadfast in its commitment to improving the health and well-being of vulnerable populations disproportionately burdened by infectious diseases, through research and innovation. Our aim is to leave no one behind in benefitting from new medicines, vaccines and diagnostics for improving health.

As you will see in this report, while our own programme of work is now broadly back on track, we recognize that the pandemic has hit countries hard – with persistent effects on other disease programmes. Therefore, we have been supporting the development of new strategies that will help build the resilience of health systems to future public health emergencies. For example, an impact assessment dashboard is now being piloted in six African countries to mitigate the impact on tuberculosis programmes.

We also recognize the importance of taking cross-cutting, multisectoral approaches to tackling diseases. We are currently engaging with 12 countries for the implementation of a multisectoral approach to control vector-borne diseases, of which six started implementing in 2022. Strengthening the research capacity of scientists in those countries most affected by infectious diseases remains a key strategic area for us. We are collaborating with a growing number of institutions in low- and middle-income countries (LMICs), with a new partner in Mali joining TDR's Postgraduate Training Scheme in 2022. We have now supported 147 students from LMICs participating in our Clinical Research and Development Fellowship programme, which is now entering a new phase as a programme that will cultivate leadership in clinical research. We are also excited to report the launch of new research training tools on gender and intersectionality that aim to support the development of gender-responsive health interventions.

As always, we thank all of our donors for their continued support and their recognition that research is one of the best ways to combat infectious diseases of poverty. We also take this opportunity to thank the many organizations and individuals around the world who work with us towards universal healthcare and better health outcomes for all.



**Dr John Reeder, Director, TDR
WHO Chief Scientist *a.i.***

“ Our aim is to leave no one behind in benefitting from new medicines, vaccines and diagnostics for improving health.

Dr John Reeder, Director, TDR

As Chair of TDR's Joint Coordinating Board, I am pleased to see that TDR has continued to champion research and innovation to address global health problems despite the enormous challenges of the last few years. I commend TDR staff for their efforts in adapting to the new realities and needs of public health systems and making a difference in countries.

The COVID-19 pandemic has shown more than ever the importance of science and the need to strengthen research capacity everywhere – particularly in the low- and middle-income countries that bear the greatest disease burden – so that current and future health threats can be addressed. Therefore, I look with pride at how TDR enables the training of the scientists of tomorrow in those parts of the world that need it most. TDR's newly launched Clinical Research Leadership fellowship programme will now help develop the scientific *leaders* of tomorrow – a prospect that fills me with great excitement.

During 2022, I had the great pleasure of visiting the Institut de Santé et Développement at Cheikh Anta Diop University in Dakar, Senegal, which recently became a TDR-supported Regional Training Centre and partners with TDR on the Postgraduate Training Scheme. The institute is meeting significant demand in the West African region for research training in French. During my visit, I had the opportunity to speak to staff and students and was impressed by the speed with which the Institute has taken up TDR's Massive Open Online Course on implementation research and other training modules into its programmes. It is impressive that all trainings funded or supported by TDR are run in disease endemic countries through such Regional Training Centres and partner universities.

The pandemic has also highlighted the importance of finding effective ways of implementing new tools and strategies and of engaging the communities that will benefit from them. So much money and effort is spent on research and development; this would all go to waste if new products and strategies aren't taken up in an effective way. TDR's support for implementation research is thus a crucial step on the path towards improving the health and well-being of people burdened by infectious diseases of poverty. TDR's promotion of multisectoral and One Health approaches, as well as an intersectional gender perspective in research, are also critical for achieving universal health coverage.

I congratulate TDR on the many achievements highlighted in this report and thank all Board members and observers for their continued support for TDR. I look forward to working with TDR to finalize its new Strategy for 2024-2029.



Dr Vic Arendt, Chair
TDR Joint Coordinating Board

“ TDR has continued to champion research and innovation to address global health problems despite the enormous challenges of the last few years.

Dr Vic Arendt, Chair
TDR Joint Coordinating Board

2022 Progress on Select Key Performance Indicators

TECHNICAL ACHIEVEMENTS



NEW SOLUTIONS
APPLIED IN
COUNTRIES

31

instances when research projects supported by TDR informed policy and/or practice in countries to tackle infectious diseases of poverty



TOOLS USED
GLOBALLY AND
REGIONALLY

4

instances when tools and reports are used to inform policy and/or practice of global/regional stakeholders or major funding agencies

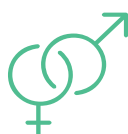


RESEARCH
GRANTEES AND
TRAINEES

226

scientists supported through the Postgraduate Training Scheme, Impact Grants for Regional Priorities, Clinical Research and Development Fellowship, and SORT IT

APPLICATION OF CORE VALUES



GENDER EQUITY

45%

of peer-reviewed publications supported by TDR have women as first author

52%

of total research grant/contract amounts have been awarded to women



SOCIAL AND
ECONOMIC
EQUITY

76%

of peer-reviewed publications supported by TDR have first authors from disease endemic countries

87%

of total research grant/contract amounts have been awarded to recipients in disease endemic countries

MANAGEMENT PERFORMANCE



EFFECTIVE
MANAGEMENT

100%

of expected results on track or with minor delays

97%

of significant risk management action plans are on track

2.

Research for implementation

Building on almost 50 years of experience, TDR works with a vast network of researchers and public health practitioners in low- and middle-income countries to ensure that scientific evidence continues to be generated and 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. We fund research projects that explore ways of overcoming obstacles and bridging gaps on the path from innovation to implementation, access and health impact.

Contents

1 Research for policies: Strengthening health system resilience

- 1.1 Strengthening country preparedness for disease outbreaks
- 1.2 Building systems to tackle drug-resistant infections
- 1.3 Operationalizing a One Health approach to increase resilience to vector-borne diseases in the context of climate change

2 Research for implementation: Supporting universal health coverage

- 2.1 Supporting disease elimination efforts
- 2.2 Mitigating the impact of health emergencies on other disease programmes
- 2.3 Promoting the development of gender-responsive health interventions

3 Research for innovation and integrated approaches

- 3.1 Optimizing implementation of digital technologies and other innovations
- 3.2 Multisectoral approach to malaria and emerging arboviral diseases

Highlights

4 research teams have successfully operationalized a One Health approach

to vector-borne diseases in the context of climate change in Africa.



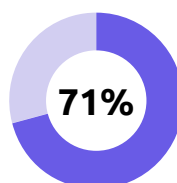
Investigators in Nepal and Uganda have demonstrated the critical need for **gender-based analysis and intersectionality** in infectious diseases research.



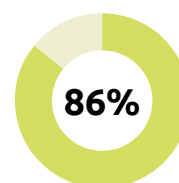
Research team at icddr,b in Dhaka, Bangladesh, supported by TDR
Credit: TDR / Y. Tushar

Lessons from the Indian subcontinent confirm the critical role of implementation research in efforts to eliminate visceral leishmaniasis and their relevance to elimination efforts in Eastern Africa.

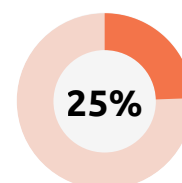
Analysis of 36 TDR-funded operational research projects on antimicrobial resistance in Asia and Africa showcase the positive impact of the AMR–SORT IT project on both the health system and research capacity.



led to changes in policy and practice



of trainees have applied skills to AMR practice



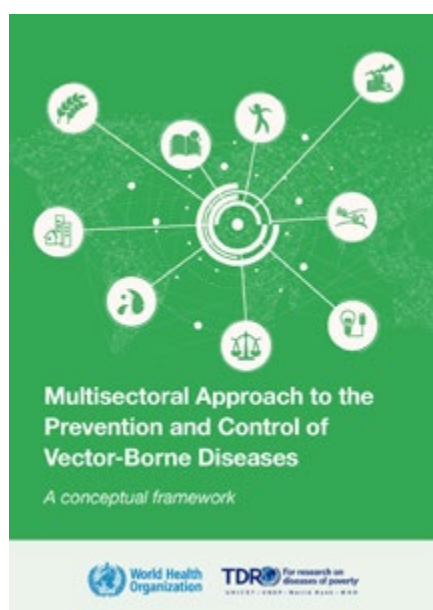
of trainees have become mentors

Highlights



Assessment of arboviral disease surveillance capacity in the 47 countries of the WHO African Region identifies opportunities for intervention.

TDR is engaged with 12 countries for implementation of a multisectoral approach (MSA) to control vector-borne diseases, of which six started implementing in 2022.



Testing of the Sterile Insect Technique (SIT) for vector control was launched in three Pacific Island countries in collaboration with the United States Center for Disease Control and Prevention, the International Atomic Energy Agency and WHO/NTD.

1. Research for policies: Strengthening health system resilience

Developing resilient health services and systems ensures countries can effectively prevent, prepare for, detect, adapt to, respond to and recover from public health threats while ensuring the maintenance of quality essential and routine health services in all contexts, including in fragile, conflict and violence settings.

We are supporting research that can help health systems strengthen resilience in various ways – for example, by helping countries prepare for disease outbreaks; building effective systems for monitoring and responding to antimicrobial resistance; and implementing a One Health approach to tackling vector-borne diseases.

1.1 Strengthening country preparedness for disease outbreaks



Objective

To help countries with prediction, early detection and response to devastating disease outbreaks



Disease focus

Arboviral diseases: dengue, Zika, Chikungunya, yellow fever



Key activities

- Strengthening surveillance and control of arboviral diseases in Africa.
- Establishing and strengthening the capacity of control programmes to use the Early Warning and Response System ([EWARS](#)).
- Supporting real-time operational research and data sharing for tackling pandemics and disease outbreaks (through the [SORT IT](#) initiative).



Countries

- Surveillance and control of arboviral diseases: 47 African countries
- EWARS: 17 countries globally
- SORT IT: 94 countries globally

2022 updates

A survey on assessing African country capacities to prevent, detect and respond to arboviral disease outbreaks has been completed and published. (See *Spotlight* story below.)

A total of 17 countries are now using EWARS. Colombia and Thailand were selected through a call for proposals to evaluate the feasibility and effectiveness of using EWARS for predicting dengue outbreaks and implementing early response.

In collaboration with the Global Outbreak and Response Network (GOARN), the WHO Regional Office for South-East Asia and WHO country offices in Bhutan, India, Nepal and Timor-Leste, SORT IT researchers assessed the impact of the COVID-19 pandemic on health systems to improve their capability to sustain health services. The evidence was published in a [special journal issue](#).

Spotlight

Assessing African country capacities to prevent, detect and respond to arboviral disease outbreaks

TDR and partners have conducted a survey in Africa to assess health system capacity to prevent, detect and respond to arboviral disease (AVD) outbreaks. The [full report](#) calls on countries to address gaps in order to be adequately prepared for arboviral diseases.

Multiple factors such as urbanization, human travel, deforestation, climate change and livestock movements have been associated with growing threats due to AVDs in Africa.

The survey, conducted in all 47 countries of the WHO African Region in collaboration with the WHO Department of Control of Neglected Tropical Diseases (WHO/NTD) and the WHO Regional Office for Africa, assessed the existing capacities of countries to conduct the surveillance and control of AVDs and their associated vectors.

While the survey found that countries do have some existing capacities for disease surveillance and preparedness for disease outbreaks, there were important capacity gaps for:

- management of cases of AVDs
- virological surveillance
- entomological surveillance/control of *Aedes* vectors
- community sensitization for engagement on activities related to the prevention and control of AVDs.

The [full report](#) summarizes the gaps and proposes possible ways to move forward.



Surveillance and control of arboviral diseases in the WHO African Region: assessment of country capacities

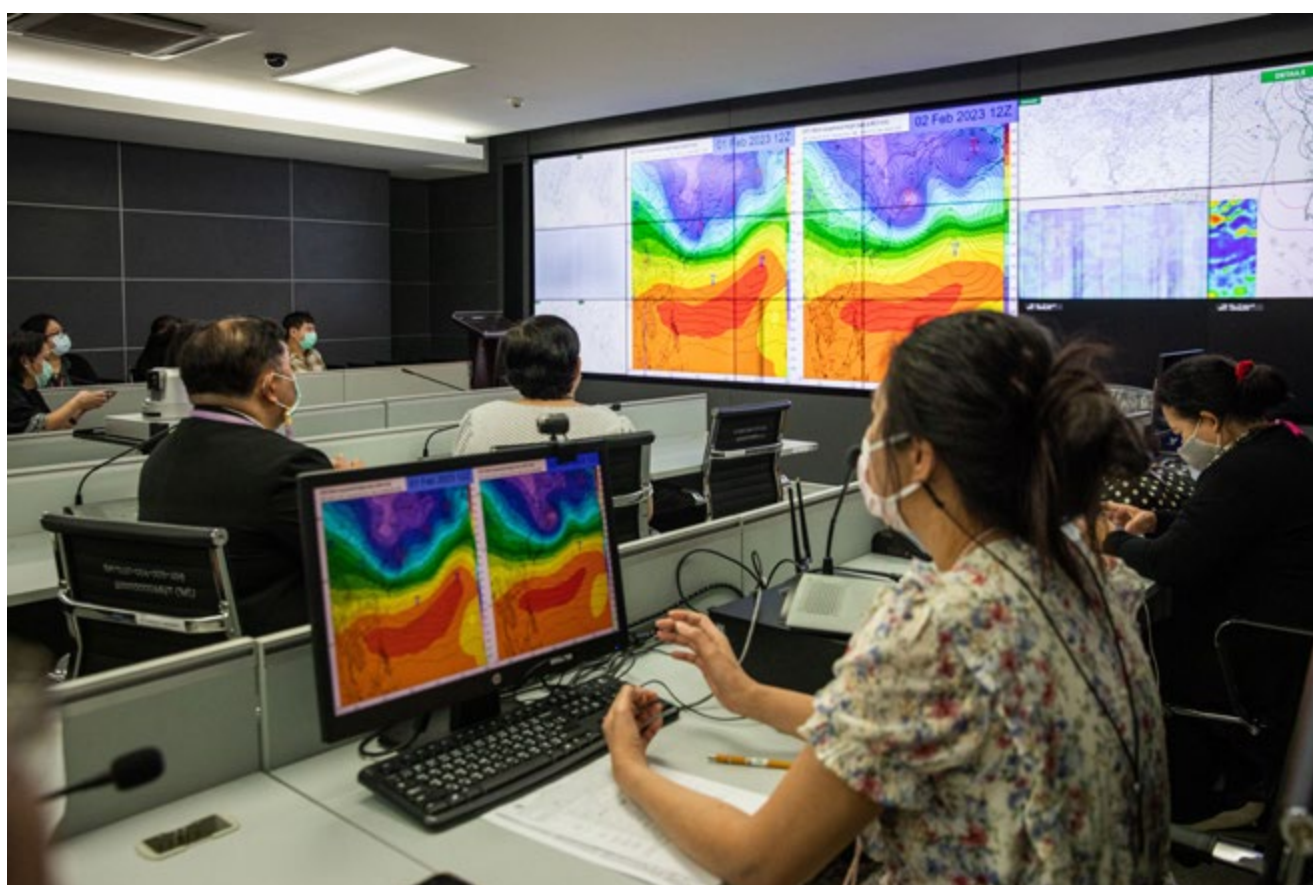
Spotlight

Establishing Early Warning and Response Systems for dengue in Colombia and Thailand

TDR has been establishing and/or strengthening country control programmes' capacities to identify signals of an impending dengue outbreak. This has led to the development of an Early Warning and Response System for arbovirus outbreaks. Two countries, Colombia and Thailand, were selected through an open call to evaluate the feasibility and effectiveness of using EWARS for predicting dengue outbreaks and implementing early response.



TDR-supported scientists with community members inspecting a mosquito breeding site in Nakhon Pathom Province in Thailand
Credit: TDR / L. DeCicca



Meteorologist discussing climate data with the National Disease control program team at Thailand's Meteorological Department in Bangkok

Steps for the establishment of EWARS and progress made in Colombia and Thailand

		Colombia	Thailand
1	Collect epidemiological and climate data for 2–3 years to build the early warning model and calibrate the tool to define the cut-off to best predict the occurrence of an outbreak	done	done
2	Define decision algorithm and vector control response depending on the level of alert	done	done
3	Train central staff (ministry of health disease surveillance department) on the use of EWARS	done	done
4	Collaborate with the national department routinely collecting climate data to agree that this data is shared on a weekly basis to feed the EWARS system	discussion in progress	done (MOU signed)
5	Install EWARS on local servers to provide access to central and peripheral levels and build a sustainable system	in progress	done
6	Define hotspot geographic areas where EWARS could be used routinely	done	done
7	Train local staff in charge of epidemiological surveillance for dengue and vector control response on EWARS and decision algorithms in the selected hotspot	done	done
8	Develop protocol and data collection tools for the evaluation of EWARS	done	done
9	Conduct a feasibility and effectiveness study	in progress	in progress
10	Gather enough evidence for routine use of EWARS for predicting and responding to a dengue threat	to follow feasibility study	to follow feasibility study

EWARS was presented to the team in charge of coordinating the Global Arboviral Initiative (GAI). This system can address the gaps identified for strengthening pillar 2 of the GAI strategy. Discussions are ongoing with the GAI team and WHO/NTD on future collaborations, especially in Africa.

1.2 Building systems to tackle drug-resistant infections



Objective

To build country resilience to the threat of drug-resistant infections



Disease focus

Antimicrobial resistance, tuberculosis



Key activities

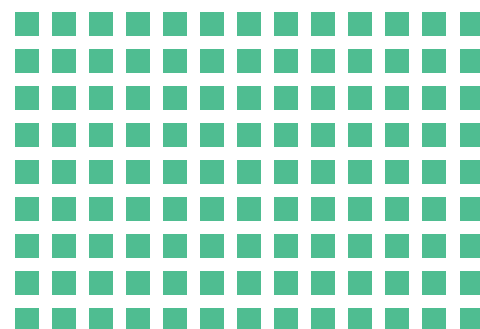
- Build sustainable operational research capacity to generate and utilize evidence to tackle the emergence, spread and health impact of antimicrobial resistance (AMR) in LMICs ([the AMR–SORT IT project](#)).
- Support research to assess the effectiveness, safety, feasibility, acceptability, cost and impact of the use of novel regimens for patients with extensively drug-resistant tuberculosis ([the ShORRT initiative](#)).



Countries

- AMR–SORT IT: Colombia, Ecuador, Ghana, Myanmar, Nepal, Sierra Leone and Uganda
- ShORRT: 27 countries globally

Video on SORT IT module 4: Communicating research findings with impact



Video on SORT IT module 4 : [Communicating research findings with impact](#)

2022 updates

Analysis of operational research projects on AMR in Africa and Asia has showcased how both the health system and research capacity have benefitted from SORT IT: 71% led to changes in policy and/or practice, 86% of trainees are applying their skills to tackle AMR, 56% of trainees are applying their skills to the COVID-19 response and 25% became mentors through a train-the-trainer programme.

Trainings on Module 4 of SORT IT (on communicating research findings) were completed for participants in Colombia, Ecuador, Ghana and Sierra Leone. (See *Spotlight* story below.)

The SHORRT operational research package developed by TDR, in collaboration with the WHO Global Tuberculosis Programme and technical partners, now supports 27 countries worldwide, with more than 4000 patients estimated to be enrolled in the studies. (See *Spotlight* story below.)

Achievements of the AMR-SORT IT project since 2019

74

research studies
completed in seven
countries

65

published by LMIC
first authors

71%

of research had an
impact on policy and/
or practice

69

implementing
institutions became
part of the AMR-SORT
IT partnership

25%

of trainees became
mentors after one
training cycle

86%

of trainees applying
SORT IT acquired
skills to AMR practice

56%

of trainees applying
SORT IT acquired
skills to the COVID-19
response

64%

of trainees completed a
new research study

Communicating research findings to tackle antimicrobial resistance in Sierra Leone

The Structured Operational Research and Training Initiative (SORT IT) has been working with seven countries since 2019 to tackle antimicrobial resistance. The projects identify not only specific, local factors contributing to antimicrobial resistance, but also potential solutions to address this critical problem.

A key SORT IT module is on communications and advocacy, where participants learn how to structure a two-page, plain language handout on their findings with clear recommendations for how to address the issues. Two short PowerPoint presentations and a one-minute spontaneous pitch are developed from this. This training has enabled TDR-supported researchers to present their work succinctly and with clear recommendations in under 10 minutes each, including Q&A.

Strengthening surveillance and monitoring in Sierra Leone

Amara Leno reported his study on antimicrobial use in livestock in Sierra Leone, which documented incomplete reporting and insufficient human and material resources to collect surveillance data. After being presented with the findings produced through his SORT IT training, the Ministry of Livestock and the Food and Agriculture Organization mandated country-wide weekly reporting, conducted trainings on data collection and provided computer tablets and motorbikes to livestock officers.

A year later, a second study assessed the impact of these actions and found the percentage of districts reporting data increased from 3% to 100%, and report completeness from 1% to 88%.

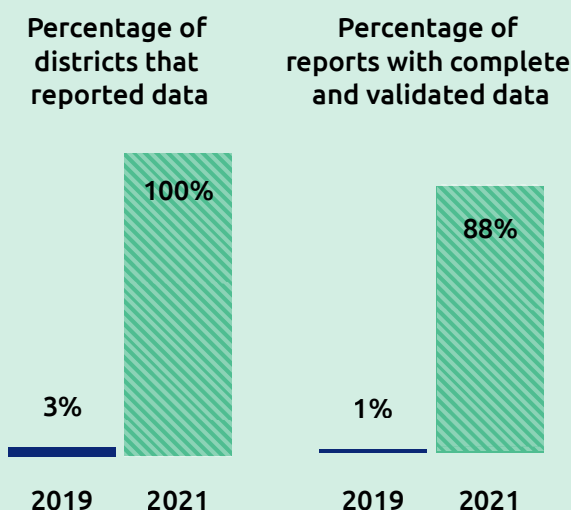
For the full story, click [here](#).



*Locally provided computer tablets and training in response to research findings in Sierra Leone
Credit: L. Amara*

The impact of SORT IT in Sierra Leone:

Amara Leno's presentation of his research findings prompted the Ministry of Livestock to mandate country-wide weekly reporting of AMR surveillance data. This led to the following increases in data reporting and quality:



The ShORRT initiative on drug-resistant tuberculosis research in the WHO Region of the Americas

TDR, in collaboration with the Pan American Health Organization (PAHO), is supporting the national TB control programmes of Colombia, the Dominican Republic, Ecuador, Mexico and Nicaragua, which are conducting operational research studies on the effectiveness and safety of modified shorter all-oral regimens for drug-resistant TB patients. The findings will provide important new evidence for the development of the next WHO guidelines on the treatment of drug-resistant TB.

The [ShORRT operational research package](#) (short, all-oral regimens for rifampicin-resistant tuberculosis) was developed by TDR, in collaboration with the WHO Global Tuberculosis Programme and technical partners, to support the implementation of novel regimens for patients with extensively drug-resistant TB.

The initiative now involves and supports 27 countries worldwide, working alongside WHO regional and country offices, academia and technical partners. More than 4000 patients worldwide are estimated to be enrolled in the studies.



*Consulting physician with patients admitted to the Luis Morillo King Hospital Unit, La Vega, Dominican Republic
Credit: National TB Programme of the Dominican Republic*

ShORRT in the Region of the Americas

In the Americas, Colombia, the Dominican Republic, Ecuador, Mexico and Nicaragua are among the pathfinder countries conducting operational research on the effectiveness and safety of modified shorter all-oral regimens for MDR/RR-TB patients.

WHO estimated that in 2019 there were 11 000 cases of drug-resistant TB in the region. Improving TB diagnosis, treatment coverage and adherence is therefore a clear public health priority.

For MDR/RR-TB, this also means implementing shorter, safer and more effective all-oral drug regimens that reduce the duration of treatment, the need for daily encounters between patients and healthcare staff for injections at the health facility, and the occurrence of adverse reactions. However, the use of such treatment regimens is still limited in this region.

During 2020 and 2021 the five national TB control programmes adapted the ShORRT research package and developed studies that aim to evaluate the effectiveness and safety of five modified bedaquiline-containing treatment regimens for patients with TB sensitive to fluoroquinolones and one novel treatment regimen comprised of six months of bedaquiline, pretomanid and linezolid (BPaL regimen) for patients with TB resistant to fluoroquinolones.

Results on the effectiveness and safety of the novel drug regimens are expected to become available between the end of 2023 and early 2024.

For the full story, click [here](#).

1.3 Operationalizing a One Health approach to increase resilience to vector-borne diseases in the context of climate change



Objective

To operationalize a multisectoral, transdisciplinary approach to vector-borne diseases that recognizes the interconnection between the health of people, animals and plants and their shared environment. The approach ensures collaboration and coordination among all relevant sectors and stakeholders to achieve better health outcomes.



Disease focus

Vector-borne diseases, e.g. malaria, Rift Valley fever, sleeping sickness



Key activities

- [Developing and piloting a framework for operationalizing a One Health approach in African countries.](#)
- Developing and implementing an online training course on One Health.



Countries

Côte d'Ivoire, Kenya, Mauritania, South Africa and the United Republic of Tanzania

2022 updates

Four [pilot studies](#) were completed on operationalizing One Health and applying the scorecard/metrics approach.

One Health training module has been developed.

A call for proposals to scale up implementation of One Health has been issued.

Draft manuscripts have been prepared for publication.

A One Health toolkit is being developed.



*A Maasai farmer with his cattle in Emboreet Village in Simanjiro District, United Republic of Tanzania.
Credit: E. Filipo*

2. Research for implementation: Supporting universal health coverage

We support research that improves and supports sustainable and equitable implementation and scale-up of health programmes, particularly for vulnerable and hard-to-reach populations. Such research therefore contributes to achieving universal health coverage so no one is left behind.

TDR is also committed to supporting the implementation of WHO's road map for neglected tropical diseases 2021–2030, which sets out global targets and milestones to prevent, control, eliminate and eradicate a diverse set of 20 diseases and disease groups. Below we highlight research for strategies to achieve and sustain elimination of two neglected tropical diseases (NTDs): visceral leishmaniasis (VL) and onchocerciasis.

2.1 Supporting disease elimination efforts



Objective

To support research on strategies to achieve and sustain disease elimination.



Disease focus

Neglected tropical diseases (visceral leishmaniasis and onchocerciasis)



Key activities

- Design and testing of approaches to sustain elimination of [visceral leishmaniasis](#) as a public health problem on the Indian subcontinent.
- Distilling lessons from TDR-supported VL research on the Indian subcontinent for elimination efforts in Eastern Africa.
- Supporting generation of data to inform WHO guidelines and country policies on implementation of moxidectin for onchocerciasis elimination.
- Supporting the development of a paediatric formulation of [moxidectin](#) for children too small to swallow the current tablet formulation.



Countries

- VL: Bangladesh, India and Nepal
- Onchocerciasis: the Democratic Republic of the Congo and Ghana



2022 updates

Visceral leishmaniasis

TDR is collaborating with WHO and other partners to initiate VL elimination efforts in Eastern Africa. This includes applying lessons learned from TDR-supported implementation research on VL elimination in Bangladesh and Nepal. (See *Spotlight* story below.)

Onchocerciasis

- The double-blind study in the Democratic Republic of the Congo comparing the [parasitological efficacy and safety of moxidectin or ivermectin](#) upon three annual and five biannual treatments is continuing recruitment.
 - The double-blind single-dose study in the Democratic Republic of the Congo to increase the amount of data available on the [safety of moxidectin](#) is continuing recruitment.
 - A moxidectin dose for children 4–11 years has been selected based on a completed [paediatric](#) dose-finding study conducted in Ghana. Preparation to collect large-scale safety data in children has been initiated.
-

Distilling lessons from TDR-supported VL research on the Indian subcontinent for elimination efforts in Eastern Africa

TDR is collaborating with WHO and other partners to initiate VL elimination efforts in Eastern Africa. This includes applying lessons learned from TDR-supported implementation research on VL elimination in Bangladesh and Nepal.

In collaboration with WHO/NTD, several consultative meetings and a survey of stakeholders have been conducted on the prospects for a VL elimination effort in Eastern Africa and on lessons learned from the Indian subcontinent. A bi-regional strategic plan for VL elimination in Eastern Africa is being developed through WHO stewardship. TDR will contribute through support of selected implementation research priorities identified in the process.

The impact of TDR-supported implementation research for VL elimination in Bangladesh and Nepal has been assessed from the perspective of each country. The reports highlighted key research contributions that led to impact in four areas:

- **diagnosis** - rK39 was validated and used as a confirmatory test for VL;
- **treatment** - miltefosine replaced sodium stibogluconate as a first line of treatment; liposomal amphotericin B replaced miltefosine subsequently due to increased treatment failures and relapse rates; combination therapy was introduced into the national protocol of treatment;
- **surveillance** - active case detection was incorporated into the national protocol of VL elimination; and
- **vector control** - integrated vector management was recognized as an important element in the elimination efforts.



*Caption: Research team at icddr,b in Dhaka, Bangladesh, supported by TDR
Credit: TDR/Y. Tushar*

TDR's value-add

Key findings from implementation research supported by TDR on visceral leishmaniasis in Bangladesh and Nepal may inform VL elimination efforts in East Africa.

2.2 Mitigating the impact of health emergencies on other disease programmes



Objective

To mitigate the impact of COVID-19 on other disease programmes and ensure continuity of treatment and care.



Disease focus

Tuberculosis, malaria, visceral leishmaniasis



Key activities

- [Supporting countries in West and Central Africa that are evaluating new and adapted strategies to mitigate the impact of COVID-19 on TB care and control through implementation research.](#)
- [Supporting 13 countries in West and Central Africa to conduct implementation research on seasonal malaria chemoprevention \(OPT-SMC\)](#) – this includes development of a tool to assess the impact of COVID-19 on SMC delivery and coverage.



Countries

- Tuberculosis: Six countries in West and Central Africa (Benin, Burkina Faso, Chad, Côte d'Ivoire, Guinea and Rwanda)
- Malaria: 13 countries in sub-Saharan Africa for OPT-SMC (Burkina Faso, Cameroon, Chad, Gambia, Ghana, Guinea, Guinea Bissau, Mali, Mauritania, Niger, Nigeria, Senegal and Togo)
- Visceral Leishmaniasis: Bangladesh and Nepal

2022 updates

An impact assessment dashboard that will help mitigate the impact of COVID-19 and future public health emergencies on TB has been finalized and is being piloted in six African countries. (See *Spotlight* story below.)

Five of the 11 studies on mitigating the impact of COVID-19 on TB services throughout West and Central Africa have been published in a special issue in the *Journal of Tropical Medicine and Infectious Diseases*.

A study assessing the impact of COVID-19 on VL control services in Bangladesh and Nepal has been completed.

Strengthening TB programmes to withstand public health emergencies

The COVID-19 pandemic created many barriers to tuberculosis (TB) treatment and care. As a result, TDR and partners launched a project to help mitigate the impact of COVID-19 and future public health emergencies on the provision of TB services in West and Central Africa. An impact assessment dashboard has been produced and is currently being piloted.

The effects of the COVID-19 pandemic on TB treatment and care highlighted the need to ensure ongoing services for TB patients at a time when contact between patients and providers was reduced. This was due to disrupted TB services, social distancing or lockdown measures and TB staff called to work on COVID-19.

This project aims to strengthen TB surveillance systems to detect and track health service disruptions in the context of public health emergencies and support national TB control programmes (NTPs) to develop preparedness and response plans.

Key outputs of the project include:

- an impact assessment framework that can be used to monitor the performance of essential TB services during public health emergencies;
- a comprehensive DHIS2 package that digitizes the impact assessment framework indicators and integrates them into a digital TB surveillance system; and
- evidence-informed and data-driven country preparedness plans which are built into enhanced TB surveillance systems and describe strategies to be taken when disruptions are observed.

The impact assessment DHIS2 dashboard has been finalized by the University of Oslo and is currently being piloted in Benin, Burkina Faso, Chad, Guinea and Rwanda.

“In times of crisis, it’s important that we get an accurate picture of how service systems are functioning to identify areas where additional support or mitigation strategies are needed, so that the community’s access to TB testing, diagnosis and treatment services are maintained,” says Dr Basel Karo, Coordinator at the Information Centre for International Health Protection at the Robert Koch Institute, a WHO Collaborating Centre for Global Outbreak Alert and Response.

For this project, we are working in partnership with the Robert Koch Institute, the West and Central African Regional Networks for TB Control (WARN/CARN-TB), the Health Information Systems Programme (HISP) at the University of Oslo and the WHO Global TB Programme. Lessons learned throughout the project will be shared with the NTP staff from all 27 countries participating in the WARN/CARN-TB networks.

More details can be found on our [website](#).



Professor Dissou Affolabi
Credit: TDR / C. Merle

“ This important new tool will allow us to assess the impact of health emergencies on TB services and develop response plans.

Professor Dissou Affolabi, NTP manager in Benin; Executive Secretary of WARN/CARN-TB

2.3 Promoting the development of gender-responsive health interventions



Objective

To support researchers to generate new knowledge and evidence on the intersection of sex and gender with other social stratifiers that affect access to health services and health outcomes.



Disease focus

All infectious diseases



Key activities

- Development of TDR's [Intersectional gender research strategy](#).
- Development and piloting of research tools for incorporating intersectional gender analysis into research.



Countries

All



*Caption: A researcher in Nepal collecting data for piloting the intersectional gender research toolkit
Credit: HERD International*

2022 updates

Investigators in Nepal and Uganda have demonstrated the critical need for gender-based analysis and intersectionality in infectious diseases research. Each research team has submitted two articles for peer-reviewed publication:

- “Gendered lives, gendered vulnerabilities: An intersectional gender analysis of vulnerability to and treatment of schistosomiasis in West Nile Region, Uganda” (submitted to *PLOS Neglected Tropical Diseases*).
- “Piloting intersectional gender analysis to understand challenges in tuberculosis care at four health care facilities in Uganda” (submitted to *PLOS One* and *Infectious Diseases of Poverty*).
- “Gender and its intersection with social stratifiers influencing lymphatic filariasis prevention and care seeking behaviour in Nepal” (submitted to *Infectious Diseases of Poverty*).
- “Conducting intersectional gender analysis for gender inclusive health system in Nepal – Where we are and what can be done” (submitted to *Infectious Diseases of Poverty*).

PLOS ONE



**INFECTIOUS DISEASES
OF POVERTY**

Research projects in Bhutan and Africa (consortium of Kenya, Malawi and South Africa) are conducting research to generate evidence to strengthen intersectionality and gender research efforts in infectious disease prevention and control, namely dengue, TB and malaria.

Two systematic reviews have been conducted in Bangladesh and India on urban health, infectious diseases and gender:

- “Protocol for a systematic review on exploring the implications of the social determinants of health and identifying effective community-based interventions to prevent and control infectious diseases in urban informal settlements in LMICs” (submitted by Bangladesh team to *BMC Systematic Reviews*).
- “Implications of the social determinants of health and identifying effective community-based interventions to prevent and control infectious diseases in urban informal settlements in low- and middle-income countries: a systematic review” (submitted by Bangladesh team to *BMC Systematic Reviews*).
- [“Housing-related challenges during COVID-19 pandemic among urban poor in low-and middle-income countries: a systematic review and gap analysis”](#) (publication by India team).
- [“A systematic review of water, sanitation and hygiene for urban poor in low- and middle-income countries during the COVID-19 pandemic through a gendered lens”](#) (publication by India team).



Spotlight

Exploring gender-related factors in managing skin-related neglected tropical diseases in Ghana

Researchers in Ghana are exploring gender-related factors affecting care of skin NTDs.

Through the Access and Delivery Partnership (ADP) and with TDR support, a team from the National Buruli Ulcer Control and Yaws Eradication and National Leprosy Control Programmes in Ghana has conducted an exploratory study on gender-related factors affecting care of skin NTDs in three districts in the central region of Ghana.

The study highlighted that women had better knowledge of the causes and symptoms of skin NTDs than men and would seek treatment at hospitals preferentially over herbalists (the opposite to the treatment-seeking behaviour of men). However, women's treatment-seeking behaviour was strongly influenced by men due to unequal power relations, gender roles and access to resources.

Meanwhile, a beta version of a mobile phone app to help health care workers diagnose skin NTDs is now being tested before its public release. Digital technologies can help gender equity by making diagnosis of skin NTDs more accessible, while also providing a way for cost-effective interventions to be integrated into basic healthcare services in low-resource settings.

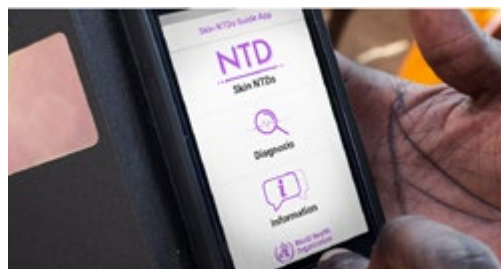
Developed in collaboration with No Leprosy Remains (formerly Netherlands Leprosy Relief) and Universal Doctor, the app allows recognition of 30 skin conditions through changes on the skin; an integrated feature also allows the visible signs of skin disease to be assessed by uploading photographs and running an artificial intelligence (AI) algorithm for four out of the 30 conditions.

Collectively, the adoption of a gender-equitable approach, plus the integration of cost-effective mobile technology to skin NTD health service delivery, could result in a step change for the management of such conditions and their sequelae in low- and middle-income country settings.

The full news article can be read [here](#).

“Applying a gender lens to service delivery for skin NTDs will improve gender equity in our attempt to achieve universal health coverage.

Dr Nana Konama Kotey,
Principal investigator of the study in Accra, Ghana



*Skin NTD app
Credit: TDR*

3. Research for innovation and integrated approaches

Realizing the potential impact of innovations for health requires an understanding of the complex environments in which they will be put to use. Implementation research (IR) is uniquely placed as an approach to systematically explore these challenges and generate new evidence to guide the optimal use and scale-up of innovations.

To support such research, TDR has been developing new research tools and approaches. These aim to optimize the implementation of innovations such as digital technologies for health and support implementation of a multisectoral approach to tackling vector-borne diseases.

3.1 Optimizing implementation of digital technologies and other innovations



Objective

To support the implementation and scale-up of digital technologies for health and innovative strategies for vector-borne diseases



Health focus

Drug safety monitoring, TB, dengue, chikungunya, Zika, malaria



Key activities

- Piloting and evaluating new tools for drug safety monitoring.
- Developing and promoting the use of a [toolkit for evaluating the implementation and scale-up of digital innovations for TB care \(IR4DTB\)](#) and supporting its use by national TB programmes.
- Developing a research [toolkit to support the effective use and implementation of computer-aided detection \(CAD\) software for TB](#).
- Supporting the testing of innovative vector control technologies, such as the [Sterile Insect Technique](#), to target vector-borne diseases (dengue, Zika and chikungunya).
- Supporting research on implementation of a promising malaria self-diagnosis and self-treatment kit for hard-to-reach populations in Brazil, French Guiana and Suriname (the [Malakit project](#)).



Countries

- Drug safety monitoring: Burkina Faso, Ghana, Malawi, the Philippines and Uganda
- Digital tools for tuberculosis: Armenia, Georgia, Ghana, Moldova, Romania, Ukraine, Uzbekistan and West and Central African countries participating in WARN-TB and CARN-TB
- Sterile insect technique (SIT): Cook Islands, Easter Island and French Polynesia
- Malakit: Brazil, French Guiana and Suriname

2022 updates

A new SMS-based tool to strengthen drug safety monitoring in Malawi is being piloted and evaluated, and the MedSafety application is being evaluated in Burkina Faso, Ghana and Uganda. (See *Spotlight* story below.)

The [IR4DTB Toolkit](#) (launched in 2020) was translated into Russian and used to support an online workshop in the WHO European Region. Six countries were selected to receive funding and technical support to conduct IR on digital health tools for TB care. Read more about the toolkit in this recent [publication](#).

As part of the ADP, a survey was conducted on the use, barriers and evaluation of digital technologies introduced by national TB and malaria programmes in West and Central Africa.

Testing of the Sterile Insect Technology for vector control was launched in three Pacific Island countries in collaboration with the United States Centers for Disease Control and Prevention, the International Atomic Energy Agency and WHO/NTD.

To improve Malakit, the feasibility to include G6PD testing was supported by a TDR project. The results showed the improved efficiency of the kits, making malaria elimination possible in Suriname.



The Malakit kit
Credit: S. Berthault

Strengthening drug safety monitoring through innovation in Malawi

As part of the Access and Delivery Partnership, TDR is supporting the Pharmacy and Medicines Regulatory Authority (PMRA) of Malawi in the introduction of innovative techniques to enhance reporting of adverse drug reactions (ADR) and adverse events following immunization (AEFI).

Collecting reports of suspected ADR is a core activity of national pharmacovigilance centres in Malawi. However, under-reporting is a persistent problem. Traditional paper forms cause delays and do not allow patients to directly report side effects themselves.

In 2021, the PMRA developed a USSD (unstructured supplementary service data) platform for reporting ADR and AEFI. This novel tool, called Medsafe-360, was introduced in early 2022 following a promotional campaign. This mobile-based SMS platform allows for direct reporting of suspected adverse events by patients and health care workers and does not require a smartphone nor an internet connection.

The full news article can be read [here](#).



Posters promoting Medsafe-360
Credit: Pharmacy and Medicines Regulatory Authority (PMRA) of Malawi



Our contribution

TDR supported Malawi's Pharmacy and Medicines Regulatory Authority to develop a protocol to evaluate the implementation, acceptability and feasibility of the SMS tool and its impact on the ADR reporting rate.

3.2 Multisectoral approach to malaria and emerging arboviral diseases



Objectives

To support efforts to prevent and control vector-borne diseases through a multisectoral approach; implement MSA case studies in several countries; and establish collaborations with non-health sectors.



Disease focus

Malaria and emerging arboviral diseases



Key activities

- Train stakeholders from national malaria and other vector-borne disease control programmes on how to implement an MSA.
- Implement MSA case studies on vector-borne disease control in several countries.
- Establish collaborations with sectors other than health to prevent and control vector-borne diseases.



Countries

- Bangladesh, Benin, Brazil, Burkina Faso, Cambodia, Ecuador, Mali, Nigeria, Senegal, United Republic of Tanzania, Viet Nam and Zambia.

What is a multisectoral approach (MSA)?

It is increasingly recognized that the prevention and control of many diseases, including vector-borne diseases (VBDs), must be driven by more than just the health sector alone. In the context of the inter-related Sustainable Development Goals, efforts to tackle vector-borne diseases require input from sectors such as water and sanitation, agriculture, housing and education.



Our catalytic role

TDR in 2020 published a conceptual framework covering the essential elements of successful multisectoral collaborations. TDR is now supporting research teams in LMICs that are piloting MSA implementation.



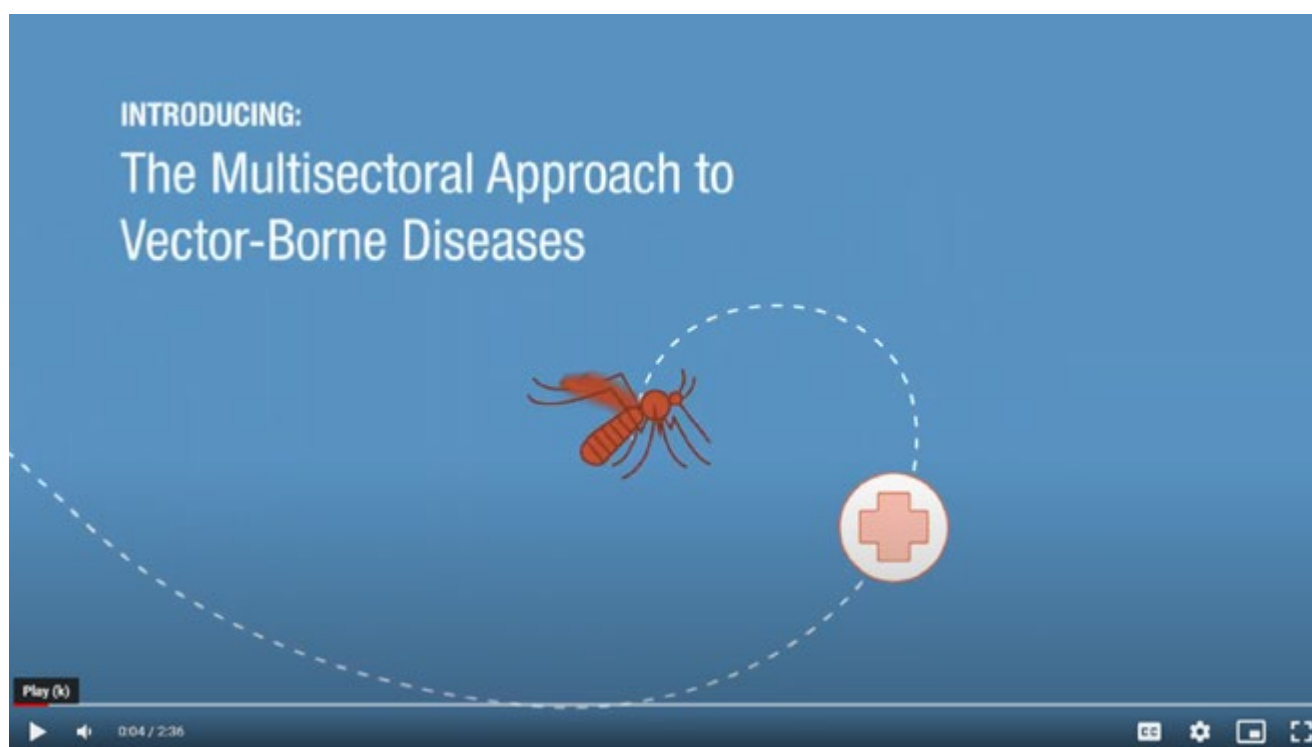
2022 updates

Four countries have started implementing MSA approaches against malaria.

Two countries have initiated MSA approaches against arboviral diseases.

A lessons learned document has been initiated under the WHO Water, Sanitation and Health (WHO/WSH) team's leadership.

An online course on MSA is being developed and will be available as a MOOC in 2023.



Watch the video [introducing the multisectoral approach to vector-borne diseases](#)

Piloting the multisectoral approach



TDR is supporting the following case studies in collaboration with WHO/WSH, the WHO Global Malaria Programme and WHO/NTD.

Case Study 1: A pilot multisectoral intervention for controlling malaria vectors, mitigating insecticide resistance and assessing WASH facilities at health care units in selected coastal and Sahelian west African countries (**Benin, Burkina Faso, Mali and Nigeria**).

Collaborating sectors: water and sanitation, agriculture and environment

Case Study 2: Establishment of a multisectoral strategy in order to prevent transmission of Aedes-borne diseases in the city of Manta in the coastal region of **Ecuador**.

Collaborating sectors: water and sanitation, education and urban planning

Case Study 3: Chikungunya, Dengue and Zika: multisectoral approach for developing solutions applicable in public health in Brasilia, **Brazil**.

Collaborating sectors: water and sanitation, education, urban planning and environment

Case Study 4: Improving access to vector control products among communities at risk of malaria in **Cambodia and Viet Nam**.

Collaborating sectors: water and sanitation and private sector

Case Study 5: Multisectoral approaches to fight malaria in **Burkina Faso**

Collaborating sectors: to be determined

3.

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 and universal health coverage.

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. Collaborations with partner universities and training institutions in these countries are critical to jointly achieving this goal.

Contents

- 1 Building the capacity of the next generation of researchers and global health leaders**
- 2 Implementation research training tools**
- 3 Fostering learning and collaboration through Regional Training Centres**
- 4 Strengthening capacity to conduct clinical trials in low- and middle-income countries**
- 5 The Access and Delivery Partnership**

Highlights

428 master's students in LMICs have been trained in IR since 2015 through TDR's Postgraduate Training Scheme.



428
MASTER'S STUDENTS
TRAINED

TOTAL WORLDWIDE
SINCE 2015



The University of Sciences, Techniques and Technologies Bamako (USTTB)

in Mali has joined the Postgraduate Training Scheme as a second partner offering French-language courses.

Three countries

have incorporated IR in their disease control programmes for developing national NTD control plans: Bhutan; Indonesia and the United Republic of Tanzania.



A new programme on Clinical Research Leadership,

built on the experience and evaluation of the Clinical Research and Development Fellowship programme, has been launched.



New implementation research training modules

on gender and intersectionality have been developed.

1. Building the capacity of the next generation of researchers and global health leaders

TDR's Postgraduate Training Scheme provides a full academic scholarship for master's training focused on implementation research, in collaboration with universities located in low- and middle-income countries. The scheme has built cadres of skilled professionals in infectious diseases of poverty across Africa, Asia and Latin America who have become influential figures in research and public health.

Postgraduate Training Scheme



Objective

To provide support for postgraduate research training in LMICs, with a focus on implementation research on malaria, tuberculosis and neglected tropical diseases.



Target audience

LMIC nationals interested in developing a career in implementation research on infectious diseases of poverty.



Countries

Partner universities in Bangladesh, Colombia, Ghana, India, Indonesia, Lebanon, Senegal, South Africa and Zambia.



Gender distribution

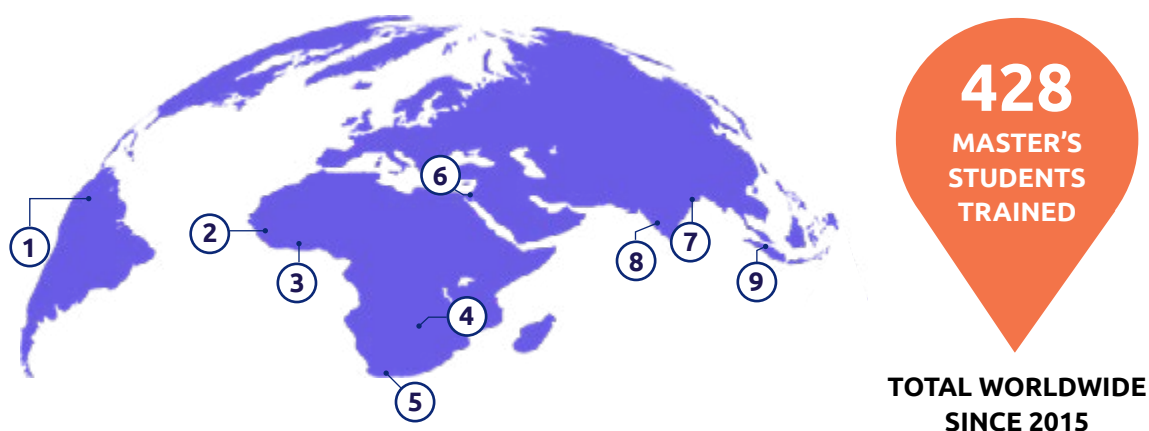
Among 428 Master's students trained, 216 are women (50%), 211 are men (49%), and one (1%) is transgender. Of the eight PhD students, one is a woman.



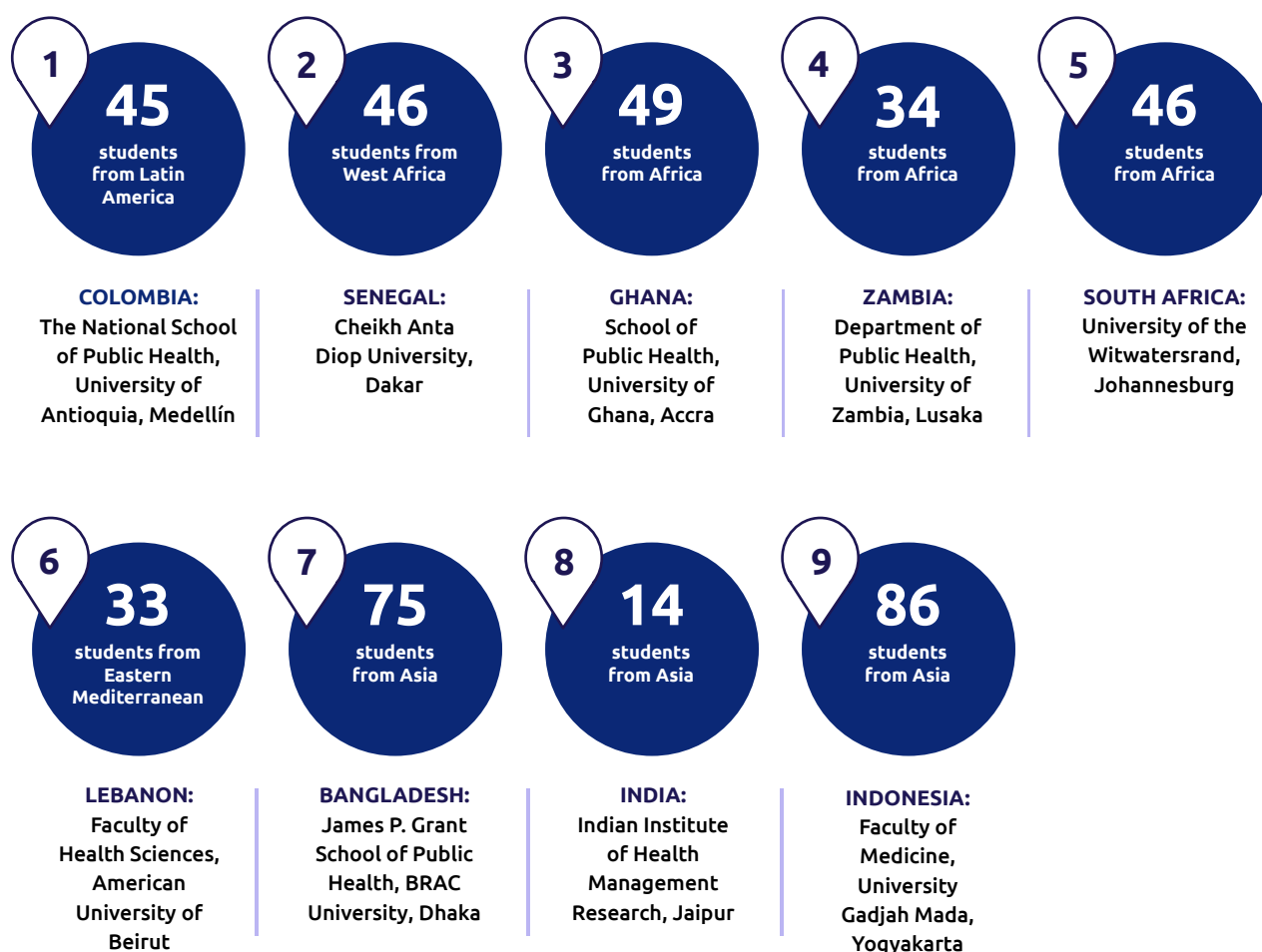
COVID-19 impact

All partner universities have actively adopted virtual trainings to ensure smooth continuation of the scheme due to the COVID-19 pandemic-related social distancing and travel restrictions.

International reach of the Postgraduate Training Scheme



NUMBERS OF MASTER'S STUDENTS TRAINED AT PARTNER UNIVERSITIES IN THE POSTGRADUATE TRAINING SCHEME



2022 updates:

Expansion has been made possible by additional funders who have joined the support of this scheme (the German Federal Ministry of Education and Research and Deutsche Gesellschaft für Internationale Zusammenarbeit – GIZ and the Luxembourg Directorate for Development Cooperation and Humanitarian Affairs, Ministry of Foreign and European Affairs). Further support is being sought from other funders.

New partner in India: The Indian Institute of Health Management's School of Public Health has selected 12 international students amongst 44 eligible applicants. This includes eight women and four men from Afghanistan, Egypt, India, Nepal, Somalia, Sudan, Tunisia and Yemen, who started their studies in late 2022.



New partner in Mali: The University of Sciences, Techniques and Technologies Bamako has joined the scheme and the first cohort of French-speaking students from West and Central Africa will begin their studies in 2023.



Broadening BRAC's reach: The James P. Grant School of Public Health at BRAC University in Dhaka, Bangladesh, is now accepting applications from candidates in the WHO Eastern Mediterranean Region.



Our unique approach

TDR provides scholarships for postgraduate research training in partnership with public health schools in low- and middle-income countries selected through a competitive process.

Lymphatic filariasis in Ghana: why are transmission levels so high, despite years of interventions?

Alfred Manyeh recently graduated with a TDR-sponsored PhD focused on lymphatic filariasis, a parasitic disease transmitted by mosquitoes.

"I wanted to uncover why transmission of the disease [in Bole district] was still so high despite years of interventions in the area," said Manyeh, who is currently a research fellow at the University of Health and Allied Sciences in Ho, Ghana.

Manyeh put an intervention in place with strong stakeholder engagement, then evaluated the impact.

He found that the programme implementers – drug distributors and health workers – were not following protocols and that local people had various misconceptions about both the disease and its treatment.

Driving real change from implementation research findings

Manyeh addressed these findings by organizing videos, community meetings and social mobilization programmes in the community to educate the people about the disease and also about the medication. He also provided training for the implementers. People in the community were more willing to take the drug following these measures.

Manyeh is teaching a new generation of young scientists how to conduct implementation research and is confident that this will improve the uptake of health products in his country.

For the full story, click [here](#).

“ My research uncovered that programme implementers were not following protocols and that local people had various misconceptions about both the disease and its treatment.

Alfred Manyeh





Research fellow, University of Health and Allied Sciences in Ho, Ghana



Alfred Manyeh
Credit: A. Manyeh

2. Implementation research training tools

Over the years, TDR, in collaboration with partners, has developed a suite of flagship training courses relevant to implementation research, aimed at improving access to, and delivery of, public health strategies and interventions. The objective and target audience for each course are detailed below.

TDR's IR training tools			
 Tool	 Objective	 Target audience	 Number of participants (2022)
Massive Open Online Course (MOOC) in IR	To provide an introduction to all concepts and principles in IR	<ul style="list-style-type: none"> • Researchers • Implementers • Public health officers 	4701 (of which 53% were women)
Basic Principles in IR	To build upon skills learnt in the MOOC	<ul style="list-style-type: none"> • Researchers • Implementers • Public health officers 	30 (of which 40% were women)
Ethics in IR	To provide an introduction to all concepts and principles in IR project	<ul style="list-style-type: none"> • Researchers • Ethic review committees 	24
IR Toolkit	To develop a strong IR project proposal and a plan for implementing the project	<ul style="list-style-type: none"> • Researchers • Implementers • Public health officers 	14 (of which 57% were women)

Massive Open Online Course (MOOC) on IR

2022 updates:

A new MOOC module on incorporating an intersectional gender perspective in IR was successfully piloted in June–July 2022 with 450 participants. This MOOC will now be offered in October 2023. View more details on our work on gender and equity in the *Global engagement chapter*.

Additional IR MOOC modules are also being developed.

Responding to gaps identified by MOOC participants so far, TDR is currently developing additional modules on:

- the use of qualitative, quantitative and mixed methods in implementation research;
- community engagement;
- illustrative examples of implementation research in the control of Chagas disease, dengue, leishmaniasis, trachoma and leprosy; and
- improving the knowledge of IR among implementers.

To visit the website, click [here](#).

Ethics in IR (IR ethics)

2022 updates:

Two virtual IR ethics courses have been conducted in all Regional Training Centres and universities supporting TDR's Postgraduate Training Scheme. Course participants included members of ethics review committees and faculties of Master's in Public Health programmes.

To visit the website, click [here](#).



IR Toolkit

2022 updates:

A new module on incorporating an intersectional gender perspective in implementation research has been launched. Through this course, participants will: 1) understand the relevance of sex, gender and intersectionality to infectious diseases of poverty; and 2) develop skills to apply the knowledge and understanding to their own implementation research. View more details on our work on gender and equity in the *Global engagement chapter*.

To visit the website, click [here](#).



Our approach

TDR continues to improve its suite of flagship IR training tools to meet implementation challenges and needs.

3. Fostering learning and collaboration through Regional Training Centres

TDR supports a network of Regional Training Centres (RTCs) located in each WHO region to serve as training hubs that conduct, manage and disseminate the portfolio of IR training courses. Train-the-trainer methodology and training workshops have led to customization of these courses to regional needs and leveraging of existing expertise in disease-endemic countries.

Regional Training Centres



Objective

To serve as training hubs that conduct, manage and disseminate TDR's portfolio of IR training courses.



Locations

Colombia, Indonesia, Kazakhstan, Malaysia, Mali, Senegal and Tunisia.

RTCs DIRECTLY SUPPORTED BY TDR

1. AMERICAS:

Centro Internacional de Entrenamiento e Investigaciones Médicas, Cali, Colombia (training expertise in research project management)

2. EASTERN MEDITERRANEAN:

Institut Pasteur de Tunis, Tunisia (training expertise in Good Clinical Practice)

3. AFRICA:

Université Cheikh Anta Diop de Dakar, Senegal* (training expertise in public health)
*sub-regional RTC

4. AFRICA:

School of Public Health, University of Ghana, Accra, Ghana (training expertise in social science and implementation research)

5. EUROPE:

Astana Medical University, Astana, Kazakhstan (training expertise in bioethics)

6. SOUTH-EAST ASIA:

Gadjah Mada University, Yogyakarta, Indonesia (training expertise in social science and implementation research)

7. WESTERN PACIFIC:

Malaysian Global Health Consortium, Kuala Lumpur, Malaysia (training expertise in implementation science)

2022 updates:

A Bachelors' Course on the Basics of Implementation Research and a PhD Course on Advanced Implementation Research have been proposed to the School Management Committee at the University of Ghana.



The School of Public Health in Ghana has developed and run an online version of the Basic Principles in IR (PIR) course in collaboration with the Kenyatta University, School of Public Health in July 2022 for 25 participants. The PIR training course is also now strategically implemented in other RTCs such as the RTC for Latin America, and the RTC for French-speaking countries in West Africa has been disseminating a French version of the course in the region.



RTCs in Senegal and Tunisia have supported the development of the French version of the ethics in IR course.



All RTCs participated in two sessions of the Ethics in IR course virtually.



Students at University of Ghana's School of Public Health
Credit: University of Ghana

4. Strengthening capacity to conduct clinical trials in low- and middle-income countries

Complementing our training programmes on research for implementation, TDR has been offering the Clinical Research and Development Fellowship (CRDF) programme. The programme's goal is to develop internationally recognized clinical research leaders in low- and middle-income countries.

Selected fellows are placed for 12 months in training partner organizations (pharmaceutical companies, product development partnerships, or research organizations) and then receive a reintegration grant for 12 months at their home institution. The fellowship is funded through a grant from the Bill & Melinda Gates Foundation.

Since 1999, a cumulative total of 128 fellows from 39 low- and middle-income countries have been selected to be placed with 34 partner organizations. All fellows have returned to work in their home institutions.

Clinical Research and Development Fellowship programme



Objective

To develop internationally recognized clinical research leaders in low- and middle-income countries.



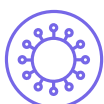
Target audience

Early- to mid-career researchers in low- and middle-income countries.



Gender distribution:

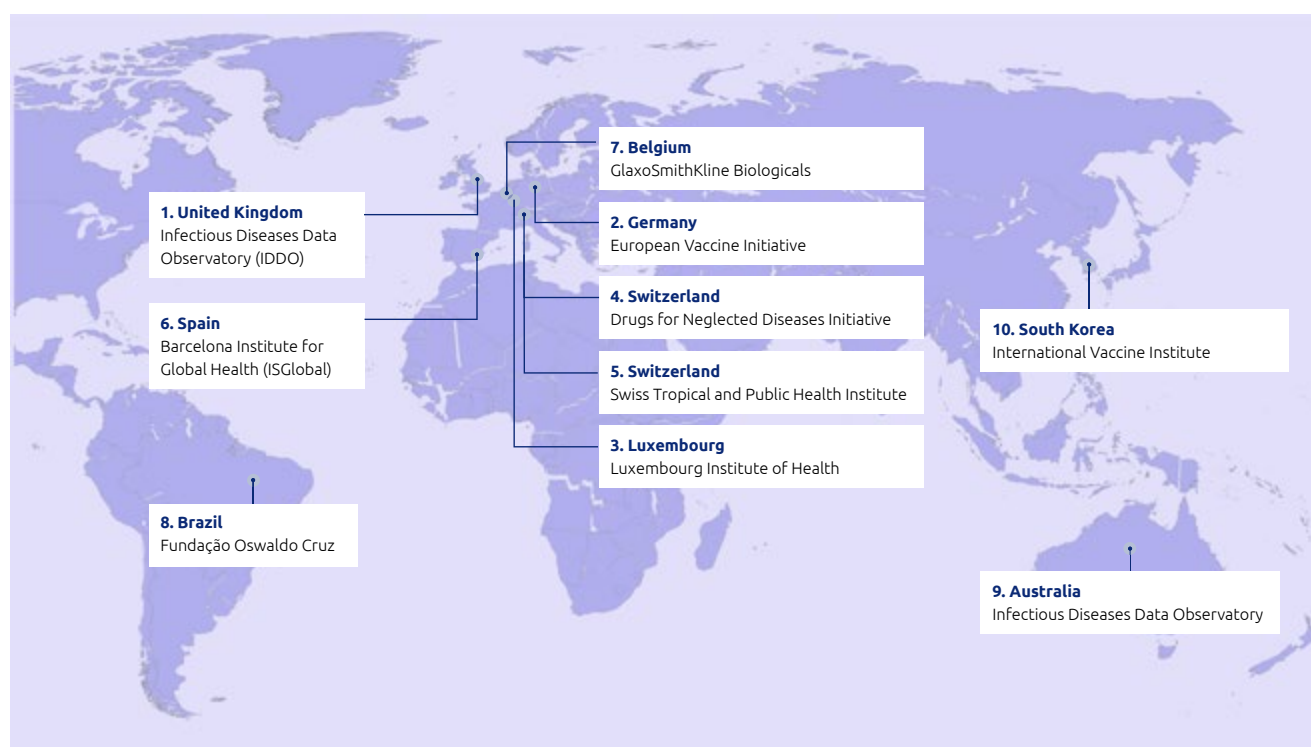
Following efforts to encourage more applications from women, in the 2020–2021 application round, 55% of the selected fellows were women.



COVID-19 impact

The COVID-19 pandemic posed a particular challenge to placing fellows in the different training partner organizations (TPOs). Potential remote online training has been discussed, but there is no substitute for the opportunities provided by on-site placements.

Training partner organizations hosting CRDF fellows in 2022



2022 updates:

18 fellows (10 women and 8 men) were placed in ten training partner organizations.

A new Clinical Research Leadership (CRL) programme builds on the experience and evaluation of the CRDF programme and comprises four main pillars:



TDR reviewed the publications output (935 publications in total) of the fellows pre- and post-grant to assess the impact of the fellowship on their career progress.



TDR's impact

The review suggests that the CRDF has had a positive impact on fellows' career progress in research, particularly in product development and health systems research in LMICs.

Publications output in different research areas:

Research area	Number of publications	
	Before fellowship	Since fellowship
Drug discovery	1	5
Basic research	95	143
Pharmacokinetics K study	10	15
Case control study	8	10
Case report	3	3
Clinical trial	59	101
Health system research	152	322
Other	1	7
Total	329	606

Further analysis shows that most of the research is related to infectious diseases of poverty, malaria, neglected tropical diseases, tuberculosis, human immunodeficiency virus (HIV) and HIV co-infection. There has also been an increasing trend in research related to noncommunicable diseases and nutrition.

Nineteen TDR-supported research fellows contribute to RTS,S malaria vaccine development

It's a testament to the success of TDR's [Clinical Research and Development Fellowship](#) programme that 19 of its fellows were involved in the development of RTS,S/AS01 (RTS,S) – the antimalarial vaccine likely to save thousands of lives across Africa following WHO's recent recommendation for its widespread use.

Below we profile two of the CRDF fellows involved.

Professor Mahamadou Ali Thera, Professor of Parasitology-Myology at the Malaria Research and Training Center, University of Sciences, Techniques and Technologies of Bamako, Mali

Mahamadou, who did his CRDF fellowship at GlaxoSmithKline Biologicals (GSK) (Belgium) back in 2000, worked on Phase I and Phase IIb studies for RTS,S in adults and children. "I was the very first fellow of this kind at GSK," he points out.

His team were able to show that the RTS,S vaccine was efficacious and provided the evidence that allowed age de-escalation development into children. Later, during his time at GSK, he helped develop the first paediatric study protocol in African children.

"I am proud to have been part of the development of RTS,S," he said, adding his belief that RTS,S development has lessons for all vaccine developers.

Since his fellowship, Mahamadou has, together with other colleagues, established Good Clinical Practice training and the capacity for undertaking Phase I, II and III clinical trials of vaccines and drugs at his host institution. Now a professor, he has also gone on to work on two other promising blood-stage malaria candidate vaccines – AMA1 and MSP3.



Professor Mahamadou Ali Thera
Credit: M. Thera

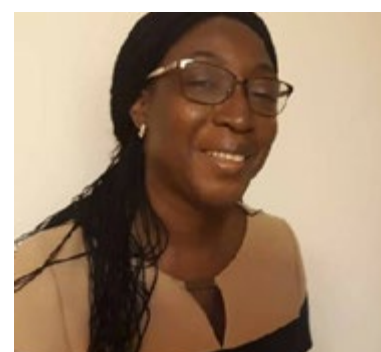
Dr Effua Usuf, Associate Professor and Clinical Epidemiologist, The Medical Research Unit The Gambia at the London School of Hygiene & Tropical Medicine

Now a senior scientist in the Gambia, Effua started her fellowship, based in GSK (Belgium), in 2013 – just after completing her PhD on pneumococcal vaccines.

As well as exploring vaccine schedules, her main focus was assessing the safety and immunogenicity of RTS,S in HIV-positive children and looking at the immune response to hepatitis B when RTS,S is co-administered with various vaccines.

As a woman scientist with young children (the youngest only 4 years old at the time of her CRDF fellowship), she appreciated TDR's flexibility and found working with other African women mentors "really motivating."

Effua's name has appeared on more than five GSK publications, and as a leading African epidemiologist, she was invited to give a presentation on her career at the World Health Assembly in 2017.



Dr Effua Usuf
Credit: E. Usuf

African CRDF fellows who have contributed to RTS,S development

Alumni	Country
Dr Clara Agutu-Atieno	Kenya
Dr Abdullahi Ahmad	Nigeria
Dr Amadou Barry	Mali
Dr Roma Chilengi	Zambia
Dr Hiwot Amare Hailemariam*	Ethiopia
Dr Anna Jammeh*	The Gambia
Dr Richard Kajubi	Uganda
Professor Mahamadou A. Thera	Mali
Dr Mupenzi Mumbere	Democratic Republic of the Congo
Dr Fridah Mwendia	Kenya
Dr Frédéric Nikiema	Burkina Faso
Dr Brenda Okech	Uganda
Dr Atinuke Olaleye	Nigeria
Dr Ally Olotu	Tanzania
Dr Alex Owusi-Ofori	Ghana
Dr Sunny Oyakhiromen	Nigeria/Gabon
Dr Alfred Tiono	Burkina Faso
Marie-Aaimée Unyuzimana	Rwanda
Associate Professor Effua Usuf	The Gambia

**Current fellows*

The full news article can be read [here](#).

5. The Access and Delivery Partnership



Objective

To help countries strengthen policies, human capacities, systems and regulations to ensure that effective medicines, vaccines and diagnostics reach the people who need them.



Collaborators

The Access and Delivery Partnership is a collaboration between UNDP, the WHO Department of Regulatory Systems Strengthening, TDR and PATH, and is funded by the Government of Japan. TDR's role is to work with ADP focus countries to strengthen institutional capacity in the areas of priority setting, implementation research and drug safety monitoring.



Focus countries

Bhutan, Burkina Faso, Ghana, India, Indonesia, Malawi, Senegal, Thailand and the United Republic of Tanzania

2022 updates:

TDR has provided technical support for various research projects in ADP focus countries.

1. Bhutan:

The Ministry of Health, in collaboration with Khesar Gyalpo University of Medical Sciences of Bhutan and the WHO country office, initiated the assessment of the Communicable Disease Division (CDD) for the development of the national action plan for meeting the WHO/NTD roadmap 2021–2030 targets, in particular to identify IR gaps. The assessment will also inform the establishment of a new NTD entity/unit within CDD.

2. Ghana:

The University of Ghana's School of Public Health and its IR partners based in the Ghana Health Service, undertook a comprehensive IR training and mentorship project that included the development of a mentorship guidance. The draft guidance is being pilot tested by using three IR demonstration proposals that were developed and selected for funding as part of the comprehensive IR training and mentorship package. The mentorship guidance will enhance IR knowledge acquisition and application of competencies.

3. Indonesia:

The Centre for Tropical Medicine, Faculty of Medicine, Public Health and Nursing at Gadjah Mada University, in collaboration with the sub-directorate of vector-borne and zoonotic diseases control and the sub-directorate of direct communicable diseases control, developed a national strategy for implementation research to support the prevention and control of five diseases (filariasis, helminthiasis, schistosomiasis, leprosy and yaws) for 2022–2026. The IR strategy will guide identification of needs and inform resource allocation for IR activities for the priority NTDs.

4. Malawi:

The Department of Research at the Ministry of Health, in conjunction with district health management teams and Kamuzu University of Health Sciences, conducted a comprehensive IR training and mentorship project that included the development of mentorship guidance and support for demonstration projects. The guidance is being pilot tested and will receive input from the mentor-mentee pairs. It is anticipated that the mentorship guidance will enhance learning experiences for improved acquisition and application of IR skills.

5. United Republic of Tanzania:

The National Institute for Medical Research, the Neglected Tropical Diseases Control Programme, Ministry of Health and regional and district NTD coordinators updated the national NTD control programme master plan in line with the WHO NTD roadmap 2021–2030 as part of the health sector strategic plan V (2021–2026). The team identified schistosomiasis and snakebite envenoming IR gaps that make interventions ineffective. The master plan will empower the NTD coordinators to mobilize and allocate IR resources when and where they are needed most.



Key takeaway

With TDR support, three countries have incorporated IR in their disease control programmes for developing national NTD control plans: Bhutan, Indonesia and the United Republic of Tanzania.



4.

Global engagement

TDR is at the interface between research and health care delivery. 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's unique position within the United Nations family through its co-sponsors (UNICEF, UNDP, the World Bank and WHO), allows it to create a bridge from local communities to the World Health Assembly, enabling 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.

Contents

- 1 Collaborating with WHO regional offices on research grants
- 2 Supporting community engagement in research and social innovation
- 3 Leveraging the TDR Global network for collaboration, mentoring and capacity building
- 4 Promoting and researching social innovations to improve health care delivery
- 5 Championing open science
- 6 Promoting effective engagement in gender and equity
- 7 Harmonizing investments in research capacity and research management

Highlights

Evidence resulting from TDR-supported research on community engagement has informed new policies in

Ethiopia, Guatemala and the Philippines.

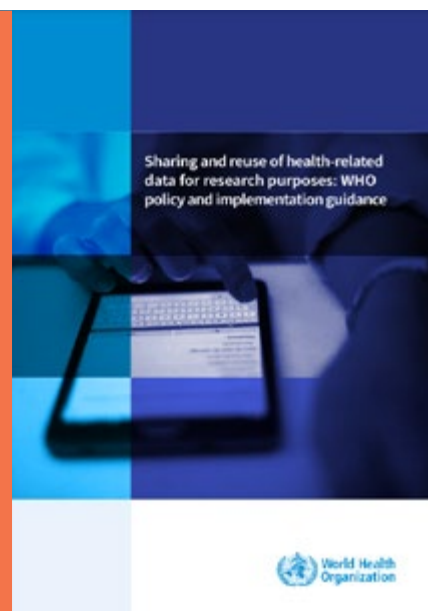


Credit: TDR / E. Filipo

TDR's Impact Grants for Regional Priorities have supported

 **203** research projects,
 **105** publications and
 **52** capacity building activities.

A new report presents more results of this grant programme between 2014 and 2020.



TDR helped develop a new WHO policy and technical guide on *Sharing and reuse of health-related data for research purposes*

Highlights



A TDR Global practical guide on *Health research mentorship in low- and middle-income countries (HERMES)* has been developed to help institutionalize research mentorship in LMICs.

A special *BMJ Innovations* supplement on social innovations in health that compiles SIHI research studies from LMICs has been published.

A new good practice document focused on equitable research partnerships has been developed.



1. Collaborating with WHO regional offices on research grants

Formerly known as the Small Grants Scheme, TDR's Impact Grants for Regional Priorities support researchers and public health practitioners as part of TDR's collaboration with all WHO regional offices.

Since 2014 the focus has been on implementation research, with each WHO region and TDR jointly identifying the research priorities to be funded.

Impact Grants for Regional Priorities



Objective

To produce implementation research findings that can help build national strategies and action plans for better control and treatment of infectious diseases of poverty.



Disease focus

Infectious diseases of poverty including malaria, tuberculosis and neglected tropical diseases.



Key activities

Provide small grants ranging from US\$ 10 000 to \$20 000 with a focus on implementation research.



Countries

The scheme has included all WHO regions since 2016, with grants being implemented and managed by the WHO regional offices for Africa, the Americas, South-East Asia, Europe, the Eastern Mediterranean and the Western Pacific.



*Ibrahim Malik Teaching Hospital in Khartoum, Sudan
Credit: WHO / L. Mackenzie*

2022 updates

Calls for proposals were issued in the WHO regions of Africa, the Americas and the [Eastern Mediterranean](#).

TDR has compiled a [report](#) summarizing the results of this grant programme between 2014 and 2020, including the following:

 **105**

research
publications

 **33**

research tools and
practices identified
with knowledge
transfer potential

 **US\$ 1.6**

million in funding
awarded

 **203**

implementation
research projects
funded

 **52**

capacity building
activities conducted

 **17**

partnerships with
researchers & institutes
in 47 countries

Spotlight

Understanding the complexities behind antimicrobial drug resistance

Implementation research teams in Armenia, China, Colombia, Ecuador, Ghana, Kazakhstan, Lebanon, Myanmar, Nepal, Sierra Leone, Sudan, Uganda, Ukraine and Uzbekistan explored a variety of factors related to antimicrobial resistance. These research projects were supported by TDR's Impact Grants for Regional Priorities in collaboration with all six WHO regional offices.

Antimicrobial resistance – the ability of microorganisms to withstand antimicrobial treatments - [is one of the top 10 global public health threats](#), according to WHO. The overuse or misuse of antibiotics makes treatments less effective, posing a serious threat to public health.

Tackling this problem requires a multisectoral approach focused on improved detection, risk factor analysis and clear public information campaigns to explain to health care providers and patients the best use of antimicrobial medicines.

TDR's Impact Grants funded a body of research conducted by medical teams and public health institutions in some 20 countries (see infographic below). The research topics investigated included the following:

- Identifying risk factors linked with drug resistance
- Links with migration-related issues
- Approaches to develop evidence-based antibiotics protocols/policies
- Social inequalities in antimicrobial resistance
- Education and public awareness needs
- Human–livestock interface for treatment

Read the full news article [here](#).

Countries conducting research on AMR supported by TDR's Impact Grants



EXAMPLES OF KEY RESEARCH FINDINGS

Armenia: Very low rate of access to drug resistance testing and high rate of resistance found among people with access to testing – these problems are linked to poor implementation of guidelines

Sudan: Multidrug-resistant TB is linked to risk factors such as previous TB treatment, HIV infection, type 2 diabetes; identifying such high-risk factors is key to improving TB management

Lebanon: Patients leaving the country before completing TB treatment encourages the emergence of drug resistance

2. Supporting community engagement in research and social innovation



Objective

To explore areas where community engagement plays an essential role in implementation research, social innovation and research ethics, contributing to research democratization.



Key activities

- Development of a community engagement training package.
- Development of a community engagement module to be incorporated into the TDR IR MOOC.
- Identification of good practices in community engagement in LMICs.



Engaging the Maasai community in Emboreet Village, United Republic of Tanzania
Credit: TDR / E. Filipo

2022 updates

The Social Innovation in Health Initiative (SIHI) Philippines hub was selected in 2020 as a partner and was awarded US\$ 150 000 by WHO's Health Emergencies Programme to develop a [Community Engagement Package](#) that would support the implementation of various health interventions. These resources were used to develop targeted microlearning modules to support various health interventions, such as vaccine implementation and emergency response efforts. This has now been finalized.

A community engagement module to be incorporated into the TDR IR MOOC has been developed through a long-term collaboration between SIHI and TDR's Research Capacity Strengthening unit, involving experts from countries. The module is expected to be launched in early 2023.

A SIHI/TDR call for proposals was issued in 2021 to conduct research in low- and middle-income countries on identifying good practices in engaging communities in research for implementation and in social innovation in health. Following the submission of 114 applications, ten projects selected by the external review group chaired by Professor Lenore Manderson implemented their activities and started to deliver their first results.



TDR's impact

Evidence resulting from TDR-supported research on community engagement has informed new policies in Ethiopia, Guatemala and the Philippines.

Ethiopia

The Ethiopian Public Health Institute, Jimma University and the Armauer Hansen Research Institute (AHRI) led a national initiative to promote effective community engagement and developed a national guideline on community engagement in the research process. This guide can be adapted by any research institution according to their needs. Research institutes in Ethiopia committed to revising their policies and integrating community engagement into their research guidelines.

Guatemala

A guide to promote best practices in community participation for vector-borne and congenital Chagas disease prevention and control strategies was co-created through a participatory approach with community leaders, coordinated by the University del Valle and the Ministry of Public Health and Social Welfare.

Philippines

Research findings on enablers of and barriers to community engagement and gender inclusivity in research contributed to the revision of a chapter in the Draft National Ethical Guidelines (2022 national guidelines for research involving human participants).

3. Leveraging the TDR Global network for collaboration, mentoring and capacity building

Over the years, TDR has contributed to the development of a global community of leaders and agents of change who are showing how research can improve the health and well-being of vulnerable populations. This community, [TDR Global](#), aims to catalyse research collaborations and foster the mentorship of young scientists.

TDR Global



Objectives

- Foster mentorship to help members increase their capacity and profile.
- Catalyse collaborations among TDR Global members.
- Serve as a resource for identifying experts to be considered for review of grants or expert committees for TDR and its partners.
- Encourage networking and connections between scientists and experts.



Key activities

- Showcase TDR Global members' activities and [profiles](#).
- Maintain and develop the global database of members ([Discovery Platform](#)).
- Support the next generation of scientists through mentorship in research and thematic activities.



Ewurama D. A. Owusu at a malaria diagnostic clinical trial site in Papua New Guinea
Credit: E. Owusu

2022 updates

A TDR Global practical guide to enhance research mentorship titled [Health research mentorship in low- and middle-income countries \(HERMES\)](#) that will help institutionalize research mentorship in LMICs has been developed and published. (See *Spotlight* below.)



TDR Global has developed a [web-based communications repository](#) to be used by TDR Global regional nodes for communications activities.



The *Women in science* compendium has been translated into [French](#) and [Spanish](#), and a webinar in Spanish was organized on International Women's Day.



A practical guide on *Public engagement and crowdfunding in health research* has also been translated into [French](#) and [Spanish](#), and a webinar was organized to share experiences on crowdfunding for health research in Africa.



At the end of October 2022, 48 884 users had accessed the [Discovery Platform](#), up from 23 106 users reported at the end of December 2021.



Spotlight

Practical guide on Health research mentorship in low- and middle-income countries

Research mentorship is critical for health research, but many mentorship resources focus on high-income countries and neglect institutional factors that are important for research mentorship in low- and middle-income countries.

To address this gap, TDR Global has developed a guide titled *Health research mentorship in low- and middle-income countries (HERMES)* to provide practical advice for institutionalizing research mentorship in diverse settings, especially in LMICs.

The guide provides tools, open access resources and advice for research institutions, tailored to LMIC settings.

TDR Global led the collaborative process of developing the guide, working in partnership with the TDR Global nodes in Ethiopia at Armauer Hansen Research Institute, the African region, the Asian region, Latin America, China (SESH) and the new United States node at the University of North Carolina. The guide is based on good practices collected through a crowdsourcing contest, a scoping review of evidence from published and grey literature and consultation with TDR Global regional and country nodes to gather their experiences and ideas from recent mentorship contests.

Dissemination activities will be led by TDR Global regional nodes in collaboration with other institutions interested in piloting and providing feedback on the guide. For example, the Ethiopian node disseminated HERMES during a meeting of university presidents and vice presidents for research.

“ I believe that this guide will improve our research culture both at academic and research institutions in LMICs. I am happy that Ethiopian colleagues under the leadership of the Armauer Hansen Research Institute have played a leadership role in this process.

Samuel Kifle, State Minister of Education, Ethiopia



Watch: find out more about [HERMES](#)



Read: download the [document](#)

4. Promoting and researching social innovations to improve health care delivery

The Social Innovation in Health Initiative is a network of partner institutions and a community of stakeholders established in 2014 through TDR's leadership. TDR continues to support SIHI, with additional funding provided by the Swedish International Development Cooperation Agency (Sida).

The Social Innovation in Health Initiative



Objective

The Social Innovation in Health Initiative aims to unlock the capacity of all health system actors and stakeholders, including communities, frontline health workers, innovators, policy-makers, the private sector and academics, to advance community-engaged social innovation in health care delivery in the global South towards universal health coverage.



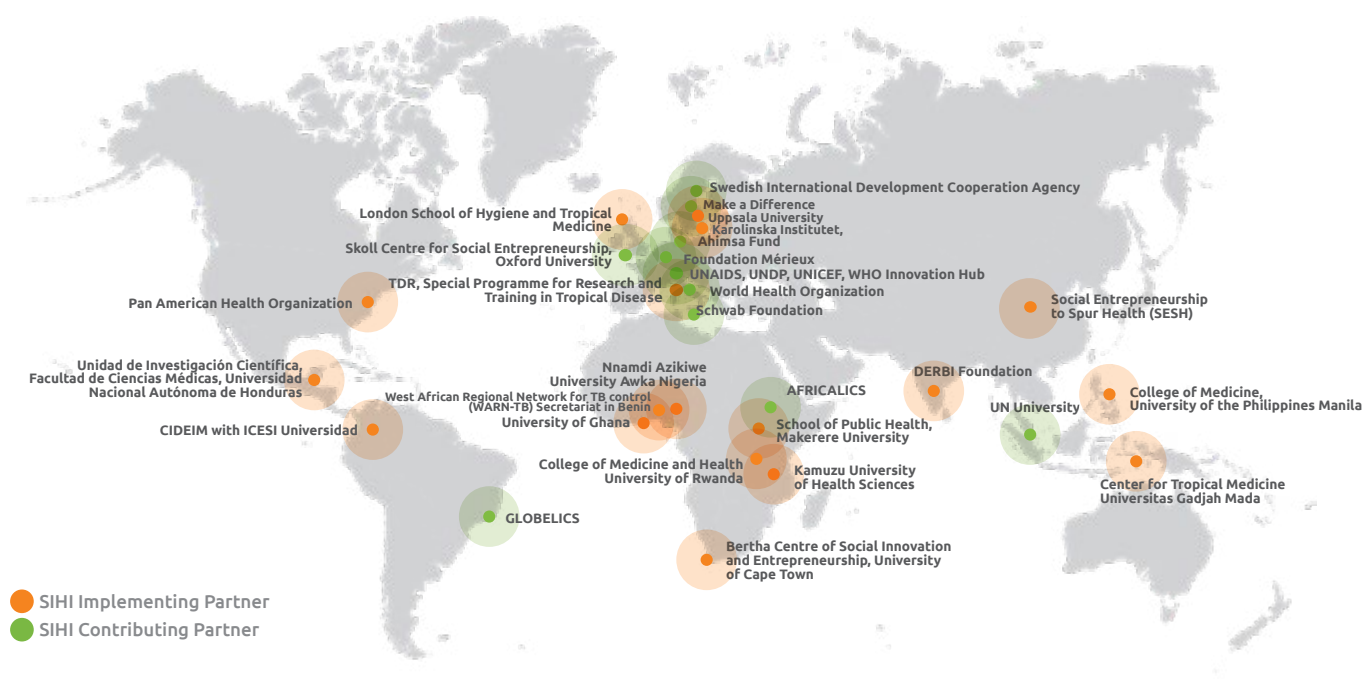
Key activities

- Research to understand what works, what doesn't, and how to sustain, replicate or scale up social innovations.
- Capacity strengthening to ensure that countries in the global South take the lead in promoting and researching social innovation.
- Advocacy to catalyse a global culture change and influence the health agenda at the local, national, regional and global levels.



Countries

See map of SIHI network below.



2022 updates

Research

- SIHI hubs in Ghana and Uganda, TDR, UNDP and UNICEF have collaborated on research to enhance engagement of private sector health providers at primary health care level in Ghana and the United Republic of Tanzania. (See *Spotlight* story below.)
- A special BMJ supplement on social innovation that compiles numerous SIHI research studies from low- and middle-income countries (supported by SIHI China, TDR and others) has been published. (See *Spotlight* below.)
- A community engagement self-monitoring strategy for social innovation has been developed and tested (collaboration between SIHI Philippines and the Pan-African Community Initiative on Education and Health).



Capacity strengthening

- A SIHI fellows programme has been launched with the first [social innovation summer training](#) completed.
- Introduction courses on social innovation have been formally embedded in student curricula in the universities partnering with the SIHI hubs in Colombia, Honduras, Malawi and the Philippines.



Partnerships and institutionalization of social innovation research

- The World Bank has agreed to support the development of a [new centre for innovation and research](#) at the University of Kamuzu in Malawi (catalysed by SIHI Malawi).
- SIHI Nigeria has formed a partnership with financial support from the Federal Ministry of Science, Technology and Innovation. This has included the launch of the [Virtual Café for Youth](#).



Role of the private health sector in providing healthcare for women and children in Ghana and the United Republic of Tanzania

SIHI, TDR, UNDP and UNICEF have collaborated on a study that has highlighted ways in which private sector engagement could be enhanced to improve healthcare delivery to women and children in low- and middle- income countries. This was part of efforts to develop strategies to scale up social innovations such as the [Drug shop integrated management of childhood illness](#) project in Uganda.

Researchers have now concluded a systematic scoping literature review and country assessments in Ghana and the United Republic of Tanzania on private provider engagement in primary healthcare for women and children.

The review explored the role of the private sector in healthcare by looking at both published and grey literature from multiple countries over the last 20 years.

Country assessments in Ghana and the United Republic of Tanzania

These assessments involved a large number of in-depth interviews with key stakeholders. Based on their findings, the researchers made recommendations to the two governments, to regulatory bodies, and to UNICEF and other UN agencies. For example, for Ghana, the researchers recommend that:

- the Government update the private health sector policy with guidelines on the engagement of private health providers, and provide incentive and support for private health providers to establish facilities in rural and remote areas; and
- that regulatory bodies intensify their monitoring activities through regular visits to private health facilities and that they strengthen private health provider associations.

For the United Republic of Tanzania, researchers recommend that:

- the Government review and update private provider accreditation/licensing requirements in collaboration with providers;
- regulatory bodies should establish a “one-stop shop” to streamline registration/regulation; and
- UNICEF/UN agencies should revive support for reproductive and child health and expand coverage for neonatal health care through private sector engagement.

Study findings were disseminated to and discussed with key target audiences, including ministries of health and their implementing partners.

Read the full news article [here](#).

“ This study, the result of collaborative efforts, demonstrates the importance of private provider engagement, especially in helping the most underserved access outpatient care.

Robert Scherpier, Senior Health Specialist, Implementation Research & Delivery Science Unit, UNICEF



Text messages sent by health workers to TB patients in Ghana participating in a study to monitor and ensure treatment adherence

Crowdsourcing youth-led social innovations during the COVID-19 pandemic in the Philippines

This is one of several papers published in the [BMJ Innovations social innovations for health special supplement](#), which highlights some of the most important research work, concepts and practices in the area of social innovations in health. It also showcases the best available case examples where significant improvements in health outcomes have been made.

Abstract

Introduction Young people have played a pivotal role as part of the COVID-19 response, including developing health messages and social innovations. Social innovation in health engages multiple stakeholders in linking social change and health improvement. The study examined the feasibility of youth ideas and innovations to address the impacts of the COVID-19 pandemic using quantitative and qualitative descriptive analyses.

Methods In partnership with WHO, academic institutions, youth organizations and civil society groups, we conducted a crowdsourcing open call among Filipino youth (15–30 years old) using a structured TDR/Social Innovation in Health Initiative process. The open call had three categories: *youth voices to cocreate the post-COVID-19 world* (entries were texts, images, videos and music); *youth-led COVID-19 social innovations*; and *youth-led social innovations not related to COVID-19*. Each submission was evaluated by three independent judges. Finalists were selected in each of the categories alongside four grand winners. All finalists were invited to attend a one day online civic hackathon.

Results We received a total of 113 entries (*youth voices to cocreate the post-COVID world*=76; *youth-led COVID-19 social innovations*=17; and *youth-led social innovations not related to COVID-19*=20). Twelve entries focused on youth mental health during the pandemic. The online hackathon provided the participants with mentorship to further develop their ideas. Finalists were able to produce draft health communication campaigns and improved social innovations.

Conclusion Many Filipino youth created exceptional entries in response to the open call. This suggests the feasibility of including youth voices in strategic planning processes. A global youth social innovation call is recommended.

Read the full publication [here](#) and find other papers in the supplement [here](#).



BMJ Innovations, special supplement on social innovations in health



*Congratulating the winners of SIHI Philippines Hub's Youth Open Call
Credit: SIHI Philippines*

5. Championing open science

TDR is a champion of open science as another critical aspect of maximizing the impact of research. TDR has a policy of open access to all publications resulting from the research it supports. It also encourages the sharing of data that the research is built on. In 2019 TDR joined cOAlition S, made up of research funders and charitable foundations making full and immediate open access to research publications a reality.



Objective

To support new approaches that improve the efficiency and maximize the impact of research for health.



Key activity

- Facilitating equitable open innovation through, for example, platforms to share and analyse research data and research tools, and open access to research literature.

2022 updates

TDR helped develop a new WHO policy and technical guide on *Sharing and reuse of health-related data for research purposes: WHO policy and implementation guidance*.



TDR supported an open call, in partnership with the Global Biodiversity Information Facility (GBIF), for a [special issue in GigaByte Journal](#), which included 11 papers (of which nine had first authors from LMICs) with data on vectors that transmit vector-borne diseases, presenting more than 500 000 occurrence records and 675 000 sampling events from more than 50 countries.



6. Promoting effective engagement in gender and equity

In 2020, TDR launched a new strategy on intersectional gender research as a pathway to a more inclusive, effective response to infectious diseases. TDR recognizes the need to base gender equality and health equity efforts on solid evidence and in strengthened research capacities, drawing on materials that emphasize the need for a comprehensive approach to effectively address gender and equality dimensions in research on infectious diseases of poverty.



Objective

To guide and support TDR's intersectional gender research agenda by strengthening gender-responsive efforts in research on infectious diseases across different TDR activities and programmes.



Key activities

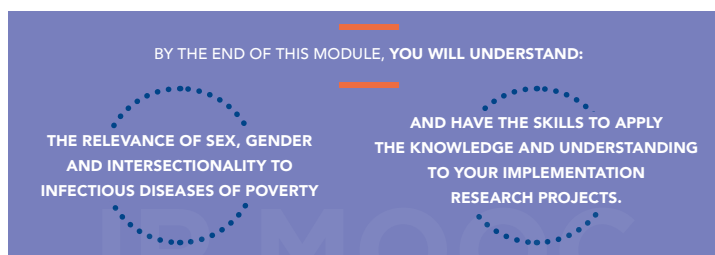
- Supporting an intersectional gender approach across research and training-related activities and programmes.
- Facilitating gender and intersectionality analyses in research for implementation training.
- Advocating for a research agenda aligned with TDR's intersectional gender research strategy and systematically mainstreaming gender and equity dimensions.



Researcher in Nepal collecting data for piloting the intersectional gender research toolkit
Credit: HERD International

2022 updates

In June 2022, TDR in collaboration with the United Nations University, launched a new module of the Massive Open Online Course on [Incorporating an intersectional gender perspective in IR](#). The course includes video lectures illustrating implementation research associated with gender and intersectionality and various chapters that range from conceptual approaches to real life case studies through research uptake. The pilot course for this new module enrolled 450 students of which 284 completed their registration and 112 received a pass mark of 80% to obtain a certificate. A second session for the African Region was held in October 2022, facilitated by the University of Ghana.



A new [IR Toolkit module on Integrating an intersectional gender lens in implementation research](#) guides researchers and health practitioners to develop an IR proposal incorporating an intersectional gender lens.



TDR is applying an intersectional gender lens within the Social Innovation in Health Initiative's efforts and selected three SIHI hubs (in Colombia, the Philippines and Uganda) to conduct research on social innovations in health to understand gendered aspects that interplay within social innovations in health at community level. They will also explore and identify locally tailored strategies and lessons to address gender intersecting inequalities in access to health services.

Two new research studies on IR and gender have been initiated in Bangladesh and Ethiopia.

TDR has strengthened its collaboration with the UNDP/UNFPA/UNICEF/WHO/World Bank Special Programme of Research, Development and Research Training in Human Reproduction (HRP) to develop a virtual repository of resources to support their research capacity strengthening efforts to incorporate sex and gender in health research.



7. Harmonizing investments in research capacity and research management

ESSENCE on Health Research is an initiative to improve the coordination and harmonization of investments in research capacity. ESSENCE members embrace the principles of donor harmonization and country alignment, and according to these principles, they align their activities and procedures with the priorities of the countries they are supporting.

ESSENCE members include some of the top funders of health research around the world. These include health research funding agencies, international health institutions, government research agencies, development agencies, philanthropists and multilateral initiatives.

ESSENCE on Health Research



Objective

To increase the impact and efficiency of funders' support for strengthening health research capacity in low- and middle-income countries.



Key activities

- Convening meetings and workshops involving ESSENCE members and partners and facilitating interagency communications.
- Supporting efforts to strengthen capacity in research management.



Countries

The focus is on low- and middle-income countries, especially those in sub-Saharan Africa.

2022 updates

A new good practice document focused on [equitable research partnerships](#) was finalized in collaboration with the UKCDR and launched at the UNGA77 Science Summit.



A paper on [Funders' perspectives on supporting implementation research in low- and middle-income countries](#) has been published in the journal *Global Health Science and Practice*.

Spotlight

José Frantz: An advocate for research management professionalization in Africa

Research management plays a crucial role in any research programme, yet in many low- and middle-income countries it remains in its infancy.

One initiative which TDR helped to establish, the International Professional Recognition Council (IPRC), is currently helping to professionalize research management in Africa.

Professor José Frantz is a senior research management professional who was recently accredited by the IPRC. She is currently the Deputy Vice-Chancellor for Research and Innovation at the University of the Western Cape (UWC) in South Africa, where, on top of her teaching and research roles, she is also responsible for the institution's strategic vision of research and innovation.



Professor José Frantz

Professor Frantz has a strong drive and determination to improve Africa's capacity for research. In 2016, she was honoured as the National Research Foundation's Champion for Research Capacity Development and Transformation at South African Higher Education Institutions, and in 2017 she was recognized by the South African Association of Health Educationalists (SAAHE) as Distinguished Health Educator of the Year.

Asked why research management is particularly important for countries such as South Africa, she referred to the COVID-19 pandemic. "As was clear during the pandemic, South Africa aligns itself with using research evidence to guide policy" she said, adding "Research administrators need to step in and be able to share accurate data."

Read the full profile [here](#).



Listen to this related episode of the *Global Health Matters* podcast [here](#).

5.

Global Health Matters podcast

Produced by TDR and hosted by Dr Garry Aslanyan, the [Global Health Matters](#) podcast features renowned experts as well as emerging voices with a focus on perspectives from low- and middle-income countries. The objectives of the podcast are as follows:

- discuss and share experiences and views on different aspects of global health research;
- communicate inspiring stories on research and careers in global health;
- engage TDR's partners and stakeholders;
- raise TDR's profile by engaging the global health community; and
- share practical lessons learned to promote South-South learning on issues related to global health and research.

A total of 21 episodes have been produced over the last two years. The podcast has reached listeners in 194 countries and almost 4000 cities, with a growing audience in low- and middle-income countries. Below is a list of episodes produced for Season 2:

The graphic features a large circular logo on the right with the text "GLOBAL HEALTH MATTERS" in blue and "the podcast" in orange script. To the left, a grid of eight small portrait photos shows diverse guests. Above the grid, the text "Listen to the inspiring collection of podcast episodes with diverse guests" is displayed. At the bottom right, there are buttons for "Listen on Apple Podcasts" and "LISTEN ON Spotify", along with a microphone icon.

Episodes (season 2)



Episode 12
[Championing health equity in South Africa](#)



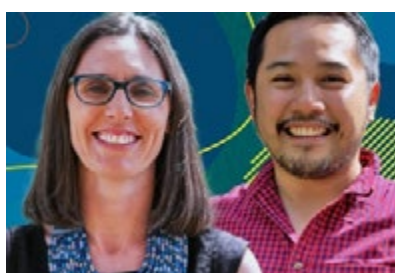
Episode 13
[Paths to a disease-free world: control, eliminate and eradicate](#)



Episode 14
[Test to protect: equal access to diagnostics for all](#)



Episode 15
[The future of global health is through diversity and dignity](#)



Episode 16
[Global health career paths: learn, mentor, practice, repeat](#)



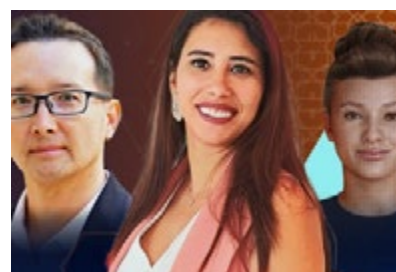
Episode 17
[The health journey of refugees and migrants is global health](#)



Episode 18
[Celebrating 70 years of protecting the world: combating influenza](#)



Episode 19
[Lifting the lid on corruption to cure health systems](#)



Episode 20
[The promise and perils of future health technology](#)



Episode 21
[Science and diplomacy for global health](#)

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The podcast is available on Apple Podcasts, Spotify, Google Podcasts or wherever people may listen to podcasts.



6.

Governance and financial performance

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1. 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.

Joint Coordinating Board

TDR's top governing body is its Joint Coordinating Board (JCB), which includes a mix of representatives from developed and developing countries (see figure below).

The Board comprises 28 members: 12 members selected by the resource contributors to the Programme (including four 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.

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.

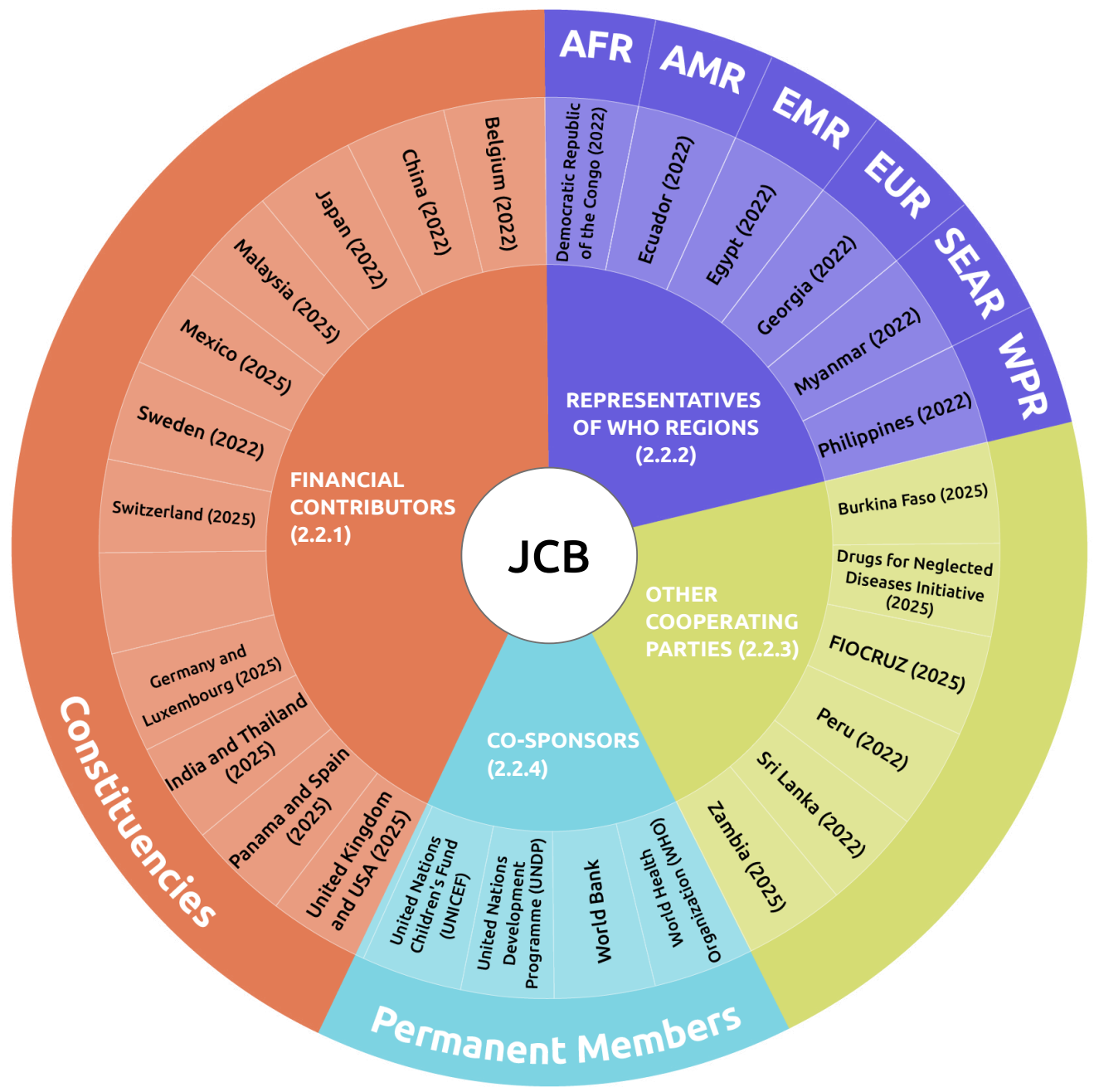
Scientific Working Groups

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

Figure: JCB membership
(as of 1 January 2022)

WHO regions

- AFR: WHO African Region
- AMR: WHO Region of the Americas
- SEAR: WHO South-East Asia Region
- EUR: WHO European Region
- EMR: WHO Eastern Mediterranean Region
- WPR: WHO Western Pacific Region



2022 STAC membership

Professor Charles MGONE, Retired Executive Director of the European & Developing Countries Clinical Trials Partnership (EDCTP), Netherlands and Former Vice-Chancellor, Hubert Kairuki Memorial University, Dar es Salaam, United Republic of Tanzania

Professor Afif BEN SALAH, Full Professor of Community Medicine, College of Medicine and Medical Sciences, Department of Community and Family Medicine, Arabian Gulf University, Manama, Kingdom of Bahrain

Professor Claudia CHAMAS, Researcher, Centre for Technological Development in Health, Oswaldo Cruz Foundation (Fiocruz), Rio de Janeiro, Brazil

Dr Theeraphap CHAREONVIRIYAPHAP, Head, Department of Entomology, Kasetsart University, Bangkok, Thailand

Dr Sara Irène EYANGO, Directeur Scientifique, Centre Pasteur du Cameroun, Laboratoire National de Référence et de Santé Publique | Ministère de la Santé Publique, Yaoundé, Cameroon

Professor Subhash HIRA, Professor of Public Health and Senior Advisor, Public Health Foundation of India, New Delhi, India

Professor Mirkuzie Woldie KERIE, Senior Research Adviser (SRA), MCH Directorate, Federal Ministry of Health, Jimma, Ethiopia

Dr Caroline LYNCH, Regional Adviser, Medicines for Malaria Venture, Chiang Mai, Thailand

Professor Catherine (Sassy) MOLYNEUX, Professor in Global Health, Health Systems Research Ethics Department, KEMRI- Wellcome Trust Research Programme, Kilifi, Kenya

Dr Alwyn MWINGA, Executive Director, Zambart, Lusaka, Zambia

Dr Emelda Aluoch OKIRO, Head, Population Health Unit, KEMRI/Wellcome Trust Collaborative Programme, Nairobi, Kenya

Professor Leanne ROBINSON, Program Director, Health Security, Senior Principal Research Fellow, Group Leader, Vector-Borne Diseases and Tropical Public Health, Burnet Institute, Melbourne, Australia

Professor Stephen Bertel SQUIRE, Professor of Clinical Tropical Medicine; Dean of Clinical Sciences and International Public Health, Liverpool School of Tropical Medicine, Liverpool, United Kingdom

Dr Marta TUFET BAYONA, Head of Policy, Gavi, Geneva, Switzerland

2. Financial performance summary

Implementation of the TDR Strategy 2018–2023 continued in 2022 and achievements have been reported in our annual financial and results reports.

Two programme budget and workplan scenarios were approved by the Joint Coordinating Board for the biennium 2022–2023: a lower scenario at US\$ 40 million and a higher scenario at US\$ 50 million. Implementation of the lower (US\$ 40 million) budget scenario began in January 2022.

Funds utilized of US\$ 19.5 million in the first year of the biennium reflects strong implementation of activities. Funds allocated to core activities were increased by 27%, thanks to significant savings in staff and operations support costs, further improving the value for money of TDR's work. This illustrates the benefit of the two-scenario model in providing flexibility within the limits approved by the governing bodies.

In June 2022, the Joint Coordinating Board approved two budget and workplan scenarios for the biennium 2024–2025, one at US\$ 40 million and the other at US\$ 50 million. TDR continues to strengthen its fundraising efforts among both new and existing donors, focusing on the priorities of the next strategy and aligned with the Sustainable Development Goals.

Figure 1: 2022-2023 budget scenarios, revised planned costs and implementation at 31 December 2022 (US\$ millions)

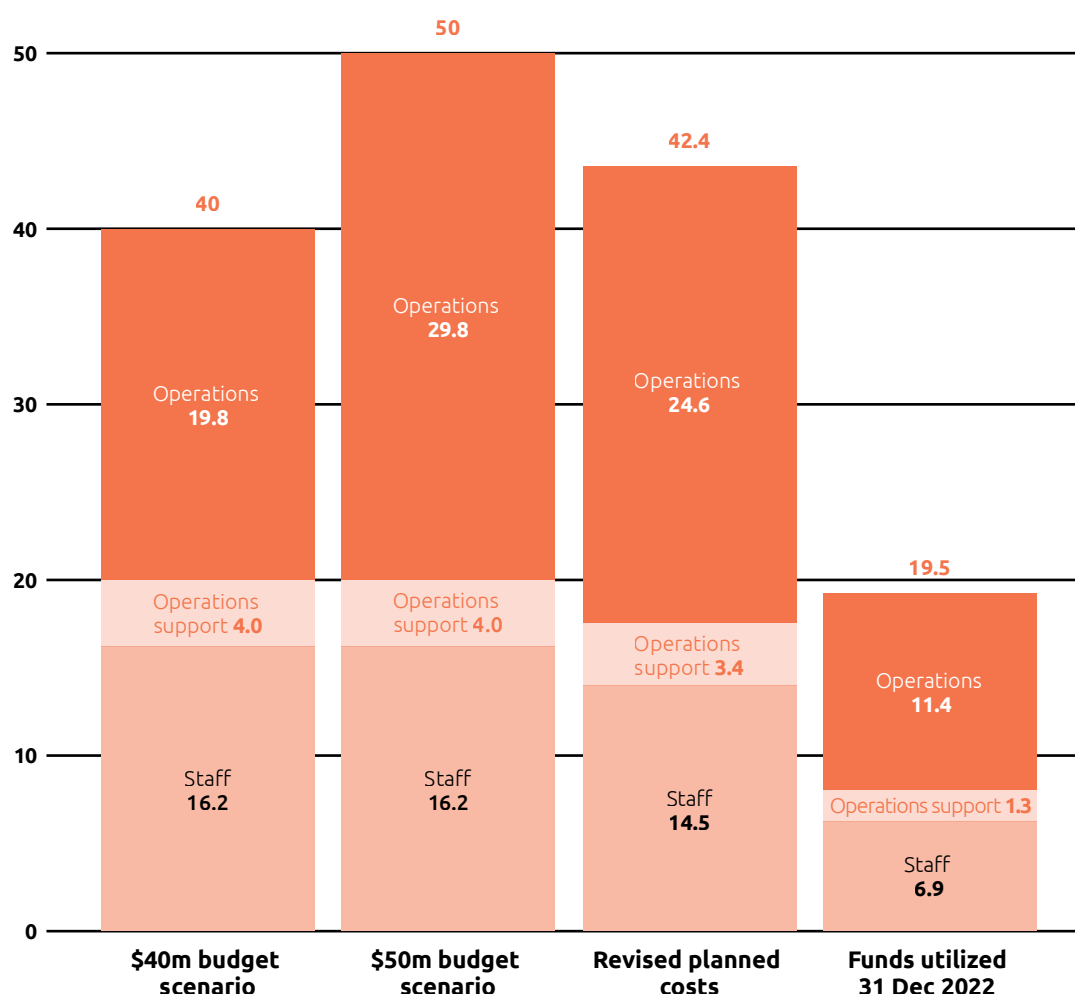


Figure 2: 2024–2025 budget scenarios (US\$ millions)



3. Contributions table

TDR 2022 revenue	
Contributor	
Core contributors	Amount (US\$)
Belgium	681 044
China	55 000
Germany	981 595
India	55 000
Japan	50 000
Luxembourg	1 155 462
Malaysia	25 000
Mexico	10 000
Nigeria (1)	400 000
Norway	306 341
Panama	7 000
Spain (2)	159 744
Sweden	3 220 540
Switzerland	1 925 255
Thailand	44 924
United Kingdom of Great Britain and Northern Ireland	5 370 224
World Health Organization	1 900 000
Subtotal	16 347 129
Contributors providing project-specific funding	Amount (US\$)
Bill & Melinda Gates Foundation	1 600 620
Luxembourg	413 340
Medicines Development for Global Health Limited (MDGH)	47 281
National Institute of Health Research (NIHR), United Kingdom	1 969 580
Robert Koch Institute (RKI)	419 023
Sweden	706 549
Swiss Development Cooperation Agency (SDC/DDC)	11 583
United Nations Development Programme (UNDP)	405 000
United States Agency for International Development (USAID)	987 274
World Health Organization	880 403
Subtotal	7 440 653
Total contributions	23 787 782

1. The contribution from the Government of Nigeria for the period 2015 to 2020 was reported in the 2021 Annual Report but will be reported in the certified financial statement in 2022 due to the timing of its receipt. The contribution for 2023 will also be reported in the 2022 certified financial statement due to the timing of its receipt.
2. The contribution from the Government of Spain for the year 2022 will be reported in the certified financial statement in 2023 due to the timing of its receipt.

Core contributors providing overall Programme support in 2022*



Contributors who provided support to specific projects in 2022*



* Listed in order of level of contribution.

