TDR 2015 ANNUAL REPORT
Partnering for innovation
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I am pleased and honoured to be TDR’s new Coordinator in my role as Assistant Director-General for HIV/AIDS, Tuberculosis, Malaria and Neglected Tropical Diseases at the World Health Organization. I have been familiar with TDR’s work for many years and have seen the positive impact of this Special Programme in my own country, China.

What has struck me as I have worked with TDR, is to see how well it is already set up to contribute to the implementation of the 2030 Sustainable Development Agenda. The Sustainable Development Goals (SDGs) highlight the need for an integrated and multisectoral response to the world’s greatest health challenges, including an acceleration of the global effort to reduce the burden of endemic infectious diseases. Target 3.8 calls for achieving universal health coverage (UHC), including financial risk protection, access to quality essential health care services, and access to safe, effective, quality, and affordable essential medicines and vaccines for all. The implementation of the SDGs will require strengthened collaboration between the health sector and the economic, social and environmental sectors, and a much stronger focus on research, innovation and capacity building.

Co-sponsorship of TDR is more relevant than ever before. There are research projects with WHO, UNICEF and UNDP that build on each of our strengths, and the World Bank provides valuable insights from its global reach.

I would like to reinforce the difference between multidisciplinary work, which is about individual disciplines working side by side, and interdisciplinary work, which brings different disciplines together to work in totally new ways. TDR is very much focused on this second approach.

One of the more recent examples of this comes from the Zika virus outbreak in Latin America. TDR’s newly established Caribbean network demonstrates the value of bringing together many different technical perspectives to share and analyse data. We still have a long way to go with Zika, but what will remain is the improved capacity and systems in those countries to deal with not only this disease but many others transmitted by vectors like the *Aedes aegypti* mosquito.

It is this collaborative and capacity building approach that has allowed TDR to continue to innovate – with TDR co-sponsors and hundreds of strategic and technical partners.
Chairing TDR’s Joint Coordinating Board provides me with lots of opportunities to get to know this organization very well. This past year, I was impressed with how much TDR achieved in the biennium while also initiating new approaches and processes. This requires both determination and flexibility, pushing the limits to see how far you can go.

For example, individual mentoring and support of postgraduate students, which used to be managed in Geneva, is moving to strong universities in their regions – Africa, Asia/Pacific, Latin America and the Middle East. The seven universities selected in 2015 are training the first cohort of students under this scheme. The change provides the opportunity to increase the regional capacity to teach the important field of implementation research, support its development as a field of study, and expand this type of education and training in a systematic process.

In addition, the six regional training centres supported by TDR are forming a network designed to foster learning and collaboration not only within their respective regions, but also among each other so that they can amplify their collective impact.

A massive open online course (or MOOC) on implementation research is also under way. TDR has helped to shape this core research approach over many years. Demonstrations and talks by leading worldwide experts will provide a visual and interactive introduction, which will be available online free of charge to anyone. This does not require travel or time away from a job, and it can be reviewed when you want and with whom you want to sit. I think it’s a dynamic new project, and I’m looking forward to its launch early in 2017.

There’s a reason why this annual report has the theme of partnering for innovation – it’s an apt description for the shared leadership that is driving this regional growth and new approaches.
THANK YOU TO THE TDR CONTRIBUTORS PROVIDING OVERALL SUPPORT *

[List of contributors]
THANK YOU TO THE TDR CONTRIBUTORS PROVIDING SPECIFIC PROJECT SUPPORT

* Listed in order of level of contribution
Partnering to innovate is powerful and challenging, and the results are worth it. In this annual report we celebrate people coming together from different viewpoints, different cities and even different countries – joined in a shared goal of improving the health of the most vulnerable. It is a courageous act, because people are asked to open themselves to new ideas and approaches, ask the hard questions and work together in ways they have never done before.

You can see this in the climate change research in Africa, community investigations on dengue and Chagas disease in Latin America, and visceral leishmaniasis elimination on the Indian sub-continent. In each, there are close collaborations with country researchers and national control programme managers, WHO country and headquarters experts and many other international collaborators. The local needs inform the research required, which then tests solutions in the field within this partnership approach.

Innovations are not just focused on health problems, but also how we tackle them from a systems approach.

For example, we asked African women to explore how to increase their numbers in science, and they enthusiastically jumped in and came up with ideas that are yielding benefits beyond what they, or indeed, we could have imagined.

The new Social Innovation in Health Initiative (SIHI) has selected 24 social innovation projects in 19 countries to be showcased and analysed for their effectiveness and global potential. Social innovation engages communities in grassroots actions that can develop solutions, like setting up primary healthcare posts in rural areas in Rwanda run by nurses, or teaching teachers in Malawi how to recognize symptoms of malaria in their students. We’re supporting research to identify what works in order to enhance healthcare delivery in low- and middle-income countries.

It’s been a great year of discoveries, but this is just the beginning. You’ll see why when you continue reading.
2015 KEY ACHIEVEMENTS:
INCREASING RESEARCH CAPACITY

SORT IT Structured Operational/Implementation Research and Training Initiative expands

The popular SORT IT programme that helps country control officers better analyze their national data, identify bottlenecks and research to guide improvements grew in scope and content in 2015. Over 100 projects were started in over 25 countries (all 6 WHO regions). In addition to completing four standard 10-month course programmes, two additional one-day courses were held. The number of trained facilitators who can lead these courses is also growing, and a new workshop to help participants develop issue briefs for policy was piloted for the Eastern Europe SORT IT programme. The SORT IT partnership produced more than 70 manuscripts for submission to peer-reviewed journals in 2015, with 40 being published.

Increased TDR regional support

The global network of six Regional Training Centres (RTCs) supported by TDR to conduct and disseminate training courses now includes all six WHO regions. The last one was selected in 2015 for the Eastern Mediterranean Region in Tunis, Tunisia. The RTC network fosters learning and collaboration not only within each region but also among the six centres. In addition, each WHO Regional Office worked with TDR to run a small grants scheme on research identified as priorities in that region.

Plans to expand and enhance evidence-to-policy support in Africa

Members of the African regional network of EVIPNet have pledged to expand both the number of countries and the types of training needs. Representatives from eight countries met in Addis Ababa, Ethiopia in 2015 to build on their 10 years of experience by sharing lessons learnt and developing future joint plans.

Regionalized and customized training expands

TDR’s postgraduate training scheme was reoriented to bring research capacity strengthening closer to the disease-endemic regions and maximize opportunities for institutional and individual research capacity strengthening. Seven universities in low- and middle-income countries now provide training relevant to implementation research at Masters of Science (and in some cases PhD) level in malaria, TB and neglected tropical diseases to improve health in those regions. See more on this in the feature on the following page. In addition, short-term, customized training was provided to 43 researchers in low- and middle-income countries. This was the third round of the short-term training grant (IMPACT) scheme to strengthen capacity in implementation research.
If Abdullah Awash and Aref al-Ahmadi had been late for their first class, they would have had a good excuse. Their country, Yemen, is at war with airports closed and visas to neighbouring Saudi Arabia hard to get. So Awash and al-Ahmadi travelled to Mokha on the Red Sea to board a ship to take up their new graduate scholarship for public health and infectious diseases at the American University of Beirut (AUB).

Just as they cleared the first checkpoint, however, they heard an airplane followed by the shriek of a missile. Seconds later, warplanes bombed the port. “Everything happened suddenly,” Awash recalled. “It was very dangerous.”

But for these and other postgraduate students, barriers to education are nothing new. Following a 30-hour boat trip to Djibouti and then by plane to Beirut, they made it to campus on time. “Our main goal was to arrive at AUB,” said Awash. “That's why we resisted all challenges, all obstacles.”

Aref and al-Ahmadi were among the first to enroll in the new TDR-supported post-graduate scholarship scheme aimed at improving implementation research on infectious diseases of poverty. By involving seven universities across three continents—three in Africa, two in Asia, one in Latin America and one in the Middle East—the initiative also seeks to increase capacity for providing such curricula. The AUB in Lebanon is the first to adopt the programme.

Over the next four years, TDR is hoping to increase the number of scientists working on malaria, tuberculosis, and 17 neglected tropical diseases. “As these students walk through the gates of AUB, they are the first of a group coming from low- and middle-income countries in a region stretching from Morocco to Afghanistan who will be trained
over the next four years,” said Dermot Maher, TDR’s coordinator for research capacity strengthening and knowledge management.

For the AUB students, who come from Yemen, Sudan, Afghanistan, Iran, Egypt and Syria, what they all share are challenges. The barriers to wiping out diseases like malaria and tuberculosis are often the same as the ones that Aref and al-Ahmadi faced on their journey, notably war, poverty, and the lack of mobility. Similarly, there are barriers when dealing with education and health.

**Facing challenges of war, poverty and education**

In Yemen, one of the world’s poorest countries, lack of infrastructure is a major obstacle to healthcare. When Awash was only four, his big brother died from malaria during the lengthy journey to the hospital on poor roads. “Personally, two from my family have died by malaria,” said Awash, who is now a vector control specialist and an entomologist with Yemen’s National Malaria Control Program. “So I have a background fighting this disease.”

In Afghanistan, villagers often have to trek over high mountain passes to reach health clinics and schools. But for Saha Naseri, a Kabul University public health graduate, the geographic barriers were only the beginning. Under the Taliban, education for girls was forbidden. So Naseri learned the basics in clandestine home classes. She attended school for the first time at age eight following the 2001 US-led invasion. “I couldn’t read,” she recalled. “That was tough for me.”

**Research to break down barriers**

Another more intangible set of barriers are ingrained beliefs hindering people from adopting treatments even when available. In Afghanistan, many believe that polio and other vaccines are part of a stealth campaign to sterilize children. In Egypt, where improperly-administered bilharzia vaccinations caused widespread hepatitis C, it is often healthcare workers themselves who need to be educated. In Yemen, policymakers tend to focus more on dispensing medication for malaria and dengue fever than preventing outbreaks. “We need to change our culture, especially the decision makers,” said Awash.

A main programme focus will be implementation research, exploring the barriers between effective healthcare interventions and the people they are designed to reach. “If you want to solve the problems, you have to go to the roots,” explained Norhan Bader, a graduate of the Kasr al-Ainy School of Medicine at Cairo University. “It all starts from understanding the real constraint or the real barrier.” Sometimes it might be religious, or cultural, but often it is also gender-related, added Bader.

To identify root causes, it is not only crucial for students to come from the regions where tropical diseases thrive, but also to study in them. “Public health is, in a sense, a social science,” says Jocelyn DeJong, Associate Dean of AUB’s Faculty of Health Sciences and a professor in its Department of Epidemiology and Population Health. “At AUB we try to teach students in a way that’s attuned to the region.”

The AUB scholarship students can pursue either a Masters of Science in Epidemiology programme or a Masters of Public Health. A key selection requirement is the commitment to return home on graduation. For Sudan’s Yusra Mohammed, this means going back to a country where malaria is omnipresent. She dreams of being able to use research combined with social interventions such as theatre or documentaries, to reduce the number of people dying of malaria. “I was looking for this programme,” she maintained. “I think this is a major transformation in my life. I have bigger dreams now.”
NEW POSTGRADUATE TRAINING SUPPORT BEGUN IN 2015

TDR supports seven universities from low- and middle-income countries to provide PhD and Masters degrees focused on implementation research in malaria, TB and neglected tropical diseases to improve health in those regions. There are three universities in Africa, two in Asia, and one each in Latin America and the Middle Eastern region. Each university serves students from their region. This support scheme began in 2015 to do the following:

- Increase the numbers of scientists in low- and middle-income countries (LMICs) trained in implementation research on infectious diseases of poverty
- Support the development of implementation research as a field of study
- Increase the capacity of universities in LMICs to provide this curriculum, manage training grant schemes and mentor students
- Expand the reach of this type of education and training in a systematic process.

THE UNIVERSITIES

James P Grant School of Public Health, BRAC University, Bangladesh

Universidad de Antioquia, National School of Public Health, Colombia

University of Ghana, School of Public Health, Ghana

Faculty of Medicine, Universitas Gadjah Mada, Yogyakarta, Indonesia

American University of Beirut, Faculty of Health Sciences, Lebanon

University of the Witwatersrand, School of Public Health, South Africa

University of Zambia, Department of Public Health, Zambia
TDR is supporting pilot schemes to enhance career opportunities for women scientists in infectious diseases. Globally, recent data from UNESCO indicates that only 28% of researchers employed in research and development (R&D) are women. Major gender disparities between women and men research scientists are also evident in places of work and in their levels of responsibility. Women scientists primarily work in academic and government institutions, while their male counterparts are engaged more in the private sector, where they enjoy better pay and opportunities.

In addition, women scientists are often concentrated in the lower echelons of responsibility and decision-making with limited leadership opportunities.

In the area of infectious diseases of poverty, the dearth of women scientists often means a lack of diverse perspectives essential to addressing gender dimensions and the burden of infectious diseases, which often disproportionately affect women. Moreover, with few women occupying decision-making positions in academic and research institutions, their scientific role in prioritizing research agendas is severely circumscribed. This leads potentially to adverse implications for addressing and eliminating infectious diseases.

**Improving the careers of women scientists in Africa**

Academic and research institutions in nine countries in Sub-Saharan Africa (Cameroon, Congo, Ethiopia, Guinea, Kenya, Malawi, Mali, Nigeria, Uganda) received TDR funding in 2015 to implement a variety of concepts and strategies aimed at addressing barriers that early-career women scientists face. Activities include mentoring, manuscript and proposal development, research methodology and ethics skills building. It also included the development of professional networks at various levels, notably at the national level in Cameroon and Malawi, across institutions in Mali and inter-regionally in Central Africa.
CAREER DEVELOPMENT FOR WOMEN IN SCIENCE IN AFRICA PROJECTS

CAMEROON — University of Yaoundé
Higher Institute for Growth in Health Research for Women Researchers (HIGHER Women) established a national network, a structured mentor/protégé program, and provided grant writing and proposal development skills to early-career women scientists in Cameroon.

CONGO — Fondation Congolaise pour la Recherche Médicale, Université Marien Ngouabi, Brazzaville
‘Making Health Research A Passion for Women’ project developed a platform for exchange and support and conducted gender analysis through an inter-regional network—Central Africa Network on Tuberculosis, HIV/AIDS and Malaria (CANTAM).

ETHIOPIA — Addis Ababa University
The project provided support to the Society for Ethiopian Women in Science and Technology (SEWIST) through a capacity-building workshop and mentorship.

GUINEA — Service de Pneumophtisiologie, Hôpital National Ignace Deen, Conakry
Guinea’s Project DARE strengthened the capacity of 12 women scientists in research protocol development and research methodology and ethics, and facilitated the development of a peer-to-peer mentoring network.

KENYA — Center for Global Health Research, Kenya Medical Research Institute, Kisumu
KEMRI led a capacity-building workshop and provided mentorship to 20 female final-year biomedical science students from five public universities in western Kenya.

MALI — National Malaria Control Programme (PNLP) and Université du Mali
Mali’s National Malaria Control Programme (PNLP) established an inter-institutional network (RIARF) comprising 16 health research institutions in Mali to support women scientists to advance their careers. A capacity-building programme to support women scientists was developed.

NIGERIA — Federal University Lokoja
The project led a series of workshops on proposal development, scientific writing and mentorship courses. The team also facilitated structured mentorship for 26 women scientists drawn from seven universities in four regional settings in Nigeria.

UGANDA — Makerere University
Women Scientists’ Career Development Programme (WoSCaDeP): A career development programme led a capacity building workshop and provided mentoring and grant writing and proposal development skills to women scientists at Makerere University College of Health Sciences.
One of the grantees from TDR’s women in science initiative has been able to leverage her small project in Ethiopia into something much larger. This is one of several profiles of the nine women leading these investigations.

On her morning walks to school in Harar, an ancient, hilltop city in the rugged eastern region of Ethiopia, Aster Tsegaye frequently stopped to consider the victims of leprosy begging by the roadside, flies swarming the open wounds on their hands and feet.

“I was so sympathetic to those people,” she said, recalling the moment she first started down the path to becoming a doctor, more than 40 years ago. “I was in grade 4. My Amharic teacher asked us what we wanted to be—I said I should be a nurse so I can treat these people.”

Tsegaye had always understood, she said, that “males are called doctors and females are called nurses.” When her teacher explained that women could be doctors, too, Tsegaye was taken aback. “I had never seen one before,” she said. “All the doctors I knew were men. And my teacher said to me: ‘If you want to be a clinician, why don’t you become a doctor?’”

Thus began her journey—from the far east of the country to the capital, 500 kilometers away; from the classroom to the laboratory to a series of leadership positions in a field where female professionals are scarce. “Globally, there are very few women scientists who are advancing to the highest levels,” she says, and Ethiopia is no exception. “In primary school, it isn’t a problem—it is half and half. But as you go higher, you find fewer and fewer women. The pipeline is leaking, and it leaks most at the top.”
Establishing a foundation to help women

Several years ago, Tsegaye, now an associate professor of immunology at Medical Laboratory School in the College of Health Sciences at Addis Ababa University and a Fellow of the Ethiopian Academy of Sciences, decided to do something to stem that leak. With the initiation and support from the Ministry of Science and Technology (MOST), she helped found the Society of Ethiopian Women in Science and Technology, or SEWiST.

A veteran scientist, Tsegaye has more than 25 years of experience in clinical laboratory diagnostic services, and nearly 40 publications to her name, among them two judged the “best scientific paper of the year” — one by the Ethiopian Medical Association and one by her college.

Through SEWiST, Tsegaye has been able to use her experience to help early-career female scientists make their way in a male-dominated world. In 2013, she was tapped to serve as the society’s vice president, and began to search for new sources of support. "And that’s when I came across the TDR call for letters of interest from women scientists on ideas for improving career development for women research scientists working in infectious diseases," she says. "I decided right away that I had to apply."

Training for women that leads to something bigger

With some US$ 10 000 in TDR support, Tsegaye organized a five-day workshop designed to encourage female researchers in infectious diseases through training, mentoring, role modeling and networking. In all, 31 women scientists from five academic institutions took part in the workshop. “The training covered things as simple as establishing the sample size and drafting a grant proposal to striking a balance between work and family life,” says Tsegaye, herself a mother of three, who served as a role model to the early-career participants.

"We are in a society where nobody trusts that women can do it," she says. "It’s so challenging here. There’s the family burden, the social burden, and of course one’s career. Maybe it’s the way I was raised in the eastern part of Ethiopia," where she says women are able to speak up for themselves. "When I face a challenge, I always find a way. I’m the kind of person who never gives up."

Shortly after organizing the TDR-supported workshop, Tsegaye was encouraged by the director general of the Ministry of Science and Technology to submit a proposal for another, far larger grant from the Ministry itself — US$ 220 000 in support of Ethiopia’s female scientists, with one key requirement: that the project’s output serve to strengthen the country’s scientific infrastructure.

To Tsegaye, who had logged countless hours teaching and conducting laboratory research at Ethiopia’s largest referral hospital, the shortage of quality control materials in labs around the country was of paramount importance. Most clinical decisions are based
on laboratory results, yet due to the cost, the difficulty of transporting perishable products across the country, and the short half-life of whole blood, most medical laboratories in Ethiopia find it difficult to continuously run quality control materials. “Without a strong laboratory with good quality control, you cannot support diagnosis and monitoring of infectious diseases,” Tsegaye explains. “So this project will investigate the use of alternative quality control methods, such as Retained Patient blood for hematology and pooled human sera and Bovine sera for clinical chemistry tests.” But the first challenge, she says, “is to establish our own reference interval,” the clinical laboratory parameters for a physiologic measurement in healthy persons. “To find those healthy Ethiopians, we will collect 14 000 biological samples, and screen them for viral infections, intestinal and hemoparasites,” says Tsegaye. Since Ethiopia’s population is heterogeneous, collection will be carried out by regional and university laboratories around the country under the coordination of the Ethiopian Medical Laboratory Association (EMLA). Results of the study will dictate the type of quality control material and reference interval used in all health facilities across Ethiopia—from Addis Ababa to far away Harar, where years ago a little girl named Aster dared to dream that she might one day be a doctor.

Dr Workenesh Ayele, a virologist with Ethiopia’s National Influenza Laboratory who co-led the TDR-supported workshop for women, recalls how quickly her longtime friend and colleague made her mark on her home institution. “Right away, she captured the attention of her new colleagues by her positive outlook and characteristic way of throwing herself unreservedly into her work, with enthusiasm and total dedication,” she says. “Dr Aster is an outstanding and exemplary teacher and a good role model who pushes her students to aspire to greater heights while lending them every possible support within her means.”
2015 KEY ACHIEVEMENTS: RESEARCH

Improving dengue and Chagas disease control in Latin America

A special issue (Vol 109, No 2, February 2015) of the Transactions of the Royal Society of Tropical Medicine and Hygiene provided the findings from a five-year study conducted in Bolivia, Brazil, Colombia, Ecuador, Guatemala, Mexico and Uruguay. An ecohealth approach brought together communities, researchers and local health authorities to identify and test environmental approaches to controlling the vectors that transmit these diseases. The involvement of policy-makers and practitioners helped support the current scaling up of the interventions at city levels.

Training materials for the use of genetically modified mosquitoes

A manual based on a series of biosafety courses on genetically modified mosquitoes held in Africa, Asia and Latin America was published in 2015. Biosafety for human health and the environment in the context of the potential use of genetically modified mosquitoes was developed to create a pool of regional scientists well trained in the assessment and management of biosafety related to the deployment of genetically modified vectors for the control of vector-borne diseases such as malaria and dengue.

Data sharing to optimise research investments and improve the evidence-base

‘Data is power’ was the sentiment expressed at a 2015 workshop in South Africa to explore data sharing in the African context, with many of the delegates drawn from within the TDR network. A new platform for sharing data on tuberculosis (TB) clinical drug trials was established in 2015, and another one for schistosomiasis is being planned. Having these data curated, validated, and easily accessible under one platform provides a resource for researchers to improve their knowledge of what makes treatments work or fail, and allows the detection of patterns not otherwise apparent in individual datasets. The TB-Platform for Aggregation of Clinical TB Studies (TB-PACTS) will support the development of new drugs and drug regimens, and help inform decisions for research and policy, which will ultimately benefit TB patients. Access to data is granted via submission to a Data Access Committee.
Elimination of visceral leishmaniasis

The elimination target of one visceral leishmaniasis (VL) case for every 10,000 people in the countries of Bangladesh, India and Nepal is close to being achieved. Close collaboration since 2005 between a range of stakeholders (including the countries’ researchers and control programmes, WHO, Drugs for Neglected Diseases initiative, McGill University and TDR) has helped identify issues, conduct the research necessary and implement the solutions. The countries are now looking at how elimination can be maintained—what interventions are sustainable and how can future resurgences be prevented using the least expensive and most feasible methods? During 2015 several studies were completed: active case detection in a combined approach covering several diseases; controlling the sandfly with insecticide-impregnated bednets; understanding treatment and case reporting delays; and a cluster randomized trial on various vector control interventions that showed that durable wall lining had the highest and longest impact on VL vector densities.

Supporting dengue outbreak preparedness at the country level

Dengue affects urban populations, often causing massive hospital overflows during the rainy seasons when the virus is transmitted by the *Aedes* mosquito. TDR has been supporting a network of dengue-affected country control programmes and experts to look at how to better prepare to respond to outbreaks, which includes early detection of outbreaks through alarm signals and delivery of adapted responses. Studies identified effective indicators for dengue outbreaks in Brazil, Mexico, Dominican Republic, Malaysia and Viet Nam, and a dengue risk framework was proposed for further testing. Preliminary cost-effectiveness modelling shows the potential break point when early warning and response are or are not cost-effective.

Plans to expand and enhance evidence-to-policy support in Africa

Members of the African regional network of EVIPNet met in 2015 and pledged to expand both the number of countries and the types of training needs. Representatives from eight countries met in Addis Ababa, Ethiopia to build on their 10 years of experience by sharing lessons learnt and developing future joint plans.
The Social Innovation in Health Initiative

A major conference on this topic was sponsored by TDR in 2015. Social innovation is one way that engages communities in grassroots actions that can develop solutions like setting up primary health posts in rural areas in Rwanda run by nurses, or teaching teachers in Malawi how to recognize symptoms of malaria in their students. TDR is supporting research to identify what works and what doesn’t in this growing field. An extensive website has been set up that showcases 24 different case studies conducted in 2015 in 19 countries: http://socialinnovationinhealth.org/

Reducing vulnerabilities to climate change in Africa

A new community of practice platform is online and supporting extensive research across Africa. Five projects are investigating how to reduce health vulnerabilities and increase resilience against vector-borne disease risks under climate change conditions in Africa.

They cover malaria, schistosomiasis and human African trypanosomiasis. VBD-environment.org was set up to share climate and health documents, videos, posters and presentations and completed project papers. In addition, web-based training materials and tools were developed for accessing and analysing relevant climate and environmental data. The data will be analysed and reported at the end of 2016. See the profile on the next page.
An innovative research approach is under way in Tanzania that may help communities adapt to the devastating effects of climate change. Unexpected weather patterns, such as increasing temperatures, late rainfall onset and droughts are affecting livelihoods, food security and health.

According to WHO estimates, climate change is already causing tens of thousands of deaths every year – from shifting patterns of disease, extreme weather events, such as heat waves and floods, and the degradation of air quality, food and water supplies, and sanitation.

One of the country’s most vulnerable populations to climate change is the Maasai pastoralists living near the border of Tanzania and Kenya. TDR is working with the International Development Research Centre of Canada to coordinate research that brings together the pastoralists with international and national scientists to identify sustainable solutions.

The Maasai pastoralists in northern Tanzania are particularly vulnerable to the combined effects of climate change and zoonotic diseases (diseases that can be passed from animals to humans) because they live close to large wildlife populations that can act as reservoirs of infection, and compete for access to water and food for their cattle.

Cattle are the lifeblood of the Maasai tribe. Their milk is a critical source of income and nutrition. However, persistent droughts have reduced pasture growth in recent years, leaving the fields dry and dusty. As a result, men are taking their herds further and further away to get good pasture.

The Maasai are migrating to woodlands where large wildlife live and are exposing their cattle to human African Trypanosomiasis or sleeping sickness, which
has been dormant for years. Sleeping sickness can dry up the cattle’s milk permanently, and impact the community’s health.

Human African trypanosomiasis (sleeping sickness) threatens millions of people in 36 sub-Saharan Africa countries where there are tsetse flies that transmit the disease. Like the Maasai, the people most exposed to these flies and therefore the disease, live in remote rural areas and depend on agriculture, fishing, animal husbandry or hunting.

Beyond sleeping sickness, rabies, bacterial infections and diseases carried by ticks are also impacting the Maasai. Yet, these zoonotic diseases do not get much attention. Merging the sciences of the flies, parasites, the environment, water and climate, TDR is working with the community to research and develop solutions.

The study is working to identify the safest areas for Maasai to take their cattle. Data collected shows that up to 29% of the flies carry the parasite causing sleeping sickness, but this varies by season and location. However, blood samples from cattle that graze in these areas will show how this translates into infection rates.

The Maasai have always known they need to move their cattle away from grazing areas for a period of time so that the grasses can recover. However, more land is being taken over by farms, and expanding populations and wildlife are increasing the competition for grazing areas. As a result, pastoralists have seen a large number of their cattle die, and their incomes reduced.

The community is a key link in both the research and the solutions. All data are presented to community groups, and potential adaptations are discussed and developed together. The goal is targeted and sustainable solutions that can be integrated into daily life long after the research is completed.

Results from the Tanzania study and four others that look at additional diseases impacted by climate change, like malaria, will be finalized at the end of 2016. By working with communities directly impacted by climate change, the studies will offer a new model of approaching the complicated issue that touches on land use, water, animal and human health.
WORK IN 2016 AND BEYOND: INCREASING RESEARCH CAPACITY

A major expansion of implementation research tools and support

The Implementation Research (IR) toolkit published by TDR in 2014 has been extensively tested, and an updated version will be published at the end of 2016. A basic course on IR developed in conjunction with the Regional Training Centre in Ghana, a training module on the ethics of IR, and guidance on reporting IR in collaboration with two WHO departments (Knowledge, Ethics and Research; and HIV) and the Alliance for Health Policy and Systems Research are all being released in 2016. A massive open online course (MOOC) on IR is also under development and will be launched in early 2017. TDR is promoting IR and OR in countries receiving Global Fund grants, building on a 2015 consultation which was informed by a situation analysis.

Increased capacity for improved clinical trial management

Nineteen organizations are now working with TDR to train and mentor scientists in low- and middle-income countries to learn how to conduct and manage clinical trials. TDR has joined in partnership with the European & Developing Countries Clinical Trials Partnership (EDCTP) to harmonize and expand efforts on the long-running Career Development Fellowship programme. In addition, a draft Global Core Competency Framework for clinical research is being validated and piloted for its usefulness and applicability in low- and middle-income countries.

Promotion of evidence-informed policy

The WHO evidence informed policy network (EVIPNet) has been supported in numerous ways by TDR since its inception in 2005. The results of lessons learnt and further needs of the 11 African region countries is being published in 2016, with evaluation of the impact of the work being considered.

New training course on gender-based analysis

This course is focused on increasing capacity among researchers in vector-borne diseases. The School of Public at the University of Ghana, one of the TDR supported Regional Training Centres, was selected to develop the course. Participants will learn about how sex and society, nature and nurture, chromosomes and environment interact to determine who is well or ill, who is treated or not, and who is exposed or vulnerable to ill health.
Options to WHO for a potential global Health Research and Development Fund

A detailed technical report outlining options for how to set up a global health research and development fund at WHO and the associated costs is being published and discussed throughout 2016. The TDR report follows the request in 2014 by WHO Member States for the WHO Director-General to investigate potential mechanisms and tools to finance health product R&D. TDR was selected as the organization most qualified to carry out the work, and was asked to provide a proposal for how to set up this fund. The options cover diseases that mainly affect low- and middle-income countries with a limited or non-existing market to fund diagnostic and treatment development.

Online platform of courses on vectors and vector-borne diseases under development

Despite vector-borne diseases (VBDs) being at the top of public health concerns in low- and middle-income countries (LMICs), professional education varies greatly and is often not available where needed the most. TDR has completed a mapping of all important courses on vectors and VBDs focused on the needs of LMICs. Stakeholders will review this as they work toward harmonizing courses and developing a web-based platform that lists available courses worldwide.

New surveillance network on insecticide resistance of emerging arborviruses

Work has begun with WHO’s Neglected Tropical Diseases Department to develop a new international surveillance network. The control of insects/arthropod vectors of emerging diseases in poor countries relies mainly on the use of chemical insecticides. However, this almost unique control approach is at risk from resistance among the target vectors. To better understand the challenges, commissioned reviews and
a workshop will bring together scientists from public health and agriculture to develop recommendations for research and implementation priorities and needs and generate an ongoing international network.

A consortium of institutions, led by the Institut de recherche pour le développement (IRD) in Thailand and including more than 20 institutions worldwide, was selected in November 2015.

WORK IN 2016 AND BEYOND:
RESEARCH

Support to countries with epidemic challenges
TDR is helping low- and middle-income countries prepare and respond to epidemic challenges through research management. It is supporting the development of the WHO R&D Blueprint, in particular the development of a curriculum to support investigators to generate clinical evidence during outbreaks of infectious diseases. Plans are also under way to expand and adapt approaches for diseases like dengue, Chikungunya and Zika, particularly in urban settings, where these outbreaks tend to occur. A Caribbean Network set up in 2015 is now sharing data and practices. Improved dengue outbreak detection and response is being tested in a number of dengue endemic countries and can be expanded to include other arboviruses.
Visceral leishmaniasis elimination

With the elimination target of visceral leishmaniasis (VL) in Bangladesh, India and Nepal close to being achieved, work is now needed to sustain this for the long-term. Studies are identifying solutions that are sustainable and cost effective.

Implementation research conducted by national TB programmes

The West Africa Research Network-TB (WARN-TB) that was established by TDR in 2015 is bringing together 16 national tuberculosis (TB) programmes. The group is harmonising practices for TB care and prevention in the region through implementation and operational research projects. Common problems include identifying case TB case findings, how to reduce mortality and treatment default, and improve childhood diagnostic and management. In 2016, 23 pilot projects are under development with the support of North-South multidisciplinary tutor/research teams.

Improved and shared data

Reliable, accessible data are critical to improve health. TDR is supporting this on numerous fronts in ways that protect the confidentiality of the patients and follow informed consent documents. In addition to a platform for clinical trial data on tuberculosis which is now active, more efforts are under way to set up sharing of schistosomiasis and soil transmitted helminths data, and discussions are under way to share data from the SORT IT training. A course in data sharing and analysis and a curriculum on data management are being developed.

Increasing drug safety monitoring capacity

A number of initiatives are under way to increase capacity in the low- and middle-income countries to collect and monitor drug safety data that could be applied across all diseases, including special issues in vulnerable populations, like pregnant women. This includes training of researchers and also looking at how to involve the communities in this work.

Insecticide resistance in malaria vectors

Control of malaria vectors relies heavily on insecticide-treated nets and indoor residual spraying. The success of these control methods is threatened by resistance of the malaria vectors to insecticides. In coordination with WHO’s Global Malaria Programme, TDR is investigating this and the magnitude of residual malaria transmission in different epidemiological settings.
Strengthening community-based management of young children’s fevers

Fever can be a symptom for any of the major childhood killers — malaria, pneumonia or diarrhoea. Community-based diagnosis and treatment is anticipated to reduce the time to diagnosis, treatment and referral (if necessary). Four studies in Nigeria, Malawi, Uganda and Burkina Faso studied community provision of rapid diagnosis and oral treatment for uncomplicated malaria with artemisinin-combination treatment (ACTs) and assessment and treatment of suspected severe malaria with rectal artesunate. The results are being published as a special issue of *The Journal of Infectious Diseases* (Oxford University Press) in 2016. Additional technical and funding support for Burkina Faso, Nigeria and Uganda were provided for translational research in programme implementation.
KEY PUBLICATIONS AND RESOURCES

TDR has a goal of supporting researchers in disease endemic countries to conduct research and lead the writing and publication of the research findings. In order to promote and enhance the translation of research into practice, free access to research publications is key.

In 2015, 186 peer-reviewed publications received TDR support, with the highest percentage ever being published in open or free access. This number has been going up since TDR implemented this requirement for all research support. The proportion published in open or free access was 75%. The total for the 2014-2015 biennium was 413 publications, out of which 82% complied with the concept of free/open access.

FIGURE 1.
TDR-SUPPORTED PUBLICATIONS:
Percentage in open/free access 2015

TDR also builds research capacity by supporting scientists to become first authors of scientific papers on their work. In 2015, the percentage of first authors from institutions in disease endemic countries was 63%.

FIGURE 2.
TDR-SUPPORTED PUBLICATIONS:
Percentage of first authors from institutions in disease endemic countries 2015

RESEARCH PUBLICATIONS

For larger topics that require more detailed documentation or manuals, TDR continues to publish selected reports. In 2015, two documents provided valuable guidance for the research community.

Biosafety for human health and the environment in the context of the potential use of genetically modified mosquitoes (GMMs)

This manual is based on a series of biosafety courses on genetically modified mosquitoes that were held in Africa, Asia and Latin America. These courses were developed to create a pool of regional scientists well trained in the assessment and management of biosafety related to the implementation of genetically modified vectors for the control of vector-borne diseases.
The manual was compiled from the manuscripts of the multidisciplinary experts from the various regions who attended these courses and who work in the field of genetically modified organisms. It does not provide technical guidance on the selection of a specific approach.

Microscopy for the detection, identification and quantification of malaria parasites on stained thick and thin blood films in research settings

This manual was developed to guide a move towards common standards for undertaking and reporting research microscopy for malaria parasite detection, identification and quantification. It contains procedures based on agreed quality assurance standards for research malaria microscopy defined at a consultation of numerous national international and national research and educational organizations. The institutions commit to adhering to these standards in published research studies, with the idea that they will form a solid basis for the wider adoption of standardized reference microscopy protocols for malaria research.

TDR Annual Report 2014
Celebrating 40 years of research

The 2014 report provided a 40-year timeline of achievements since TDR’s inception as part of the anniversary activities held in 2014. The report also provides an overview of the key research results, performance overview, financial summary and contributors in 2014.

TDR results 2014 report: measuring for improvement

This report covers the period from January to December 2014, and is based on the Performance Assessment Framework and its monitoring and evaluating system aligned with TDR’s 2012-2017 strategic plan. The report includes measurement of 23 performance indicators that cover technical expected results, application of core values, and management performance.
TDR 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, who is an Assistant Director-General of WHO. Dr Hiroki Nakatani, who headed the HIV/AIDS, Tuberculosis, Malaria and Neglected Tropical Diseases Cluster until the end of 2015, had that responsibility since TDR was organizationally moved there in 2012 to support closer ties to the control departments. Day-to-day management is provided by the TDR Director. TDR staff members number 33 and come from all regions of the world.

TDR’s top governing body is its Joint Coordinating Board (JCB), which includes a mix of representatives from developed and developing countries (see figure 4).

A Standing Committee composed of representatives from the four co-sponsoring agencies, the Chair and the Vice-Chair of the JCB, the Chair of STAC, one representative from the JCB resource contributors group

**FIGURE 3.** TDR governance
(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 paragraph 2.2.2 or paragraph 2.2.3 of the TDR MOU), provides guidance and oversight on an ongoing basis.

Programmatic and technical review comes from the Scientific and Technical Advisory Committee (STAC), which includes 15 internationally recognized scientists. Members serve in their personal capacities to represent the range of research disciplines.

**FIGURE 4.** JCB membership (as of 1 January 2015)

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**Joint Coordinating Board (JCB)**

The Board comprises 28 members: 12 members selected by the resource contributors to the Programme (including six constituencies of two 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.

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**WHO regions (Regional Offices)**
- AFR: Africa
- AMR: Americas
- EMR: Eastern Mediterranean
- EUR: Europe
- SEAR: South-East Asia
- WPR: Western Pacific
STAC is the committee that peer reviews TDR’s research plans and work.

<table>
<thead>
<tr>
<th>Name</th>
<th>Position and Affiliation</th>
<th>Term of Membership</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr Graeme BILBE</td>
<td>Research and Development Director, Drugs for Neglected Diseases initiative (DNDi), Switzerland</td>
<td>2014-2015</td>
</tr>
<tr>
<td>Professor Moses BOCKARIE</td>
<td>Director, Centre for Neglected Tropical Diseases, Liverpool School of Tropical Medicine, United Kingdom</td>
<td>2014-2015</td>
</tr>
<tr>
<td>Dr Ikram GUIZANI</td>
<td>Head, Programme on Applied Molecular Epidemiology and Experimental Pathology to Infectious Diseases, Institut Pasteur de Tunis, Ministry of Health, Tunisia</td>
<td>2012-2015</td>
</tr>
<tr>
<td>Professor John GYAPONG</td>
<td>Pro-Vice Chancellor for Research Innovation and Development, University of Ghana, Ghana</td>
<td>2014-2015</td>
</tr>
<tr>
<td>Dr Poloko KEBAABETSWE</td>
<td>Director Health Systems Research Unit, BoMEPI - Botswana Medical Education Partnership Initiative, University of Botswana School of Medicine, Botswana</td>
<td>2012-2015</td>
</tr>
<tr>
<td>Dr Florencia LUNA</td>
<td>Director, Bioethics Program of FLACSO, Latin American University of Social Sciences, Argentina</td>
<td>2012-2015</td>
</tr>
<tr>
<td>Professor Lenore MANDERSON</td>
<td>Professor, School of Public Health, Faculty of Health Sciences, University of the Witwatersrand, South Africa</td>
<td>2012-2015</td>
</tr>
<tr>
<td>(Chair) Professor Charles MGONE</td>
<td>Executive Director, European &amp; Developing Countries Clinical Trials Partnership (EDCTP), The Netherlands</td>
<td>2014-2015</td>
</tr>
<tr>
<td>Professor Frank NYONATOR</td>
<td>Gro Harlem Brundtland Senior Leadership Fellow, Harvard School of Public Health, Kresge Room 1007, USA</td>
<td>2014-2015</td>
</tr>
<tr>
<td>Professor Rosanna PEELING</td>
<td>Chair of Diagnostics Research, Department of Clinical Research, ITD, London School of Hygiene &amp; Tropical Medicine, United Kingdom</td>
<td>2014-2015</td>
</tr>
<tr>
<td>Dr Ana RABELLO</td>
<td>Senior Researcher, Fundação Oswaldo Cruz, Centro de Pesquisas René Rachou, Laboratório de Pesquisas Clínicas, Brazil</td>
<td>2014-2015</td>
</tr>
<tr>
<td>Dr Ananda Rajitha (Raj) WICKREMASINGHE</td>
<td>Dean of the Faculty of Medicine &amp; Professor of Public Health, Faculty of Medicine, Sri Lanka</td>
<td>2012-2015</td>
</tr>
<tr>
<td>Professor Xiao-Nong ZHOU</td>
<td>Director, National Institute of Parasitic Diseases; Chinese Center for Disease Control and Prevention, People’s Republic of China</td>
<td>2014-2015</td>
</tr>
</tbody>
</table>
TDR revenue and budget modelling have proven very successful for planning and high levels of implementation. Two budget levels reflecting the range of forecast revenue were set at the start of the 2014/15 biennium. This allowed core activities to begin immediately in January, 2014. In October 2014, planned costs were revised in line with revenue and the higher budget level was initiated (see Figure 5).

**Figure 5.** Financial situation at end 2015 (US$ million)

- **Resources available 2014-15:**
  - Specified funding: 15 M
  - Core funding: 41.2 M
  - Total: 56.2 M

- **Revised planned costs 2014-15:**
  - Specified funding: 13.1 M
  - Core funding: 41.4 M
  - Total: 54.6 M

- **Funds utilized 2014-15:**
  - Specified funding: 10.2 M
  - Core funding: 38.5 M
  - Total: 48.8 M
A new portfolio of projects began in 2014 and required a preparation phase to set up new working models and partnerships. Consequently, 2015 was an extremely active year – implementing 89% of the planned costs, including expenditures and contracts encumbered.

The same 2-tier budget scenario has been developed in 2016-17 based on the success of the model in 2014-15, which were approved by TDR’s Joint Coordinating Board. These scenarios are at the levels of US$ 45 million and US$ 55 million, in line with current revenue forecast (see Figure 6).
TDR uses its Performance Assessment Framework to measure progress in the implementation of its vision and strategic plan. Key performance indicators (see table below) have been developed in consultation with TDR stakeholders. These help assess not only what TDR does (TDR achievements and its contribution to changes in countries) but also how it does it (application of core value and management performance).

Measurements are compiled in the annual TDR results reports: www.who.int/tdr/publications/about-tdr

In 2015, good progress was made on a number of indicators. For the first time, a majority of advisory committee members were women (53%). This reflects a strong TDR focus to increase gender equity in science (the women in science initiative is profiled on page 13).

Also new in 2015, TDR piloted an estimate of the total number of people working on projects as a result of grants and partnerships. The small secretariat of 30 staff was able to engage over 500 people throughout the world, increasing research capacity and creating significant value in low- and middle-income countries.

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>TECHNICAL EXPECTED RESULTS</td>
<td></td>
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</tr>
<tr>
<td><strong>OUTCOME:</strong> Infectious disease knowledge, solutions and implementation strategies translated into policy and practice in disease endemic countries</td>
<td>1. Number and proportion of innovative knowledge, new/improved solutions or implementation strategies successfully applied in developing countries</td>
<td>0</td>
<td>30 ≥ 75%</td>
<td>13 (+3) 63%</td>
<td>Measured annually, cumulative over 6 years</td>
</tr>
<tr>
<td></td>
<td>2. Number of tools and reports that have been used to inform policy and/or practice of global/regional stakeholders or major funding agencies</td>
<td>0</td>
<td>7</td>
<td>4 (+1)</td>
<td>Measured annually, cumulative over 6 years</td>
</tr>
<tr>
<td><strong>MAIN OUTPUT:</strong> New and improved solutions and implementation strategies that respond to health needs of disease endemic countries developed</td>
<td>3. Number and proportion of innovative knowledge, new/improved solutions or implementation strategies developed in response to requests from WHO control programmes and/or diseases endemic countries</td>
<td>0</td>
<td>35 ≥87%</td>
<td>21 (+5)</td>
<td>Measured annually, cumulative over 6 years</td>
</tr>
<tr>
<td></td>
<td>4. Number of peer-reviewed publications supported by TDR and percentage published in open access journals</td>
<td>233 not measured ≥150/year 100%</td>
<td>740 (2012-2015) (+186 in 2015) 75% open access (2015)</td>
<td>Measured annually</td>
<td></td>
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</tr>
<tr>
<td><strong>TECHNICAL EXPECTED RESULTS (CONTINUED)</strong></td>
<td></td>
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<tr>
<td>FEEDER OUTPUTS:</td>
<td>High quality intervention and implementation research evidence produced</td>
<td>5. Number and evidence of new/improved tools, case-management, control or implementation strategies generated through TDR facilitation with systematic quality review by external committees</td>
<td>0</td>
<td>40</td>
<td>21 (+5)</td>
</tr>
<tr>
<td>FEEDER OUTPUTS:</td>
<td>High quality intervention and implementation research evidence produced</td>
<td>6. Proportion of peer-reviewed publications supported by TDR with first author from disease endemic country (DEC) institutions</td>
<td>61%</td>
<td>≥70%</td>
<td>63%</td>
</tr>
<tr>
<td>Enhanced research and knowledge transfer capacity within disease endemic countries</td>
<td>7. Number of DEC institutions and/or networks demonstrating expanded scope of activities and/or increased funding from alternative sources thanks to TDR support</td>
<td>0</td>
<td>5</td>
<td>3 (0)</td>
<td>Measured annually, cumulative over 6 years</td>
</tr>
<tr>
<td></td>
<td>8. Number of TDR grantees/trainees and proportion demonstrating career progression and/or increased scientific productivity</td>
<td>0</td>
<td>≥80%</td>
<td>58/68, 85% 318 new trainees (+178 in 2015)</td>
<td>Measured on cohorts 3-5 years after training ended</td>
</tr>
<tr>
<td>Key stakeholders in disease endemic countries engaged in setting the research agenda and ensuring research reflects their needs</td>
<td>9. Number and evidence of research-related agendas, recommendations and practices agreed by stakeholders at global, regional or country level</td>
<td>0</td>
<td>9</td>
<td>9 (+1)</td>
<td>Measured annually, cumulative over 6 years</td>
</tr>
<tr>
<td></td>
<td>10. Proportion of TDR outputs produced with key DEC stakeholder active involvement</td>
<td>Not measured</td>
<td>100%</td>
<td>100%</td>
<td>Measured annually</td>
</tr>
<tr>
<td><strong>APPLICATION OF CORE VALUES</strong></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>EQUITY (11-15)</td>
<td>Social and economic</td>
<td>11. Proportion of TDR grants/contracts awarded to institutions or individuals in DECs (total count and total dollar amount)</td>
<td>59% DEC</td>
<td>75% DEC</td>
<td>78% DEC (amount) 62% DEC (count)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12. Proportion of experts from DECs on TDR advisory committees</td>
<td>58%</td>
<td>60%</td>
<td>71%</td>
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<tr>
<td><strong>APPLICATION OF CORE VALUES (CONTINUED)</strong></td>
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<tr>
<td><strong>Gender</strong></td>
<td></td>
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<tr>
<td>13. Proportion of women among grantees/contract recipients (total count and total amount)</td>
<td>35% (n) 17% (US$)</td>
<td>50%</td>
<td>39% (% count) 28% (% amount)</td>
<td>Measured annually</td>
<td></td>
</tr>
<tr>
<td>14. Proportion of women on TDR advisory committees</td>
<td>32%</td>
<td>50%</td>
<td>53%</td>
<td>Measured annually</td>
<td></td>
</tr>
<tr>
<td>15. Proportion of women as first author of peer-reviewed publications supported by TDR (within a calendar year)</td>
<td>Not measured</td>
<td>50%</td>
<td>39%</td>
<td>Measured annually</td>
<td></td>
</tr>
<tr>
<td>16. Resources leveraged as direct contributions (co-funding, services or in-kind) to TDR projects (examples)</td>
<td>Not measured</td>
<td>tbd</td>
<td>US$ 1:1 (US$ TDR: US$ partners) People 1:15 (TDR: in the field)</td>
<td>Measured annually</td>
<td></td>
</tr>
<tr>
<td><strong>Effective partnerships</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>17. Number of effective public health tools and strategies developed which have been in use for at least two years</td>
<td>51</td>
<td>67</td>
<td>75</td>
<td>Measured annually; two years after adoption</td>
<td></td>
</tr>
<tr>
<td><strong>Sustainability of outcomes</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>18. Proportion of project final reports found satisfactory by peer-review committees</td>
<td>Not measured</td>
<td>&gt;80%</td>
<td>100%</td>
<td>Measured annually</td>
<td></td>
</tr>
<tr>
<td><strong>Quality of work</strong></td>
<td></td>
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<tr>
<td><strong>MANAGEMENT PERFORMANCE</strong></td>
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<tr>
<td><strong>Effective resource mobilization</strong></td>
<td></td>
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<tr>
<td>19. Percentage of approved biennial budget successfully funded</td>
<td>78%</td>
<td>≥100%</td>
<td>100%</td>
<td>Measured in the second year of each biennium</td>
<td></td>
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<tr>
<td>20. Percentage of income received from multi-year agreements</td>
<td>Not measured</td>
<td>tbd</td>
<td>72%</td>
<td>Measured in the second year of each biennium</td>
<td></td>
</tr>
<tr>
<td><strong>Effective management</strong></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>21. Percentage of staff workplans and performance reviews (including personal development plan) completed on time.</td>
<td>Not measured</td>
<td>≥90%</td>
<td>87%</td>
<td>Measured annually</td>
<td></td>
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<tr>
<td>22. Proportion of expected results on track.</td>
<td>60%</td>
<td>≥80%</td>
<td>88%</td>
<td>Measured annually</td>
<td></td>
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<tr>
<td>23. Proportion of significant risk management action plans that are on track.</td>
<td>Not measured</td>
<td>≥80%</td>
<td>94%</td>
<td>Measured annually</td>
<td></td>
</tr>
</tbody>
</table>
## TDR CONTRIBUTORS (TO THE 2014-15 BIENNium)

<table>
<thead>
<tr>
<th>CONTRIBUTOR</th>
<th>Amount (US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Core contributors</strong></td>
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</tr>
<tr>
<td>Belgium</td>
<td>4,076,087</td>
</tr>
<tr>
<td>China</td>
<td>165,000</td>
</tr>
<tr>
<td>Cuba</td>
<td>7,500</td>
</tr>
<tr>
<td>Germany</td>
<td>1,631,105</td>
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<tr>
<td>Ghana</td>
<td>75,000</td>
</tr>
<tr>
<td>India</td>
<td>110,000</td>
</tr>
<tr>
<td>Japan</td>
<td>470,000</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>2,513,319</td>
</tr>
<tr>
<td>Malaysia</td>
<td>50,000</td>
</tr>
<tr>
<td>Mexico</td>
<td>30,000</td>
</tr>
<tr>
<td>Norway</td>
<td>3,377,406</td>
</tr>
<tr>
<td>Panama</td>
<td>14,000</td>
</tr>
<tr>
<td>Portugal</td>
<td>63,532</td>
</tr>
<tr>
<td>Spain</td>
<td>61,958</td>
</tr>
<tr>
<td>Sweden</td>
<td>10,401,755</td>
</tr>
<tr>
<td>Switzerland</td>
<td>3,802,094</td>
</tr>
<tr>
<td>Thailand</td>
<td>92,366</td>
</tr>
<tr>
<td>Turkey</td>
<td>10,000</td>
</tr>
<tr>
<td>United Kingdom of Great Britain and Northern Ireland</td>
<td>7,633,587</td>
</tr>
<tr>
<td>World Bank</td>
<td>2,500,000</td>
</tr>
<tr>
<td>World Health Organization</td>
<td>1,800,000</td>
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<tr>
<td><strong>Sub-total</strong></td>
<td>38,884,709</td>
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<td><strong>Contributors providing specific project funding</strong></td>
<td></td>
</tr>
<tr>
<td>Bill &amp; Melinda Gates Foundation</td>
<td>2,905,385</td>
</tr>
<tr>
<td>European Commission</td>
<td>1,250,137</td>
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<tr>
<td>International Development Research Centre (IDRC), Canada</td>
<td>4,352,301</td>
</tr>
<tr>
<td>United Nations Development Programme (UNDP)</td>
<td>1,407,270</td>
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<td>U.S. Agency for International Development (USAID)</td>
<td>1,215,251</td>
</tr>
<tr>
<td>Others</td>
<td>202,508</td>
</tr>
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<td><strong>Sub-total</strong></td>
<td>11,332,852</td>
</tr>
<tr>
<td><strong>TOTAL CONTRIBUTIONS</strong></td>
<td>50,217,561</td>
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The Special Programme for Research and Training in Tropical Diseases (TDR) is a global programme of scientific collaboration established in 1975. Its focus is research into neglected diseases of the poor, with the goal of improving existing approaches and developing new ways to prevent, diagnose, treat and control these diseases. TDR is sponsored by the following organizations: