TDR SCIENTIFIC AND TECHNICAL ADVISORY COMMITTEE
46th Meeting
Agenda item 5.1

TDR/STAC46/24.9
21 Feb. 2024

TDR Expected Results

Strategic Plans 2024–2025 and Progress 2023

Research for Implementation

Contents

Expected Result: 1.1.7

Title: Maximized utilization of data for public health decision-making

Strategic Work Area: Research for implementation **Workstream:** Research for implementation

ER type:	Continuing	**Funding type:**	UD and DF
Start date:	01/01/2012	**End date:**	31/12/2025
ER status:	On Track	**Comment:**	We made progress in 1) operational research to tackle public health emergencies an emerging infections; 2) building research capacity to tackle TB/MDR-TB and NTDs 3) setting benchmarks for reporting and 4) expanding partnerships

WHO region: Global

Partners: The SORT IT global partnership including Public health programmes in target countries, ministries of health, NGOs and academic institutions.

Diseases: COVID-19;Ebola;Malaria;Neglected Tropical Diseases;Schistosomiasis;Tuberculosis;Not Disease-Specific

Review mechanism: Scientific working group + other ad hoc or collaboration-based review systems as appropriate

ER manager: Rony ZACHARIAH

Team: Abraham Aseffa, Corinne Merle, Mohammed Khogali, Michelle Villasol, Abdul Masoudi, Ekua Johnson Rony Zachariah, Robert Terry, Garry Aslanyan, Maier Mary + relevant RCS staff

Number of people working on projects: 14

FENSA clearance obtained for all Non-State Actors? Yes

Justification for no FENSA clearance: No

TDR partnership criteria

Add value:	Yes	Use resources:	Yes
Align goals:	Yes	Address knowledge gaps:	Yes
Integrate mandates:	Yes	Build strengths:	Yes
Reduce burden:	Yes	Foster networking:	Yes
Increase visibility:	Yes		

TDR partnership criteria indicators

Objectives aligned:	Yes	Aligned
Roles complimentary:	Yes	SORT IT partners and alumni allow use of trained resources for expansion. Training of trainers is integrated.
Coordination transparent:	Yes	Partner calls each month to coordinate activities. Selections criteria and SOPs established
Visibility:	Yes	TDR and partner Websites updated on a quarterly basis . Inclusion of LOGOS on lectures, publications and evidence briefs acknowlede TDR and its partners

Objectives and results chain

Approach to ensure uptake: Research questions identified and endorsed early with programmes and stakeholders at national and international levels, as well as WHO offices where applicable. Early engagement with those expected to use the results facilitates research uptake. We have also integrated a new research module on research communication for decision makers.

Up-take/Use Indicator: Number of new or changed policies guidelines or practice change and/or decisions taking into account.

Gender and geographic equity:	SORT IT focuses on vulnerable and excluded groups and is in line with efforts to achieve UHC, All calls include the statement that TDR is committed to Equality, Diversity and Inclusivity in science. Researchers are encouraged to apply whatever their gender identity, sexual orientation, ethnicity, religious, cultural and social backgrounds, or (dis)ability status.
Publication plan:	Open access publications; policy and issue briefs; documents for WHO control programmes
Up-take/use indicator target date:	31/12/2025

Sustainable Development Goals

Good Health and Well-being;Quality Education;Gender Equality;Clean Water and Sanitation;Reduced Inequality;Life Below Water;Life on Land;Partnerships to achieve the Goal

Concept and approach

Rationale:	Countries and WHO need evidence for informing operational decisions, formulating recommendations/ guidelines and policies. TDR can play a key role in helping to crystallize relevant research questions within programme settings and strengthening country capacity for compilation and analysis/interpretation of available data. This is in line with the SDG 17.18 which is to enhance capacity-building support to countries to increase significantly the availability of high-quality, timely and dis-aggregated data for public informed decision making. Identifying knowledge and information gaps is also important to inform research agendas and move research into action. many countries are data rich but information poor. This paradigm need to change and SORT IT is aimed at making countries and institutions *"Data rich, information rich and Action rich"* The model is geared to promote "local research with local solutions and local ownership"
Design and methodology:	Priority areas will be identified by the countries in collaboration with WHO country offices and relevant stake holders. Countries will play a central role in identifying the implementing staff. The SORT IT approach which combines research implementation with training and global engagement will be used to empower participants on being able to independently conduct research thereafter .
Approach to ensure quality:	TDR has inbuilt milestones and performance targets for implementation, research subjects and participants will be endorsed by those expected to use the results, including publishing as a part of quality control; Standard Operating Procedures where appropriate are customized to national requirements and capacity. All franchised courses will have quality control measures that need to be accounted for. Quality of reporting is monitored through independently commissioned evaluations.

ER Objectives

ERObj-0063 : 3. Strengthen health systems to accelerate efforts towards achieving UHC, SDGs and tackling public health emergencies

ERObj-0007 : 2. Promote and support data sharing for evidence-based decision-making (guidelines/policy/practice and research)

ERObj-0006 : 1. Build sustainable capacity to promote and support the effective use of public health data for evidence-based decision-making

Biennium Budget

Biennium: 2022-2023

Low and Hight Budget Scenario

	Low Budget Scenario	High Budget Scenario
Undesignated funds	USD 250000	USD 600000
Designated funds	USD 400000	USD 600000
Total	USD 650000	USD 1200000

Planned Budget

Undesignated funds	USD 250000
Designated funds	USD 570000
Total	USD 820000

Biennium: 2024-2025

Low and Hight Budget Scenario

	Low Budget Scenario	High Budget Scenario
Undesignated funds	USD 400000	USD 500000
Designated funds	USD 500000	USD 900000
Total	USD 900000	USD 1400000

Planned Budget

Undesignated funds	USD 400000
Designated funds	USD 500000
Total	USD 900000

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ER Biennium Risks

Biennium: 2022-2023

ERRisk - 0229: Loss of quality as we franchise the model to other institutions

Actions To Mitigate Risk: Quality indicators and strict methodology to be implemented by institutions franchising the SORT IT model. Quality indicators and strict methodology to be implemented for institutions wishing to franchise the SORT IT model. All SORT IT courses have to formally register with TDR and report on achievement (or not) of TDR performance targets. SOPs are shared with all institutions that wish to run franchised SORT IT programmes.

Mitigation Status: On Track

Biennium: 2022-2023

ERRisk - 0228: Possibility of "weaning funding for TDR" for SORT IT activities

Actions To Mitigate Risk: Fundraising efforts, including outside usual regular donors

Mitigation Status: On Track

Biennium: 2024-2025

ERRisk - 0292: Possibility of limited or dwindling funds

Actions To Mitigate Risk: Fundraising efforts, including outside usual regular donors

Mitigation Status: Planning phase

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ER Biennium Outputs

Biennium: 2022-2023

EROutp-0279: Number of publications and evidence of change in policies/ practice

Output Indicator: Publications and issue/policy briefs to inform evidence-based policies/ practice

Output Target Date: 31/12/2023

Output Progress Status: On Track

Output Progress Description: Cumulatively since 2009, there has been 857 publications by the SORT IT partnership in 50 journals (impact factor 0.4–19) and in five languages (English, Russian, Spanish, Portuguese and French).

In 2022 and 2023, there were 91 publications including several special issues on Public Health Emergencies, Tackling TB/MDR and research impact. Roughly 68% of all research studies influence policy and practice at national, sub-national and health facility levels.51% of trainees complete new research independently. These highlight the effectiveness of TDR work on influencing policies/practice and building human resource capacity in LMICs

Biennium: 2024-2025

EROutp-0360: Number of publications and evidence of change in policies/ practice

Output Indicator: Publications and issue/policy briefs to inform evidence-based policies/ practice

Output Target Date: 31/12/2025

Output Progress Status:

Output Progress Description:

Biennium: 2022-2023

EROutp-0278: Number of successful trainees and number of data analyses conducted and reported

Output Indicator: Build capacity for the effective collection and analysis and use of data

Output Target Date: 31/12/2023

Output Progress Status: On Track

Output Progress Description: Cumulatively since 2009, there has been close to 1000 operational research projects with data and close to 2000 trained in five languages (English, Russian, Spanish, Portuguese and French). 94 countries have benefited from

research training and operational research support

Biennium: 2024-2025

EROutp-0359: Number of successful trainees and number of data analyses conducted and reported

Output Indicator: Build capacity for the effective collection and analysis and use of data for decision making

Output Target Date: 31/12/2025

Output Progress Status:

Output Progress Description:

ER Biennium Outcomes

Biennium: 2024-2025

EROutc-0103: Quality controlled publications and strengthened evidence-base for policy and practice decisions

Progress made towards outcome :

Biennium: 2022-2023

EROutc-0061: Strengthened evidence-base for policy and practice decisions

Progress made towards outcome : Cumulatively since 2009, there has been 857 publications by the SORT IT partnership in 50 journals and in five languages (English, Russian, Spanish, Portuguese and French).

ER Project Links

ER Country Links

Country:	Ukraine	**WHO Region :**	EURO	**World Bank : Income Group**	Lower middle income
Country:	Armenia	**WHO Region :**	EURO	**World Bank : Income Group**	Upper middle income
Country:	Zambia	**WHO Region :**	AFRO	**World Bank : Income Group**	Lower middle income
Country:	Congo, Dem. Rep.	**WHO Region :**	AFRO	**World Bank : Income Group**	Low income
Country:	Guinea	**WHO Region :**	AFRO	**World Bank : Income Group**	Low income
Country:	Ethiopia	**WHO Region :**	AFRO	**World Bank : Income Group**	Low income
Country:	Zimbabwe	**WHO Region :**	AFRO	**World Bank : Income Group**	Lower middle income

Country:	Kenya	**WHO Region :**	AFRO	**World Bank : Income Group**	Lower middle income
Country:	Uganda	**WHO Region :**	AFRO	**World Bank : Income Group**	Low income
Country:	Senegal	**WHO Region :**	AFRO	**World Bank : Income Group**	Lower middle income
Country:	Burkina Faso	**WHO Region :**	AFRO	**World Bank : Income Group**	Low income

Expected Result: 1.3.14

Title: Testing of innovative strategies for vector control

Strategic Work Area: Research for implementation **Workstream:** Research for innovation

ER type:	Continuing	**Funding type:**	UD and DF
Start date:	01/01/2020	**End date:**	31/08/2024
ER status:	On Track	**Comment:**	After delays in the start of the ER, the contract with CDC for funding this activity was signed and the work on the research project has now well started. Other supporting activities are also well on track.

WHO region: Global

Partners: WHO/NTD; the International Atomic Energy Agency (IAEA); the US CDC Fort Collins

Diseases: Arboviral diseases;Chikungunya;Dengue;Neglected Tropical Diseases;Vector-borne diseases;Zika virus

Review mechanism: Through ad hoc expert review groups approved by TDR senior management, and through TDR advisory bodies, including the scientific working groups, STAC and JCB

ER manager: Florence FOUQUE

Team: Abdul Masoudi

Number of people working on projects: 1

FENSA clearance obtained for all Non-State Actors? No

Justification for no FENSA clearance: No

TDR partnership criteria

Add value:	Yes	Use resources:	Yes
Align goals:	Yes	Address knowledge gaps:	Yes
Integrate mandates:	Yes	Build strengths:	Yes
Reduce burden:	Yes	Foster networking:	Yes
Increase visibility:	Yes		

TDR partnership criteria indicators

Objectives aligned:	Yes	Partnership well in place and objectives aligned with the respective strategies of the partners
Roles complimentary:	Yes	The complementary roles of the partners is established through a Memorandum of Understanding signed by TDR, WHO and IAEA
Coordination transparent:	Yes	The coordination mechanism is transparent and follow the rules of the partners.
Visibility:	Yes	The visibility of the partnership is achieved through the communication offices of all partners.

Objectives and results chain

Approach to ensure uptake: To ensure the uptake of the findings and their application into countries, the different activities performed through this ER are involving since the planning stage the relevant stakeholders. The partners of the ER, namely US-CDC, IAEA and NTD/WHO also have their own channels to provide recommendations to countries based on the findings.

Up-take/Use Indicator:	The main indicator for uptake will be the number of countries for which innovative vector control activities or tools have been tested and/or will be used. Other uptake indicators can include number of countries where vector surveillance and control tools are improved through knew acknowledged acquired during the development of this ER, as well as number of countries showing clear reduction in targeted mosquito vector populations.
Gender and geographic equity:	Gender and geographical equities are taken into account in all activities among which the building of the ad hoc review groups, the consultancies and in the selection criteria of the research teams.
Publication plan:	The publication plan include guidance documents that will be updated regularly, thematic briefs, scientific publications in open access peer review journals (with special issues) and other materials such as training materials and briefs for stakeholders (communities and technical staff).
Up-take/use indicator target date:	31/08/2024

Sustainable Development Goals

Good Health and Well-being;Industry, Innovation and Infrastructure;Climate Action;Partnerships to achieve the Goal

Concept and approach

Rationale:

Causing more than one million deaths per year, with few new drugs or strategies to combat these emerging infectious pathogens, vector-borne diseases (VBDs) such as malaria, dengue, Zika, chikungunya, yellow fever and others account for 17% of the total morbidity from infectious diseases. The incidence of some VBDs has grown dramatically in recent decades, with about one third of the world population now at risk from *Aedes*-borne epidemics. This increase is due to global changes and has prompted WHO to state the urgent need for alternative vector control methods in its Global vector control response (GVCR) 2017–2030, which was approved at the World Health Assembly in 2017 by more than 190 Member States (WHO 2017). The rationale of this expected results is to work with all partners to test innovative vector surveillance and control technologies, as well as to support access to relevant training and capacity building on these technologies.

One of these alternative technologies is the “Sterile Insect Technique” (SIT) a method of pest control using area-wide releases of sterile males to mate with wild females, which will then not produce offspring. This technique has been successfully implemented in agriculture against numerous insects since about 60 years, with no side effects and environmentally safe impact. As a first step, a joint collaboration was established between the Department of Nuclear Sciences and Applications (NA), the Department of Technical Cooperation (TC) of the International Atomic Energy Agency (IAEA), and the UNICEF/UNDP/World Bank/ WHO Special Programme for Research and Training in Tropical Diseases (TDR) of the World Health Organization (WHO), in partnership with the WHO Department of Control of Neglected Tropical Diseases (NTD), to develop activities on providing guidance to countries and testing SIT against the *Aedes* mosquitoes, vectors of arboviral diseases.

Other tools will also be supported through this activity such as capacity building tools and vector surveillance tools, to be able to provide a full package of innovative technologies for prevention and control of vectors and vector-borne diseases.

Design and methodology:

Design and Methodology of the ER are briefly described below through key activities and timelines, but more detailed description of each phase is available in the technical documentation:

- Phase 1: January 2019 to April 2020: Development and Production of a Guidance Document on how to test SIT for countries
- Phase 2: July 2019 to December 2021: Resource mobilization, buildings of ad hoc review committees and Special Project Team, call for proposals and selection of research consortium(s) to test SIT into field conditions. Landscape analysis for new vector control technologies. Development of training and surveillance tools.
- Phase 3: January 2022 to December 2023: Update of proposals, contracts and first field tests including epidemiological evaluation.

- Phase 4: January 2024 to December 2025: Continuation of field tests and if satisfactory implementation of the results and policy recommendations and deployment of this new vector control technology at the country level.

Approach to ensure quality:

The following approaches were taken to ensure quality of the expected results:

1. The objectives, planning, activities and budget of the ER is aligned with TDR strategy and was approved by TDR governing bodies.
2. The groups of experts were invited based on their competencies and experience and approved as per TDR SoPs. All experts accepting to be part of a group completed their DOIs and COIs.
3. The Guidance Document was developed in phase 1 by a group of experts, with external and internal reviews, external editing, final check and WHO publication clearance system.
4. For the selection and following up of research proposals in phase 2, review and steering groups of external experts were established and approved accordingly.
5. The quality of the findings in phase 3 is reviewed by the selected experts groups through mid-term reports and published in open access peer review scientific journals.
6. The quality of the findings in phase 4 is reviewed by the selected experts groups through mid-term and final reports, published in open access peer review scientific journals, and submitted to the Vector Control Advisory Group (VCAG) of the WHO operational program (NTD/WHO) for policies development.

ER Objectives

ERObj-0021 : 4. Develop indicators to evaluate the impact on the vectors populations, the human health and the health systems of innovative vector control technology.

ERObj-0022 : 5. Provide to the WHO operational programs and the countries the required support to make new recommendations and policies on innovative vector control technologies, and allow full deployment of new validated vector control tools.

ERObj-0056 : 6. Provide to countries the knowledge and guidance on new vector surveillance tools needed for the implementation of the new vector control tools.

ERObj-0020 : 3. Support research activities to test into field conditions the epidemiological outcomes of new vector control technologies.

ERObj-0019 : 2. Support research activities to test into field conditions the entomological outcomes of new vector control technologies.

ERObj-0018 : 1. Provide to countries and stakeholders up to date guidance on how to test new vector control technologies through different materials such as guidance document, training materials, workshop and in site evaluations.

ERObj-0057 : 7. Provide to countries the required tools to improve training and capacity building on innovative vector surveillance and control.

Biennium Budget

Biennium: 2022-2023

Low and Hight Budget Scenario

	Low Budget Scenario	High Budget Scenario
Undesignated funds	USD 100000	USD 300000
Designated funds	USD 600000	USD 800000
Total	USD 700000	USD 1100000

Planned Budget

Undesignated funds	USD 150000
Designated funds	USD 612000
Total	USD 762000

Biennium: 2024-2025

Low and Hight Budget Scenario

	Low Budget Scenario	High Budget Scenario
Undesignated funds	USD 200000	USD 300000
Designated funds	USD 700000	USD 1350000
Total	USD 900000	USD 1650000

Planned Budget

Undesignated funds	USD 200000
Designated funds	USD 700000
Total	USD 900000

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ER Biennium Risks

Biennium: 2022-2023

ERRisk - 0267: The testing of the efficacy of the technologies cannot be performed because of lack of support/interest from the countries

Actions To Mitigate Risk: Follow closely with the partners and the countries and eventually organize more information meetings and exchanges to better understand the requests, the needs and the challenges, in order to address them in the best possible way.

Mitigation Status: Completed

Biennium: 2022-2023

ERRisk - 0266: Delay in the testing of the new vector control technologies due to delayed funding and/or Health systems challenges due to COVID

Actions To Mitigate Risk: Keep close contact with countries showing interest on the technology and monitor the situation with the partners and vector control agencies involved in the projects.

Mitigation Status: Completed

Biennium: 2024-2025

ERRisk - 0310: The completion of all required tests SIT not completed before the end of the biennium

Actions To Mitigate Risk: Close follow up on the testing activities and engagement with the research team to mitigate the deadlines

Mitigation Status: On Track

Biennium: 2024-2025

ERRisk - 0311: Delays in building capacity for the countries in implementing the technology once the SIT efficiency on the diseases is proven.

Actions To Mitigate Risk: Development of training packages through MOOC or other materials

Mitigation Status: On Track

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ER Biennium Outputs

Biennium: 2024-2025

EROutp-0382: Number of countries in the process of integrating SIT

Output Indicator: Countries integrating the SIT into the integrated Vector control against Aedes mosquitoes and arboviral diseases

Output Target Date: 31/12/2025

Output Progress Status: On Track

Output Progress Description: Will start in 2024

Biennium: 2024-2025

EROutp-0381: VCAG recommendation

Output Indicator: SIT technology against Aedes mosquitoes and arboviral diseases presented at the WHO Vector Control Advisory Group for advise and review

Output Target Date: 31/12/2024

Output Progress Status: On Track

Output Progress Description: Engagement with VCAG started

Biennium: 2022-2023

EROutp-0329: Number of countries in which field testing could be done

Output Indicator: Field testing of innovative vector control technologies done

Output Target Date: 31/12/2023

Output Progress Status: On Track

Output Progress Description: Field testing of SIT will be done in 3 countries

Biennium: 2022-2023

EROutp-0330: Number of countries using the new surveillance and capacity building tools developed through this activity

Output Indicator: Development and availability for countries of supporting tools in surveillance, capacity building and data sharing for innovative vector control technologies

Output Target Date: 31/12/2023

Output Progress Status: On Track

Output Progress Description: A capacity building tool is now available through a Directory for courses on medical entomology mage available at the global level on the Global Vector Hub Platform.

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ER Biennium Outcomes

Biennium: 2022-2023

A landscape analysis for innovative vector control technologies completed and under review to be released in 2023.

The development of an innovative surveillance tool for Aedes mosquitoes completed.

Collaboration for data sharing well on track with the GBIF (Global Biodiversity Information Facility) with released of a Special Issue on data papers on vectors in Gygabyte Journal, awarded the best Journal for Innovation by ALPSP in September 2022.

EROutc-0087: Findings from field testing on innovative vector control tools

Progress made towards outcome : On track.

Biennium: 2022-2023

A landscape analysis for innovative vector control technologies completed and under review to be released in 2023.

The development of an innovative surveillance tool for Aedes mosquitoes completed.

Collaboration for data sharing well on track with the GBIF (Global Biodiversity Information Facility) with released of a Special Issue on data papers on vectors in Gygabyte Journal, awarded the best Journal for Innovation by ALPSP in September 2022.

EROutc-0088: Availability of new tools for surveillance of vectors, data sharing and capacity building on vector surveillance and control.

Progress made towards outcome : Capacity building on vector surveillance and control enhanced through the Directory of courses of medical entomology release through the Global Vector Hub platform.

Landscape analysis on innovative vector control tools on track.

Innovative surveillance tool for Aedes mosquitoes in development.

Data sharing activities in collaboration with the Global Biodiversity Information Facility.

Biennium: 2024-2025

A landscape analysis for innovative vector control technologies completed and under review to be released in 2023.

The development of an innovative surveillance tool for Aedes mosquitoes completed.

Collaboration for data sharing well on track with the GBIF (Global Biodiversity Information Facility) with released of a Special Issue on data papers on vectors in Gygabyte Journal, awarded the best Journal for Innovation by ALPSP in September 2022.

EROutc-0115: Procedure for implementing SIT and integrating the technique into the vector control activities

Progress made towards outcome : Writing of the documentation will start in 2023, based on the field testing of SIT

Biennium: 2024-2025

A landscape analysis for innovative vector control technologies completed and under review to be released in 2023.

The development of an innovative surveillance tool for Aedes mosquitoes completed.

Collaboration for data sharing well on track with the GBIF (Global Biodiversity Information Facility) with released of a Special Issue on data papers on vectors in Gygabyte Journal, awarded the best Journal for Innovation by ALPSP in September 2022.

EROutc-0116: Evaluation of the vector control activities using SIT on arboviral diseases transmission

Progress made towards outcome : Evaluation will proceed with the SIT field testing

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ER Project Links

Project ID : P23-01062 **PI Name :** Eleonora Flacio

ER Project Title : Technical support for the Management of Special Issues in open peer review Journals to publish the outcomes of two TDR workshops.

ER Start Date : 01/01/2020 **ER End Date :** 31/08/2024

Project ID : P22-00605 **PI Name :** Thomas Scalway

ER Project Title : Multi-sectoral approach on prevention and control of vector-borne and Innovative technology for Vector Control as well as a new project on malaria among hard to reach populations.

ER Start Date : 01/01/2020 **ER End Date :** 31/08/2024

Project ID : P23-00960 **PI Name :** Chris Rixson

ER Project Title : Development of The Terms of References for Centres of Reference in Medical Entomology Through the organization of a side-event at the 18th International Course on Dengue and other emerging Arboviruses. August 14-25, 2023 IPK, Havana, Cuba, in partnership

ER Start Date : 01/01/2020 **ER End Date :** 31/08/2024

Project ID : P21-00170 **PI Name :** Sogoba Nafomon

ER Project Title : A pilot multisectoral intervention for controlling malaria vectors, mitigating insecticides resistance and assessing WaSH facilities at health care units in selected costal and sahelian west African countries.

ER Start Date : 01/01/2020 **ER End Date :** 31/08/2024

Project ID : P23-00983 **PI Name :** Sandra Gewehr

ER Project Title : Development of a Best Practices document for mosquito control in build areas.

ER Start Date : 01/01/2020 **ER End Date :** 31/08/2024

Project ID : P21-00432 **PI Name :** Scott C. Edmunds

ER Project Title : Special issue on data on vector

ER Start Date : 01/01/2020 **ER End Date :** 31/08/2024

Project ID : P22-00725 **PI Name :** Maria Guadalupe Guzman

ER Project Title : Support to Capacity Building in Medical Entomology through the attendance to the First Edition of the Curso Internacional de Control Integrado de Vectores at Instituto Pedro Kouri, Cuba.

ER Start Date : 01/01/2020 **ER End Date :** 31/08/2024

Project ID : P22-00775 **PI Name :** Thomas Scalway

ER Project Title : Development of training videos for the Malakit research team

ER Start Date : 01/01/2020 **ER End Date :** 31/08/2024

Project ID : P21-00284 **PI Name :** Gildas Yahouedo

ER Project Title : Development of a landscape analysis of the potential innovative vector control tools which are still at the development or testing phases with analysis of benefit/risks and comparative advantages and challenges.

ER Start Date : 01/01/2020 **ER End Date :** 31/08/2024

Project ID : P23-00985 **PI Name :** Herve Bossin

ER Project Title : PAcific Islands Consortium for the Evaluation of Aedes SIT (PAC-SIT).

ER Start Date : 01/01/2020 **ER End Date :** 31/08/2024

ER Country Links

Country:	United Kingdom	**WHO Region :**	EURO	**World Bank Income Group :**	High income
Country:	Cook Islands	**WHO Region :**	WPRO	**World Bank Income Group :**	n/a
Country:	Chile	**WHO Region :**	AMRO	**World Bank Income Group :**	High income
Country:	Cuba	**WHO Region :**	AMRO	**World Bank Income Group :**	Upper middle income
Country:	Mexico	**WHO Region :**	AMRO	**World Bank Income Group :**	Upper middle income
Country:	French Polynesia	**WHO Region :**	NULL	**World Bank Income Group :**	High income
Country:	Brazil	**WHO Region :**	AMRO	**World Bank Income Group :**	Upper middle income

Country:	Benin	**WHO Region :**	AFRO	**World Bank : Income Group**	Lower middle income
Country:	Switzerland	**WHO Region :**	EURO	**World Bank : Income Group**	High income

Expected Result: 1.3.3

Title: Population health vulnerabilities to VBDs: Increasing resilience under climate change conditions (Operationalizing a One Health Approach for the Control of VBDs in the Context of Climate Change)

Strategic Work Area: Research for implementation **Workstream:** Research for policy

ER type:	Evolved	**Funding type:**	UD
Start date:	01/01/2020	**End date:**	31/12/2025
ER status:	On Track	**Comment:**	
WHO region:	AFRO		
Partners:	WHO-PHE, WHO-AFRO, WHO-NTD, Fondation Merieux, UN Environment		
Diseases:	Malaria;Rift valley fever;Schistosomiasis;Tuberculosis;Trypanosomiasis;Vector-borne diseases		
Review mechanism:	Through SWG, dedicated ad hoc group of external experts		

ER manager: Corinne Simone Collette MERLE
Team: 1 Professional staff (P5) and 1 admin staff (Daniel Hollies)
Number of people working on projects: 20

FENSA clearance obtained for all Non-State Actors? Yes
Justification for no FENSA clearance: No

TDR partnership criteria

Add value:	Yes	Use resources:	Yes
Align goals:	Yes	Address knowledge gaps:	Yes
Integrate mandates:	No	Build strengths:	Yes
Reduce burden:	No	Foster networking:	Yes
Increase visibility:	Yes		

TDR partnership criteria indicators

Objectives aligned:	Yes	The objectives of this programme are aligned with TDR strategy
Roles complimentary:	Yes	TDR partners add complementary value and contribution to achieving TDR strategy.
Coordination transparent:	Yes	Coordination with partners is above board and transparent.
Visibility:	Yes	Partners share similar goals as TDR, thus expanding TDR's visibility in the field.

Objectives and results chain

Approach to ensure uptake: TDR and collaborating research institutions will conduct networking and policy-advice activities to promote the products generated from the research programme:

a) Translation and dissemination of the scientific knowledge, evidence and adaptation tools and strategies generated through partnership and networking (south-south and north-south). Project recipients will facilitate the transfer of research findings to various user groups including academics, policy-makers and the public through a range of means including via TDR, projects and partner websites. They will present the results in relevant fora and national dialogues and publish the results in scientific journals from the various disciplines of the investigators, as well as through interdisciplinary publication channels. TDR and collaborators will also produce scientific synthesis and research summaries on the research results;

b) Promotion of research-to-policy uptake of the research results by engaging in researcher, practitioner and policy dialogues at local and national levels through research-to-policy dialogue, policy documents, media, involving policy-makers in research meetings/workshops, implementation and evaluation of the projects, strategy events such as Community of Practice meetings and stakeholder consultations;

c) Enhancement of public awareness of climate change adaptation options by communicating research findings to communities, health officials and policy-makers through various means (including publications, feedback seminars, dissemination of scientific results to the general public, popularization of research findings by the media in collaboration with research institutions using films and other forms of documentation);

d) Promotion of intersectoral collaboration by integration of representatives of other sectors in the transdisciplinary research activities and in the research meeting process; and

e) Undertake monitoring and evaluation activities (internal and external M&E) to ensure that expected outputs and outcomes are achieved in line with project objectives. In collaboration with the researchers, TDR's communications team and IDRC, the results of the programme will be widely disseminated using various means.

The overall performance of the programme will be monitored and evaluated by TDR. In addition to the annual report, TDR activities are reported in the TDR newsletter and on its website.

Up-take/Use Indicator: 1. Increased national, regional and international attention triggered through research results; 2. Use of tools by African countries for increased resilience to VBD risks under climate change conditions; 3. Number and significance of events where decision-making by public health officials is a focus; 4. Number of reports, workshops, meetings, national fora and media popularization produced/organized; and 5. Evidence of impact of capacity built in research institutions and communities

Gender and geographic equity: All proposals follow gender-sensitive approaches, with all research activities having an explicit gender perspective/framework and taking into account possible gender differentials in the epidemiology and transmission of VBDs and will, if possible and appropriate, define gender-sensitive approaches to the community-based adaptation strategies to reduce population health vulnerabilities. This perspective is further stressed in the call for proposals and during proposed training and workshops where the participation of women researchers is actively encouraged. Best approaches to engage women in programmes and activities aimed at climate change adaptation for health and reduced risk for VBDs will also be addressed.

Publication plan: At least three publications (open access) expected from projects supported by TDR

Up-take/use indicator target date: 31/12/2025

Sustainable Development Goals

Good Health and Well-being;Reduced Inequality;Climate Action

Concept and approach

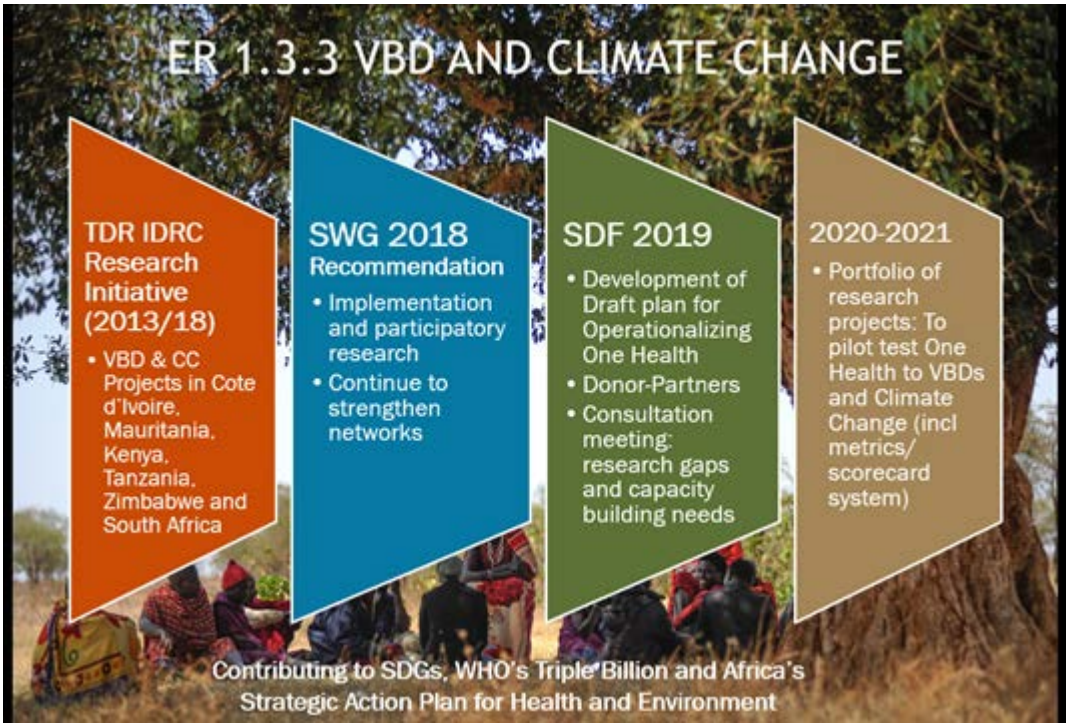
Rationale:

The overall goal of this ER is to generate evidence to enable development of innovative strategies to reduce VBD-related human vulnerability and to increase resilience of African populations to VBD-related health threats. In addition, it aims to broaden and extend knowledge, research capacity, collaboration and policy advice products that can be used throughout Africa and other regions.

During previous years (from 2013), and through the TDR IDRC Research Initiative on Vector Borne Diseases and Climate Change, this ER had delivered on the following: 1) identification and characterization of potential impact on vector borne diseases (VBD) of complex socioecological conditions of water systems in Africa, 2) assessment of VBD risks under various environmental exposure conditions and vulnerability context, 3) decision support processes and tools for health impact assessment and management, and 4) a network and community of practice with capacity built to better manage climate and environment-related health risks. For the current biennium (2020-2021), this ER addresses an extraordinary opportunity to build on the outputs of the TDR-IDRC Research Initiative as the basis for operationalizing the One Health, a multisectoral, transdisciplinary approach that ensures collaboration and coordination among all relevant players in public health, animal health, plant health, environment, ministries, stakeholders, sectors and disciplines, to achieve better public health outcomes (see **Figure 1. Evolution of ER 1.3.3**). This

opportunity has now become even more urgent and a critical need with the emergence of Covid-19, re-emergence of Ebola and other zoonotic and vector borne disease (VBD) threats. For example, the social and economic dislocations Covid-19 has catalysed can be expected to increase health risks by increasing the vulnerability of many already vulnerable populations well beyond the pandemic period.

Figure 1. Evolution of ER 1.1.3. Vector borne diseases and climate change



Relevance

Human health is intimately linked to the state of the environment, including the effects of climate change. Nearly one in four premature deaths in Africa, for instance, are linked to the environment and threatens to increase the number of health emergencies and outbreaks in the coming years. IMP SWG members highlighted the importance of the interrelationship between health and climate and acknowledged that research in this area remains highly topical albeit the completion of the TDR IDRC Research Initiative on Vector Borne Diseases (VBDs) and Climate Change.

One of the approaches that could prove to be valuable in the implementation of joint interventions in health and environment, to address population health vulnerabilities and to increase resilience is the One Health approach, which ensures that human, animal, and environmental health concerns are addressed in an integrated, multisectoral and holistic manner, and to provide a more comprehensive understanding of the problems and potential solutions than would be otherwise not be possible with siloed approaches by the stakeholders concerned (researchers, public health practitioners, environment, agricultural sectors, communities and other relevant partners). At the same time, the One Health approach is quite complex, making its practical implementation and operationalization not straightforward, and thus, the stakeholders concerned will benefit from capacity building on the One Health approach to build resilience against VBDs under climate change conditions.

Demonstrable impact

The goal of this ER is to ensure resilience to the adverse impacts of VBDs and climate change among vulnerable populations in Africa.

It is expected to contribute to the following:

- 2030 Agenda for Sustainable Development through Sustainable Development Goal 3 (Health and Well Being) and 13 (Take urgent action to combat climate change and its impacts) and the UNFCCC's Paris Agreement on Climate Change
- WHO's Triple Billion target and WHO's 13th General Programme of Work (2019-2023)
- Strategic Action Plan to Scale up Joint Interventions in Health and Environment in Africa (2019-2029)
- WHO's Global Vector Control Response (2017-2030) and the 2030 NTD Road Map for Ending Neglected Tropical Diseases

Design and methodology:

Operationalizing One Health encompasses a set of tools, currently under development through ER 1.3.3, that combines well-documented, evidence-based principles and practices that specifically address the problem of population vulnerabilities to VBDs in the context of climate change. It is widely agreed among international development agencies, medical and public health scientists that One Health can contribute significantly to global health in this regard. Yet the challenge is how to extend One Health operationalization efforts that are focused on organizational requirements, on elaboration of specific methods including performance metrics (through a scorecard) that reflect the interdependence of human health and ecosystem health. Thus, for operationalizing One Health, we are combining established methods from the environmental and health fields using analytical systems, planning and organizational approaches to form the basis for risk mitigation and management against emerging zoonotic diseases, climate variability and extreme weather events. The One Health scorecard system is critical to measure success and evaluate performance of the One Health plan through performance indicators for collectively developing a metrics standard that incorporates variances of specific settings for a harmonised evaluation (see **Figure 2. Example of a One Health Scorecard)**.

Figure 2. Example of a One Health scorecard ('What is not measured is not done, What is not measured can not be managed, What is not measured can not be improved, What is not measured is not important to justify').

Example of a One Health Scorecard for VBDs in the Context of Climate Change

Collectively developing a standard that incorporates variances of specific settings for a harmonized evaluation

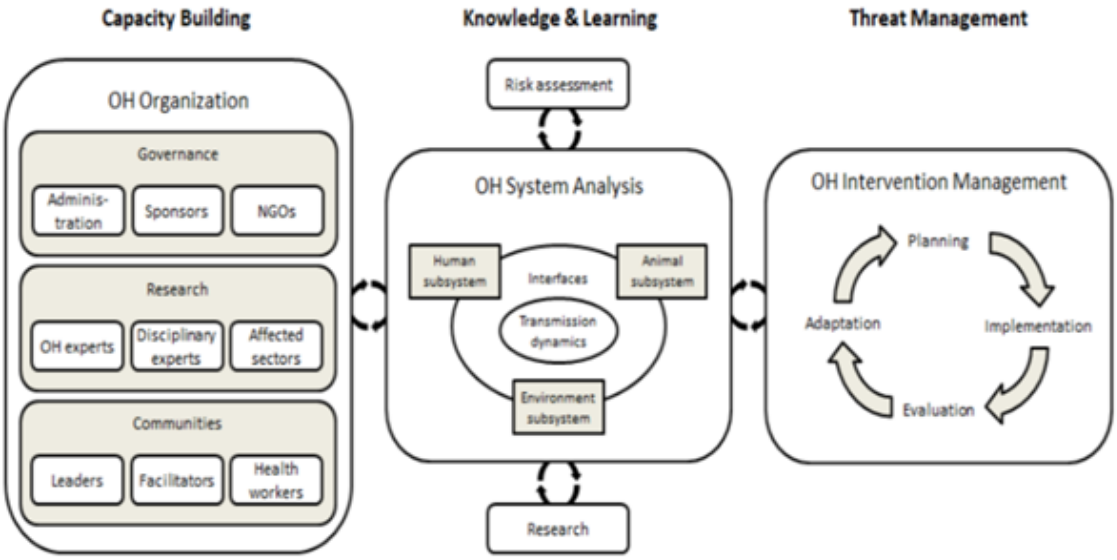
P1 Capacity	3	P2 Intervention Science	2	P3 Risk Management	2	P4 Impact and Risk	4
S1 Governance	3	**S4 Intervention Management**	2	**S7 Social Systems**	3	**S10 Impact and Risk**	4
K1 Sectors	4	K10 Planning	3	K19 Resilience	4	K28 Severity	3
K2 Disciplines	3	K11 Implementation	3	K20 Risk Mitigation	3	K29 Frequency	2
K3 Communities	3	K12 Adaptation	2	K21 Risk Control	3	K30 Risk Potential	4
S2 Organization	3	**S5 Implementation Research**	2	**S8 Animal Sytems**	2		
K4 Culture	3	K13 Effectiveness	3	K22 Resilience	2		
K5 Knowledge	4	K14 Efficiency	3	K23 Risk Mitigation	3		
K6 Management	3	K15 Sustainability	2	K24 Risk Control	2		
S3 Resources	3	**S6 System Analysis**	3	**S9 Ecosystems**	2		
K7 Human Resources	4	K16 Social Systems	4	K25 Resilience	2		
K8 Supplies & Equipment	3	K17 Animal Systems	4	K26 Integrity	3		
K9 Financial Resources	3	K18 Ecosystems	3	K27 Vector Control	2		

Consultation Meeting for Operationalizing a One Health Approach for Vector-Borne Diseases in the Context of Climate Change, 17-18 December 2019, Brazzaville, Republic of the Congo

A significant advance toward accomplishing this was to employ Implementation Science in the design of a Framework/Draft Plan and associated provisional metrics and indicators, which was presented and discussed during the One Health Consultation Meeting held in Brazzaville, Congo, last December 2019 (see **Figure 3. Components of an adaptive One Health approach)**. Participated in by IMP SWG (represented by Dr Mario Henry Rodriguez, who also chaired the meeting), key researchers from the TDR IDRC network,

representatives from the ministries responsible for health and environment, and partners/collaborators [WHO AFRO, Fondation Merieux, UN Environment, OIE-Africa, FAO-Africa, PAMCA], the Brazzaville meeting acknowledged the value of the TDR IDRC research initiative for laying the foundation for more holistic, locally adaptable health systems capable of VBD and climate change risk management and can now be envisioned for the implementing the One Health approach. The refinement of the Framework/Draft Plan from the Brazzaville meeting is expected to result in an essential policy and management tool that currently does not exist for operationalizing One Health.

Figure 3. Components of an adaptive One Health approach



The main recommendation from the Brazzaville meeting was a Call to Action to implement the Draft Plan to fully develop the One Health operationalization system using the extensive experience and data outputs from the TDR-IDRC Africa Initiative. Aligned with the Libreville Strategic Action Plan to Scale Up Health and Environment Interventions in Africa (2019-2029), this scorecard and performance metrics system is envisioned to assist in mitigating the impacts of VBD health consequences on the most vulnerable populations. It was further recommended to implement the Draft Plan on a pilot scale based on the Initiative's projects in Cote d'Ivoire, Kenya, Tanzania and South to facilitate increased integrated coverage of health, agricultural and environment interventions for primary prevention of VBDs while integrating ecosystems preservation in Africa.

Progress in 2020

The following activities have been completed and undertaken:

- Consultation Meeting for Operationalizing a One Health Approach for VBDs in the context of Climate Change, 17-18 December 2019, Brazzaville, Republic of Congo (see **Group photo from the Consultation Meeting)**

o Jointly organized and funded by TDR with Fondation Merieux; participants included TDR partners and collaborators, SWG, researchers, public health practitioners, ministry representatives from public health and environment, other stakeholders

o Objectives: 1) To discuss how research products from the TDR IDRC Research Initiative on VBDs and Climate Change can be aligned with and contribute to the Strategic Action Plan (SAP) to Scale up Health and Environment Interventions in Africa (Libreville, 2019-2029), 2) To discuss and provide input into a draft plan that will guide the implementation of One Health

o Brief from the meeting: 1) Participants were informed of the new Libreville Strategic Action Plan and discussed how future work can be aligned with and contribute to the SAP, 2) Discussed and provided input to the draft plan for Operationalizing One Health, 3) Conducted a workshop on country scenario-setting for the application of the One Health scorecard/metrics system; 4) Identified research and capacity building needs for the implementation of One Health

o Recommendations from the meeting: 1) Revise draft plan for OH with input from participants, 2) Call to Action to pilot test the draft plan including the metrics based assessment tool, 3) Request TDR and partners to support the testing of the draft plan through funding and technical support for country projects and activities for 2020-2021

Group photo from the Consultation Meeting

- Engagement with partners

o TDR is engaged with the following partners:

- Fondation Merieux
- UN Environment
- OIE-Africa (World Organization for Animal Health)
- FAO-Africa (Food and Agriculture Organization)
- PAMCA (Pan Africa Mosquito Control Association)

- Established collaboration with Global Health Group International (led by Prof Bruce Wilcox at the ASEAN Institute for Health Development, Mahidol University, Thailand) for technical support for the delivery of products relevant to Operationalizing One Health

o Completion of a Master Plan and Guidance Document for use by research projects in the development of their workplans

o Development of an interactive web-based collaboration platform for knowledge sharing and to maximize communications and information exchange

o Planning and organization of a writeshop for African principal investigators to assist in development of workplans to help facilitate TDR's engagement with technical and policy personnel with WHO AFRO, WHO country office in Africa, UN Environment, OIE-Africa, FAO-Africa, Fondation Merieux and PAMCA

o To assist TDR in providing guidance to countries (researchers, policy makers and other relevant stakeholders) to lay the foundation and tools necessary for translation and uptake of One Health strategies an strengthened capacity for integrating human, animal and ecosystem health

o Preparation of a publication and research dissemination plan

- Participation at the 26th Tripartite Annual Executive Meeting on One Health, WHO Headquarters, Geneva, 12-13 February 2020

o Objective of the meeting: to discuss critical issues at a political and strategic level, review progress and address bottlenecks

o TDR presented its One Health research portfolio in the Session on One Health Research as part of information sharing among partners with an interest to strengthen collaborative research activities on specific topics and methodologies

o Presented were the One Health research portfolio on Antimicrobial Resistance and the projects on vector borne diseases and climate change

- Participation of TDR in the Virtual 2nd Meeting of the Interagency Liaison Group on Biodiversity and Health, 4-6 May 2020

o This meeting was hosted by the Department of Environment, Climate Change and Health and the Convention on Biological Diversity (CBD)

o Contributed to the finalized Guidance for mainstreaming biodiversity for nutrition and health

o Contributed to the WHO Q&A on climate and health, and post COVID recovery

o Contributed to the WHO Q&A on biodiversity, health and infectious diseases

o Discussed how to leverage joint WHO-CBD work programme on biodiversity and health can be aligned in the context of COVID 19

o Contributed towards the preparation of a Draft Global Plan of action on Biodiversity and Health, including addition of key elements of the biodiversity-inclusive One Health Guidance

- Completion of a Virtual Writeshop with principal investigators (from Cote d'Ivoire, Kenya, South Africa and Tanzania) on 8, 16, 22 and 29 July 2020; 10.30-12.00 CET

o To develop workplans for pilot testing the Draft Plan for One Health including the use of the scorecard/metrics system

o Proposals submitted to TDR by 1 August 2020; contracts processed, with projects starting by the 1st week of Sep 2020 for a duration of 1 year. Please see below for an annotated list of projects; see also **Proposed Pathway/Logic Model for the 4 Projects.**

Project 1. *From an Ecohealth research project to operationalizing One Health approach in West Africa (Cote d'Ivoire and Mauritania)*

Principal Investigator: Dr Brama KONE, Centre Suisse de Recherches Scientifiques en Côte d'Ivoire (CSRS), Abidjan, Côte d'Ivoire

o Main objective. To operationalize a One Health approach through the assessment of capacity building needs among stakeholders, activities and outcomes of knowledge and learning process and risk management strategies

o Specific objectives:

▪ To analyse the actors (governance, organizations) and resources, capacity building activities and their outcomes, employing socio ecological systems analytical methods and stakeholder analysis

▪ To assess the effectiveness of the EcoHealth approach principles in the implementation of One Health intervention science and risk management scorecard components

▪ To Investigate how the previous project results and experience with Malaria and Schistosomiasis interventions, and the role of public versus private health facilities could guide interventions to improve health systems disease risk management capacity, considering OneHealth approach, taking as example the zoonotic disease COVID-19 pandemic management

RES. QUEST.	SPEC. OBJ.	INPUTS	METHODS / ACTIVITIES	OUTPUTS	SOURCE OF VERIFICATION	OUTCOMES
HOW TO CREATE STANDARDIZED (REPEATABLE) AND MEASURABLE TRANSDISCIPLINARY METHODOLOGY / APPROACH, INCLUDING ONEHEALTH TO TACKLE ZOONOTIC AND OTHER SOCIO-ENVIRONMENTAL DISEASES, DRAWING ON THE ENDED ECOHEALTH RESEARCH PROJECTS?	SO1	- MTV-CC Project dissertations (Masters and PhDs), reports, publications and other documents (previous Ecohealth project implemented in Korhogo) - Other literature - MTV-CC project team members	- Project dissertations (Masters and PhDs), reports, publications and other documents review - Other literature review - Paper writing workshop - Participation to thematic working groups	- Proof of concept validating the OneHealth scorecard capacity building component from the MTV-CC project	- Project reports - Scientific publications Workshops' reports	- ONE HEALTH OPERATIONALIZED FOR VBD CONTROL & PREVENTION IN THE CONTEXT OF CLIMATE CHANGE - BROADER APPLICATION OF THE ONE HEALTH OPERATIONALIZATION TO ZOONOSES AND OTHER EMERGING/RE-EMERGING INFECTIONS (INCLUDING COVID 19)
	SO2	- Project dissertations (Masters and PhDs), reports, publications and other documents (previous Ecohealth project implemented in Korhogo) - Other literature - MTV-CC project team members	- Project dissertations (Masters and PhDs), reports, publications and other documents review - Other literature review - Paper writing workshop - Participation to thematic working groups	- Proof of concept validating the OneHealth scorecard intervention science and risk management components from the MTV-CC project	- Project reports - Scientific publications Workshops' reports	
	SO3	- MTV-CC project Stakeholders - Project dissertations (Masters and PhDs), reports, publications and other documents (previous Ecohealth project implemented in Korhogo) - Other literature - MTV-CC project team members	- Remote/face to face interviews with community leaders and key informants from private and public health centers and health system (District health actors) in the management of Malaria, schistosomiasis and Covid-19 pandemic - Literature review - Paper writing workshop - Result dissemination workshop - Participation to thematic working groups	- Impact of the MTV-CC project on diseases management at community and Health system levels - Lessons from Covid-19 management - Proof of concept validating the OneHealth scorecard impact and risk components from the MTV-CC project	- Project reports - Workshops' reports - Scientific publications	
	SO4	- MTV-CC project Stakeholders - Recorded videos during MTV-CC project implementation - Other projects leaders/team members from the ongoing initiative	- Video recording with researchers and other project stakeholders in Côte d'Ivoire and Mauritania on project implementation process and lessons learned for operationalizing OneHealth scorecard	- Video documentary	Video	

Project 2. *Operationalizing One Health Initiative for Malaria and Rift Valley Fever Project in Kenya*

Principal Investigator: Professor Benson B.A. ESTAMBALE, Research, Innovation and Outreach, Jaramogi Oginga Odinga University of Science and Technology, Bondo, Kenya

o Main objective. To contribute to the operationalization of a One Health Research protocol for Implementation Research

o Specific objectives:

▪ To synthesize the existing project data based on a One Health Approach and guided by the tenets of social-ecological systems framework (SESF).

▪ To build the capacity of the project team on the One Health Approach to climate sensitive vector borne disease research.

▪ To publish synthesized research papers based on the One Health Approach which incorporates findings from the project.

Project 3. *One Health Operationalization in Tanzania*

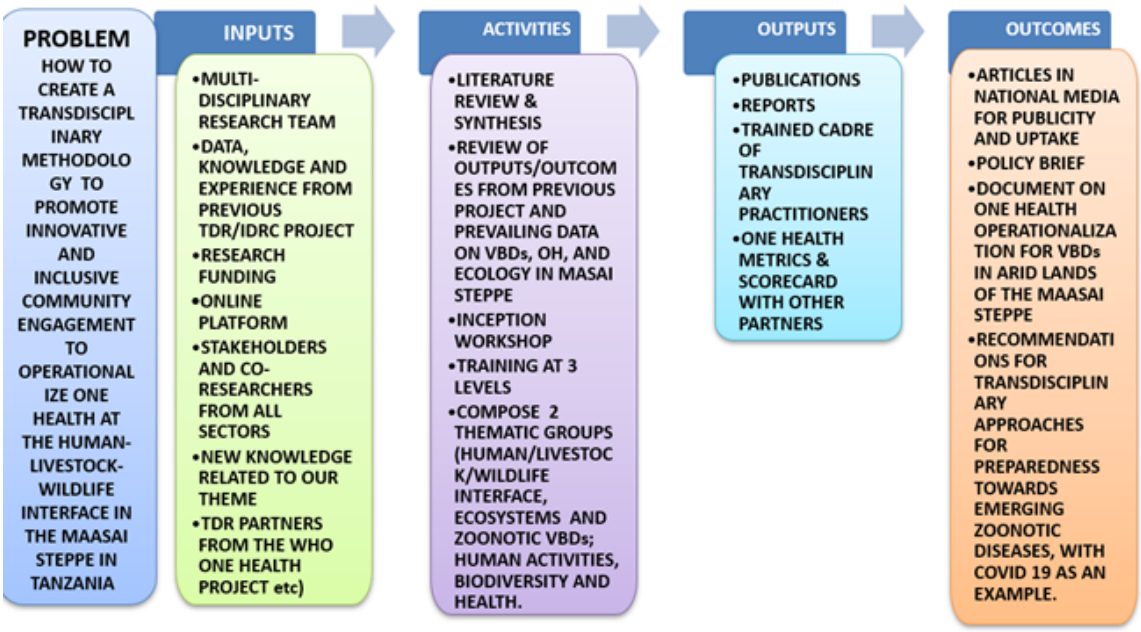
Principal Investigator: Professor Paul S. GWAKISA, The Genome Science Centre and Department of Veterinary Microbiology and Parasitology, Faculty of Veterinary Medicine, Sokoine University of Agriculture, Morogoro, Tanzania

o Specific objectives:

▪ To build capacity for transdisciplinary research for operationalizing One health at different levels (community level/extension workers/postgraduates and young researchers).

▪ To work closely with all stakeholders and develop a framework for addressing key one health-based community needs using a Theory of Change approach (eg, the human-livestock-wildlife interface and zoonotic diseases).

▪ To collaboratively develop a metrics-based assessment of a One Health scorecard.



Project 4. *Operationalizing One Health in Ingwavuma Community: Developing Transdisciplinarity Methodology (South Africa)*

Principal Investigator: Professor Moses J. CHIMBARI, College of Health Sciences, University of Kwazulu-Natal, Durban, South Africa

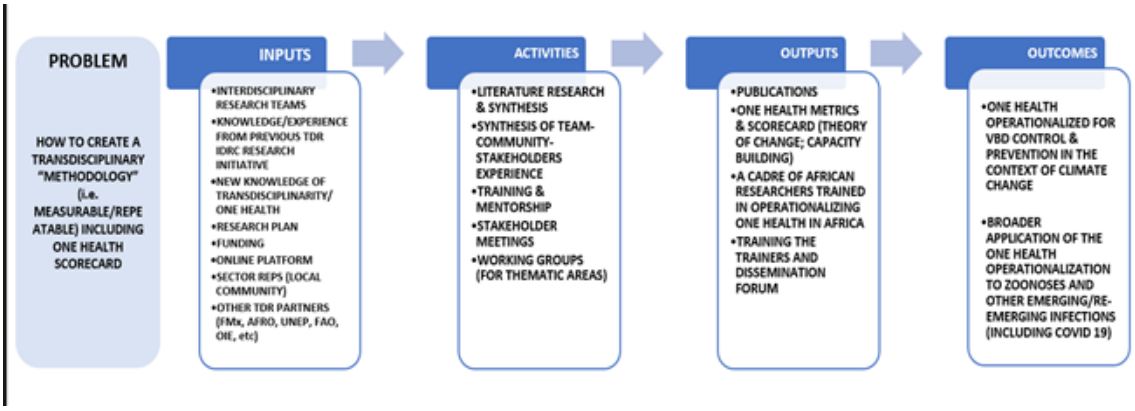
o Main objective. To address capacity development, knowledge and learning and threat management for operationalizing One Health in South Africa

o Specific objectives:

▪ To enhance and develop capacity at different levels for operationalizing One Health

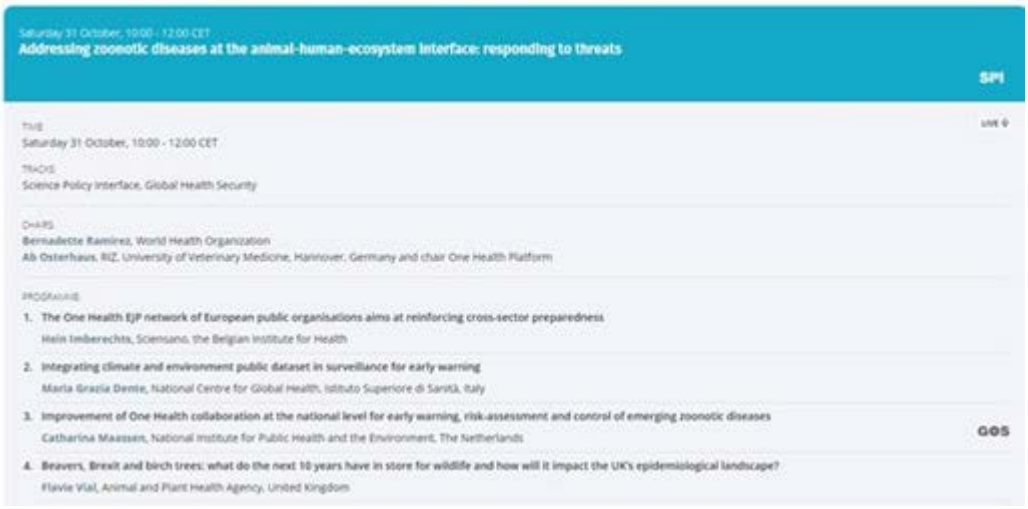
▪ To co-develop a theory of change with stakeholders to easily identify priority areas for research and intervention

▪ To identify hurdles to full empowerment of communities through a co-development of a monitoring and evaluation framework



- Scientific Session at the recent virtual World One Health Congress 2020, 30 Oct-3 Nov 2020. The title of the session was *A Metrics Based Evaluation of One Health: Toward Control of VBDs in the context of Climate Change in Africa*. This session brought together 6 scientist-leads (from Bangkok, Germany, Cote d'Ivoire, Kenya, South Africa and Tanzania) to further articulate the fundamentals of One Health and to draw insights into the conduct of integrative research using One Health transdisciplinary systems approaches including pilot testing a scorecard/metrics-based evaluation for its operationalization. For more information on this Scientific Session, please refer to https://www.fondation-merieux.org/en/events/6th-world-one-health-congress-2020-virtual-event/. For more information on the One Health scorecard, please refer to https://onehealthscorecard.org/.

- Aside from the Scientific Session on One Health at the virtual WOHC 2020 (mentioned above), TDR also participated in another Scientific Session, *'Addressing zoonotic diseases at the animal-human-ecosystem interface: responding to threats,* as part of the Science Policy Interface (Global Health Security) - see figure below.



Progress in 2021:

Key achievements:

- **A Master Plan and Guidance document** for the development of the operational protocol was finalized. It provided an overarching synthesis of the input from the One Health Consultation Meeting (December 2019, Brazzaville), as the basis for developing a standardized approach for the One Health Metrics and Scorecard. This Master Plan supported a follow-up consultation process through bi-monthly online meetings (with technical support from TDR and Global Health International Group [GHGI]) that helped the development of actions plans for the country projects and to clarify the expected outputs, collaborative teamwork process, timetable and milestones for the African research teams.

- **Establishment of an on-line platform for Operationalizing One Health as a Transdisciplinary Ecosystem Approach (**https://onehealthscorecard.org/**).** This web-based collaborative member login platform was developed and launched in July 2020, and continually upgraded based on feedback from the country teams. It has proven effective as the primary means of collaborative learning, organizational management, and progress tracking.

This on-line platform also includes an interactive collaborative space for two working groups composed of members from the network of researchers and stakeholders from the country projects, TDR, GHGH and other stakeholders/partners (see **FIGURE 1)**:

o *Fundamentals Working Groups*

- Capacity building, approach planning and organizational evaluation - To integrate knowledge that is both scientific and technical pertaining to zoonotic disease risk mitigation with that of operational theory and management approaches (https://onehealthscorecard.org/login/approach-planning-and-evaluation/)
- Systems thinking, resilience and risk management (https://onehealthscorecard.org/login/systems-thinking/)
- Intervention management and implementation research (https://onehealthscorecard.org/login/intervention-science/)

o *Topical Working Groups*

- Transdisciplinary research on zoonoses and VBDs (https://onehealthscorecard.org/login/transdisciplinary-research-on-zoonoses-and-vbds/)
- Health and biodiversity (https://onehealthscorecard.org/login/health-and-biodiversity/)
- Sacred ecology (https://onehealthscorecard.org/login/sacred-ecology/)
- Gender and equity (https://onehealthscorecard.org/login/gender-and-equity/)
- Community engagement (https://onehealthscorecard.org/login/community-engagement/)

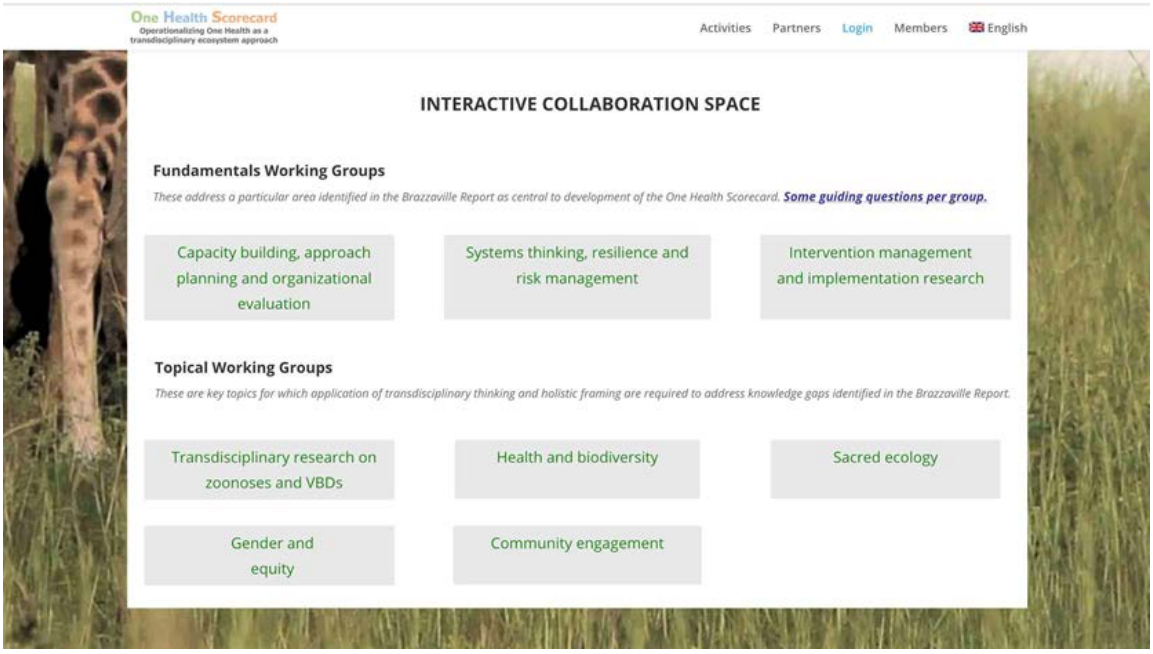


FIGURE 1. Interactive collaboration space in onehealthscorecard.org

– **Published a One Health Handbook.** This is a comprehensive reference source of One Health framing and integration of its challenges including the basis for its operationalization. This cutting-edge One Health fundamentals document was developed and incorporated into the web-based platform, along with key supporting materials, providing the scholarly and evidence-based background on One Health. This document was subsequently published as a chapter in the Springer/WHO handbook of Global Health [B. A. Wilcox and J. A. Steele. ©The Editors and the World Health Organization, April 2021 R. Haring (ed.), Handbook of Global Health, https://doi.org/10.1007/978-3-030-05325-3_88-1; see **FIGURE 2**], making it widely available within WHO and other collaborating agencies and organizations (FAO, OIE, UNEP, among others) for their One Health programmes.

FIGURE 2. One Health and Emerging Zoonotic Diseases: Framework, Integration and Challenges. B. A. Wilcox and J. A. Steele. ©The Editors and the World Health Organization, April 2021 R. Haring (ed.), Handbook of Global Health, https://doi.org/10.1007/978-3-030-05325-3_88-1

One Health and Emerging Zoonotic Diseases

Framework, Integration and Challenges

Bruce A. Wilcox and Jennifer A. Steele

Contents

Abstract

One Health is a rapidly developing area of integrative research and intervention focused on zoonotic diseases in the context of the human, animal, and environment interface. Its central tenet is the inseparability of the health of humans, animals, and ecosystems. Spawned by the recognition of the need for greater collaboration between veterinary and human medicine, One Health also requires consideration of the social and ecological dimensions of health challenges in order to create an integrative framework beyond biomedicine, including natural and social sciences, as well as local and traditional knowledge and perspectives. One Health offers an opportunity to reconcile disciplinary silos in the health sciences, and its transdisciplinary imperative offers solutions to the limits of conventional thinking in biomedicine and public health. This chapter examines how different sectors address and define zoonoses and points to the need to develop a global prioritization scheme for surveillance, reporting, and assessment of endemic, epidemic, and pandemic zoonoses according to their relative health

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R. Haring (ed.), *Handbook of Global Health*,
https://doi.org/10.1007/978-3-030-05325-3_88-1

Put together a One Health Glossary. An A-Z index of terms relevant to One Health. (https://onehealthscorecard.org/login/one-health-glossary/ **)**

An **online One Health pilot curriculum development component** was added to the collaborative effort which will build on and extend the fundamentals section of the web-based platform. 2 to 3 individuals from each of the Country teams have been selected and will participate in the pilot course development from October 2021 through January 2022. The Prototype Online Training course (An innovative / interactive virtual classroom for use in an open eLearning platform) 'Operationalizing One Health as a Transdisciplinary ecosystem approach: Linking health, environment and communities' is a coordinated effort by TDR in collaboration with GHGI and researchers from Tanzania, – Kenya, Cote d'Ivoire and South Africa. Progress towards implementation of this course are as follows:

- Modules for the course have been developed
- Selection of initial batch of trainees (4 per country team) is now finalized.

This training course is also one of the proposed WHO Technical Products on norms/standards, data and research for 2022-23 (TP), a collaboration between TDR and NTD.

Plans for 2022-2023

The proposed plans for this biennium include the following:

- A call for proposals to scale up the implementation and application of the One Health metrics/scorecard in Africa.
- Technical and funding support for a portfolio of projects in Africa.
- Mentoring and capacity building through a training course on Operationalizing One Health.

Approach to ensure quality:

VES will collaborate with WHO-PHE, WHO Regional Office for Africa (AFRO), through the Department of Protection of Human Environment (PHE), UN Environment, FAO-Africa, OIE-Africa and Fondation Merieux for implementation of the programme by ensuring that project outcomes feed into national climate change and health policy processes.

Uniqueness

Building on previous projects from ER 1.3.3, TDR's unit on Research for Implementation is best positioned for research and capacity building toward operationalizing an integrated, multisectoral and holistic One Health approach for the control of VBDs in the context of climate change. Through TDR's convening and facilitation role, various partners and stakeholders from different sectors are brought together for the One Health approach which is envisioned as a novel, essential policy and management tool (including a metrics/scorecard system) for the control of VBDs at a time of changing environment/climate conditions in Africa.

ER Objectives

ERObj-0023 : To operationalize and implement a One Health approach, embedded into the health and environment strategic alliance of country task teams, to enable African countries to manage the impact of VBDs in the context of climate change

Biennium Budget

Biennium: 2022-2023

Low and Hight Budget Scenario

	Low Budget Scenario	High Budget Scenario
Undesignated funds	USD 400000	USD 600000
Designated funds	USD 0	USD 0
Total	USD 400000	USD 600000

Planned Budget

Undesignated funds	USD 550000
Designated funds	USD 0
Total	USD 550000

Biennium: 2024-2025

Low and Hight Budget Scenario

	Low Budget Scenario	High Budget Scenario
Undesignated funds	USD 400000	USD 600000
Designated funds	USD 500000	USD 600000
Total	USD 900000	USD 1200000

Planned Budget

Undesignated funds	USD 400000
Designated funds	USD 500000
Total	USD 900000

.....

ER Biennium Risks

Biennium: 2024-2025

ERRisk - 0275: Health researchers and other stakeholders may encounter challenges in working under transdisciplinary circumstances (e.g. across different disciplines, knowledge sources and other multisectoral partners).

Actions To Mitigate Risk: The transdisciplinary approach will be promoted and advocated for from the onset as an essential aspect required of the proposals and throughout the projects. The online training course will also supplement the implementation of the research projects.

Mitigation Status: Planning phase

Biennium: 2024-2025

ERRisk - 0276: Knowledge translation outcomes may usually not be under the control or influence of the projects, particularly those in the decision- and policy-making positions.

Actions To Mitigate Risk: For this research programme, stakeholders, including from the affected communities and policy/decision-makers, will be engaged from the very beginning at the inception and during the course and completion of the

research projects to ensure their active involvement in conducting and reporting on the research on the research with the expectation that the results will be utilized as effectively as possible. It is anticipated that the periodic review of successes and failures of the projects and of the implementation of the research programme will allow timely remediation to potential problems that might occur during the course of the implementation of the projects.

Mitigation Status: Planning phase

Biennium: 2022-2023

ERRisk - 0259: Knowledge translation outcomes may usually not be under the control or influence of the projects, particularly those in the decision- and policy-making positions.

Actions To Mitigate Risk: For this research programme, stakeholders, including from the affected communities and policy/decision-makers, will be engaged from the very beginning at the inception and during the course and completion of the research projects to ensure their active involvement in conducting and reporting on the research on the research with the expectation that the results will be utilized as effectively as possible. It is anticipated that the periodic review of successes and failures of the projects and of the implementation of the research programme will allow timely remediation to potential problems that might occur during the course of the implementation of the projects.

Mitigation Status: On Track

Biennium: 2022-2023

ERRisk - 0258: Health researchers and other stakeholders may encounter challenges in working under transdisciplinary circumstances (e.g. across different disciplines, knowledge sources and other multisectoral partners).

Actions To Mitigate Risk: The transdisciplinary approach will be promoted and advocated for from the onset as an essential aspect required of the proposals and throughout the projects. The online training course will also supplement the implementation of the research projects.

Mitigation Status: On Track

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ER Biennium Outputs

Biennium: 2022-2023

EROutp-0315: Publication and dissemination of a call for proposals

Output Indicator: A call for proposals for technical and funding support addressing the scaled up us of the One Health Transdisciplinary Ecosystem Approach for Vector Borne Diseases in the context of Climate Change in Africa

Output Target Date: 31/03/2022

Output Progress Status: Completed

Output Progress Description: The call for proposals will initiate the implementation of this ER for 2022-23.

Biennium: 2022-2023

EROutp-0318: 2 projects being implemented in Africa

Output Indicator: Implementation of a portfolio of projects for the scaled up application of the One Health Transdisciplinary and Ecosystem Approach for Vector Borne Diseases in the context of Climate Change in Africa

Output Target Date: 30/06/2022

Output Progress Status: On Track

Output Progress Description: Implementation of projects from June 2022-Dec 2023

Biennium: 2024-2025

EROutp-0371: scientific publications of 4 research results for at least 4 African research consortia and launch of 3 new research projects. Under the 50 million scenario, two more research projects could be conducted.

Output Indicator: Conduct of One Health research projects for the control of VBDs in the context of climate change

Output Target Date: 31/12/2025

Output Progress Status: On Track

Output Progress Description:

Biennium: 2022-2023

EROutp-0316: A Special Project Team composed of at least external experts to review and recommend proposals for funding.

Output Indicator: Establish a Special Project Team to review proposals for funding/implementation

Output Target Date: 30/04/2022

Output Progress Status: Completed

Output Progress Description: The Special Project Team, composed of external experts will be put together to review and recommend proposals for funding.

Biennium: 2022-2023

EROutp-0319: A research uptake meeting to share new knowledge, data, decision support processes/tools to stakeholders

Output Indicator: Research Uptake meeting with researchers, project stakeholders and collaborators

Output Target Date: 31/12/2023

Output Progress Status: On Track

Output Progress Description: Online webinars are organised every quarter with researchers, project stakeholders and collaborators to share study progress and new knowledge concerning One Health and climate & health , data and decision support processes/tools

Biennium: 2022-2023

EROutp-0317: Protocols reviewed for ethics approval at WHO and at the country level

Output Indicator: Project protocols developed from proposals and submitted to WHO ERC and National Ethics Review Committees for approval

Output Target Date: 30/04/2023

Output Progress Status: On Track

Output Progress Description: Proposals recommended for funding will be developed into project protocols and submitted to WHO ERC and National Ethics Review Committees for approval.

Biennium: 2022-2023

EROutp-0320: African researchers trained in Operationalizing One Health through an online course which is offered at least once a year (in 2022 and 2023)

Output Indicator: Implementation of an online training course on Operationalizing One Health

Output Target Date: 30/06/2024

Output Progress Status: On Track

Output Progress Description: The operationalization of One Health will be supplemented by an online training course including the use of the scorecard/metrics system. It was developed and piloted. It is at a fine tuning stage before being made available on TDR website

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ER Biennium Outcomes

Biennium: 2024-2025

EROutc-0112: Scaled-up application of the One Health Transdisciplinary Ecosytem Approach for Vector Borne Diseases and other infectious diseases in the context of climate change

Progress made towards outcome :

Biennium: 2022-2023

EROutc-0082: Capacity building for research on the application of the One Health Transdisciplinary Ecosystem Approach for Vector Borne Diseases in the context of Climate Change in Africa; including roll out of an online training course (at least 20 trainees across Africa per year)

Progress made towards outcome : South-South sharing experience contribute to capacity building activities for improving research capacities of African countries for conducting research on One Health approach for improving VBD control

Biennium: 2022-2023

EROutc-0084: Research uptake and translation of tools/products from the research projects including the use of online training course for the scorecard/metrics systems on One Health operationalization

Progress made towards outcome : on track

Biennium: 2022-2023

EROutc-0083: Scaled-up application of the One Health Transdisciplinary Ecosytem Approach for Vector Borne Diseases in the context of climate change in African countries

Progress made towards outcome : 4 consortia started to develop new research projects applying One health transdisciplinary Ecosystem Approach for VBD in Africa

ER Project Links

Project ID : P22-00834 **PI Name :** AbdulHamid Lukambagire

ER Project Title : One health approach to control and understanding the dynamics of fascioliasis and schistosomiasis in the context of climate change in Rwanda and Tanzania

ER Start Date : 01/01/2020 **ER End Date :** 31/12/2025

Project ID : P21-00360 **PI Name :** Nabil Haddad

ER Project Title : Consultant for landscape analysis, joint SDF on VBDs and pockets of poverty

ER Start Date : 01/01/2020 **ER End Date :** 31/12/2025

Project ID : P21-00278 **PI Name :** Moses John Chimbari

ER Project Title : Provide technical support and expertise for piloting the Draft Plan for Operationalizing One Health.

ER Start Date : 01/01/2020 **ER End Date :** 31/12/2025

Project ID : P21-00277 **PI Name :** Paul Gwakisa

ER Project Title : Provide technical support and expertise for piloting the Draft Plan for Operationalizing One Health.

ER Start Date : 01/01/2020 **ER End Date :** 31/12/2025

Project ID : P21-00279 **PI Name :** Brama Koné

ER Project Title : Provide technical support and expertise for piloting the Draft Plan for Operationalizing One Health

ER Start Date : 01/01/2020 **ER End Date :** 31/12/2025

Project ID : P21-00280 **PI Name :** Benson B. A. Estambale

ER Project Title : Provide technical support and expertise for piloting the Draft Plan for Operationalizing One Health.

ER Start Date : 01/01/2020 **ER End Date :** 31/12/2025

Project ID : P22-00751 **PI Name :** Nadisha Sidhu

ER Project Title : Consultant contract to support One Health and Climate Change activities

ER Start Date : 01/01/2020 **ER End Date :** 31/12/2025

Project ID : P22-00835 **PI Name :** Cheikh Talla

ER Project Title : Enhancing One-health Surveillance and Control of Vector-borne Diseases related to Climate Change in the West Africa region

ER Start Date : 01/01/2020 **ER End Date :** 31/12/2025

Project ID : C00038 **PI Name :** Bruce Wilcox

ER Project Title : (ER 1.3.3) Technical support in the delivery of products relevant to Operationalizing One Health for Vector Borne Diseases and Climate Change

ER Start Date : 01/01/2020 **ER End Date :** 31/12/2025

Project ID : P22-00836 **PI Name :** Moses Chimbari

ER Project Title : Application of One Health approach for reducing the burden of vector-borne diseases in vulnerable communities in the context of climate change

ER Start Date : 01/01/2020 **ER End Date :** 31/12/2025

Project ID : P22-00833 **PI Name :** Charles Drago Kato

ER Project Title : Strengthening Surveillance of Leishmaniasis in Uganda and Kenya through a Collaborative Multisectoral One Health Capacity Building Approach in Endemic foci.

ER Start Date : 01/01/2020 **ER End Date :** 31/12/2025

ER Country Links

Country:	Côte d'Ivoire	**WHO Region :**	AFRO	**World Bank Income Group :**	Lower middle income
Country:	South Africa	**WHO Region :**	AFRO	**World Bank Income Group :**	Upper middle income
Country:	Rwanda	**WHO Region :**	AFRO	**World Bank Income Group :**	Low income
Country:	Kenya	**WHO Region :**	AFRO	**World Bank Income Group :**	Lower middle income
Country:	Nigeria	**WHO Region :**	AFRO	**World Bank Income Group :**	Lower middle income
Country:	Tanzania	**WHO Region :**	AFRO	**World Bank Income Group :**	Lower middle income
Country:	Tanzania	**WHO Region :**	AFRO	**World Bank Income Group :**	Low income
Country:	Senegal	**WHO Region :**	AFRO	**World Bank Income Group :**	Lower middle income

Expected Result: 1.1.1

Title: Country preparedness for disease outbreaks

Strategic Work Area: Research for implementation **Workstream:** Research for implementation

ER type:	Evolved	**Funding type:**	UD and DF
Start date:	01/01/2013	**End date:**	31/12/2025
ER status:	On Track	**Comment:**	
WHO region:	Global		
Partners:	Endemic country programmes and researchers, WHO regional offices		
Diseases:	Arboviral diseases;Arboviruses;Chikungunya;Dengue;Vector-borne diseases;Other		
Review mechanism:	Scientific working group + other ad hoc or collaboration-based review systems as appropriate		

ER manager: Corinne Simone Collette MERLE
Team: Michelle Villasol, Corinne Merle, Gildas Yahouedo, Nolwenn Conan
Number of people working on projects: 120

FENSA clearance obtained for all Non-State Actors? Yes
Justification for no FENSA clearance: No

TDR partnership criteria

Add value:	Yes	Use resources:	Yes
Align goals:	Yes	Address knowledge gaps:	Yes
Integrate mandates:	Yes	Build strengths:	Yes
Reduce burden:	No	Foster networking:	Yes
Increase visibility:	Yes		

TDR partnership criteria indicators

Objectives aligned:	Yes	Objectives aligned
Roles complimentary:	Yes	Complementary role and responsabilities
Coordination transparent:	Yes	Transparent coordination
Visibility:	Yes	Visibility of TDR higlighted

Objectives and results chain

Approach to ensure uptake:	National control programmes and WHO (HQ, ROs) fully involved in research planning, implementation and analysis
Up-take/Use Indicator:	TDR outputs considered among evidence informing guidelines and policy decisions or control programme advisory committee recommendations
Gender and geographic equity:	Gender specific Zika issues as they relate to outbreak surveillance and response will be taken into account during research design. All affected regions are considered.
Publication plan:	Scientific meetings, Open access journals, TDR website

Up-take/use indicator target date: 31/12/2025

Sustainable Development Goals

Good Health and Well-being;Reduced Inequality;Partnerships to achieve the Goal

Concept and approach

Rationale:

This ER addresses an important public health problem (prediction, early detection and response to devastating outbreaks). Considering the growing importance of Aedes-borne diseases, the initial focus was on dengue, chikungunya, Zika and yellow fever but we move slowly towards addressing other climate sensitive diseases such as meningitis, cholera outbreaks and promoting a One Health approach,

Dengue is the fastest growing arboviral disease worldwide with periodic threats of large outbreaks particularly in urban areas of Latin America and Asia posing an enormous social, economic and health burden on individuals, families and governments. Chikungunya has been for a long time endemic in South India and surrounding areas. In 2013 it was introduced to Latin America leading to large epidemics in nonimmune populations. This was followed by the introduction of the Zika virus in Latin America which attacks under largely unknown conditions the nervous system leading to Guillen Barre syndrome and microcephaly in new-born babies.

For all these diseases, country preparedness and response are generally weak and ineffective. Few vector control measures are backed by evidence and are generally deployed when the outbreak is already flaring.

Yellow fever is (despite an efficacious vaccine) a continuous threat in rural areas of Africa and Latin America (mainly Brazil) with the possibility of moving to urban areas and converting into urban yellow fever.

Meningitis is a recurrent threat in many countries and a high burden of mortality and incidence is concentrated in the African meningitis belt, especially for children younger than 5 years. When the surveillance system is inadequate, the response arrives too late for avoiding large outbreaks. If, based on climate data, the occurrence of an outbreak could be predicted in advance, surveillance measures could be strengthened in the at-risk areas to trigger immediate action if occurring.

Design and methodology:

For this ER, TDR is providing the following support:

1. Support to country control programmes worldwide to identify signals that can alert country control programmes to an impending arbovirus outbreak. This has led to a model contingency plan and **an Early Warning and Response System (EWARS) for arbovirus outbreaks**
2. Support to the Ethiopian National Disease Control Programme to pilot EWARS **for predicting meningitis outbreak**
3. Strengthening surveillance and control of Arboviral diseases in Africa including **yellow fever outbreak prevention & response in high-risk African countries**

Approach to ensure quality:	Scientific working group and, as applicable, other expert review of proposals, progress reports, close monthly monitoring of country progress in the conduct of their research protocol.

ER Objectives

ERObj-0000 : To enable countries to improve their response capacity to arboviruses outbreaks and other diseases outbreaks

ERObj-0068 : Strengthening surveillance and control of Arboviral diseases in Africa including yellow fever outbreak prevention & response in high-risk African countries

Biennium Budget

Biennium: 2022-2023

Low and Hight Budget Scenario

	Low Budget Scenario	High Budget Scenario
Undesignated funds	USD 150000	USD 200000
Designated funds	USD 0	USD 0
Total	USD 150000	USD 200000

Planned Budget

Undesignated funds	USD 200000
Designated funds	USD 0
Total	USD 200000

Biennium: 2024-2025

Low and Hight Budget Scenario

	Low Budget Scenario	High Budget Scenario
Undesignated funds	USD 150000	USD 200000
Designated funds	USD 500000	USD 500000
Total	USD 650000	USD 700000

Planned Budget

Undesignated funds	USD 150000
Designated funds	USD 500000

Total	USD 650000

ER Biennium Risks

Biennium: 2022-2023

ERRisk - 0222: Lack of interest outside epidemic peaks resulting in insufficient funding

Actions To Mitigate Risk: Raise awareness of potential donors; explore alternative ways of supporting work

Mitigation Status: On Track

Biennium: 2024-2025

ERRisk - 0300: Lack of interest outside epidemic peaks resulting in insufficient funding

Actions To Mitigate Risk: Raise awareness of potential donors; explore alternative ways of supporting work

Mitigation Status: Planning phase

ER Biennium Outputs

Biennium: 2022-2023

EROutp-0280: situation analysis report

Output Indicator: Strengthened capacities of African countries in terms of disease outbreaks response

Output Target Date: 31/12/2023

Output Progress Status: Completed

Output Progress Description:

Biennium: 2022-2023

EROutp-0281: Number of countries using EWARS tool

Output Indicator: Expanded countries' capacities to use EWARS tool

Output Target Date: 31/12/2023

Output Progress Status: On Track

Output Progress Description:

Biennium: 2024-2025

EROutp-0400: at least one research package was developped and endorsed by WHO NTD or WHO EYE department

Output Indicator: availability of tools for strengthening capacities of countries in Africa for the surveillance and control of arboviral diseases including Yellow fever

Output Target Date: 01/01/2025

Output Progress Status: On Track

Output Progress Description: Research package for the conduct of Root cause analysis for understanding the occurence of Yellow fever Outbreaks in countries where mass vaccination was conducted: at a development stage

Biennium: 2024-2025

EROutp-0370: By 2025, more than 15 countries use EWARS in specific at-risk districts and at least 3 countries integrated EWARS in their surveillance system (Under the $US 50 million scenario, with 50,000 USD more, EWARS could be implemented in two new countries

Output Indicator: Integration of EWARS in countries 'surveillance system

Output Target Date: 31/12/2025

Output Progress Status: On Track

Output Progress Description:

ER Biennium Outcomes

Biennium: 2024-2025

EROutc-0111: Country preparedness and policy decisions for arbovirus outbreaks informed or facilitated by TDR outputs

Progress made towards outcome :

Biennium: 2022-2023

EROutc-0062: Country preparedness and policy decisions for arbovirus outbreaks informed or facilitated by TDR outputs

Progress made towards outcome : The Early Warning Response for dengue Outbreak (EWARS) is used by 17 countries. Evaluation studies to measure the impact of EWARS on dengue control are ongoing in Thailand and Colombia

Biennium: 2024-2025

EROutc-0123: Process and tools were developed to strengthen country capacities for the Surveillance and Control of Arboviral Diseases including Yellow Fever in Africa

Progress made towards outcome :

ER Project Links

Project ID : P21-00349 **PI Name :** Winfried Kern

ER Project Title : Support to research for Improved VL Surveillance, Case Detection and Vector Control in the scope of VL elimination Initiative in Bangladesh and Nepal

ER Start Date : 01/01/2013 **ER End Date :** 31/12/2025

Project ID : B80100 **PI Name :** Joacim Rocklov

ER Project Title : Maintenance of the web application version of dengue Early Warning and Response System (EWARS)

ER Start Date : 01/01/2013 **ER End Date :** 31/12/2025

Project ID : P21-00490 **PI Name :** Apinya Niramitsantipong

ER Project Title : Thailand - Better Documenting EWARS Effectiveness on Dengue Control

ER Start Date : 01/01/2013 **ER End Date :** 31/12/2025

Project ID : P23-00939 **PI Name :** Laith Naser Hussain

ER Project Title : Technical assistance for the implementation of an “Effective, affordable and evidence-based dengue early warning and response systems”(EWARS for dengue control)

ER Start Date : 01/01/2013 **ER End Date :** 31/12/2025

Project ID : P23-00945 **PI Name :** Nolwenn Conan

ER Project Title : Addressing the yellow fever immunization gaps by improving its assessment in targeted countries.

ER Start Date : 01/01/2013 **ER End Date :** 31/12/2025

Project ID : P23-00882 **PI Name :** Hajo Grundmann

ER Project Title : Support for effective implementation of an early warning and response systems for dengue control (EWARS for dengue control).

ER Start Date : 01/01/2013 **ER End Date :** 31/12/2025

Project ID : P20-00069 **PI Name :** Winfried Kern

ER Project Title : Research Programme on “Effective, affordable and evidence-based dengue early warning and response systems”

ER Start Date : 01/01/2013 **ER End Date :** 31/12/2025

Project ID : P20-00097 **PI Name :** Laith Naser Hussain

ER Project Title : Research Programme on “Effective, affordable and evidence-based dengue early warning and response systems”.

ER Start Date : 01/01/2013 **ER End Date :** 31/12/2025

Project ID : B80229 **PI Name :** Margarita Ronderos

ER Project Title : To prepare reports of the Expert Meeting on Dengue-Zika-Chikungunya Early Outbreak Warning and Response, WHO-HQ, Geneva, Switzerland, 19-20 September 2019

ER Start Date : 01/01/2013 **ER End Date :** 31/12/2025

Project ID : P20-00137 **PI Name :** Gildas Yahouedo

ER Project Title : Data collection for measuring the capacities of the South-East and Central Africa countries for entomological/epidemiological surveillance of arboviral diseases and vector control

ER Start Date : 01/01/2013 **ER End Date :** 31/12/2025

Project ID : B80015 **PI Name :** David Benitez-Valladares

ER Project Title : Research Programme on 'Effective, affordable and evidence-based dengue early warning and response systems '

ER Start Date : 01/01/2013 **ER End Date :** 31/12/2025

Project ID : P21-00191 **PI Name :** Gildas Yahouedo

ER Project Title : Situation analysis on surveillance and control on vector borne diseases in sub-Saharan Africa

ER Start Date : 01/01/2013 **ER End Date :** 31/12/2025

Project ID : B80117 **PI Name :** Maquines Odhlambo Sewe

ER Project Title : Research Programme on 'Effective, affordable and evidence-based dengue early warning and response systems '.

ER Start Date : 01/01/2013 **ER End Date :** 31/12/2025

Project ID : B80020 **PI Name :** Laith Naser Hussain

ER Project Title : Research Programme on 'Effective, affordable and evidence-based dengue early warning and response systems '

ER Start Date : 01/01/2013 **ER End Date :** 31/12/2025

Project ID : B80116 **PI Name :** Ursula Wittwer Backofen

ER Project Title : Research Programme on 'Effective, affordable and evidence-based dengue early warning and response systems '

ER Start Date : 01/01/2013 **ER End Date :** 31/12/2025

ER Country Links

Country:	South Africa	**WHO Region :**	AFRO	**World Bank : Income Group**	Upper middle income
Country:	Angola	**WHO Region :**	AFRO	**World Bank : Income Group**	Lower middle income
Country:	Burundi	**WHO Region :**	AFRO	**World Bank : Income Group**	Low income
Country:	Congo, Rep.	**WHO Region :**	AFRO	**World Bank : Income Group**	Lower middle income
Country:	Eritrea	**WHO Region :**	AFRO	**World Bank : Income Group**	Low income
Country:	Benin	**WHO Region :**	AFRO	**World Bank : Income Group**	Lower middle income
Country:	Mali	**WHO Region :**	AFRO	**World Bank : Income Group**	Low income
Country:	Mauritania	**WHO Region :**	AFRO	**World Bank : Income Group**	Lower middle income
Country:	Rwanda	**WHO Region :**	AFRO	**World Bank : Income Group**	Low income
Country:	Senegal	**WHO Region :**	AFRO	**World Bank : Income Group**	Lower middle income
Country:	Burkina Faso	**WHO Region :**	AFRO	**World Bank : Income Group**	Low income
Country:	Botswana	**WHO Region :**	AFRO	**World Bank : Income Group**	Upper middle income

Country:	Cameroon	**WHO Region :**	AFRO	**World Bank : Income Group**	Lower middle income
Country:	Algeria	**WHO Region :**	AFRO	**World Bank : Income Group**	Lower middle income
Country:	Chad	**WHO Region :**	AFRO	**World Bank : Income Group**	Low income
Country:	Côte d'Ivoire	**WHO Region :**	AFRO	**World Bank : Income Group**	Lower middle income
Country:	Cabo Verde	**WHO Region :**	AFRO	**World Bank : Income Group**	Lower middle income
Country:	Guinea	**WHO Region :**	AFRO	**World Bank : Income Group**	Low income
Country:	Liberia	**WHO Region :**	AFRO	**World Bank : Income Group**	Low income
Country:	Central African Republic	**WHO Region :**	AFRO	**World Bank : Income Group**	Low income
Country:	Ghana	**WHO Region :**	AFRO	**World Bank : Income Group**	Lower middle income
Country:	Lesotho	**WHO Region :**	AFRO	**World Bank : Income Group**	Lower middle income
Country:	Mauritius	**WHO Region :**	AFRO	**World Bank : Income Group**	High income
Country:	Namibia	**WHO Region :**	AFRO	**World Bank : Income Group**	Upper middle income
Country:	Comoros	**WHO Region :**	AFRO	**World Bank : Income Group**	Lower middle income
Country:	Congo, Dem. Rep.	**WHO Region :**	AFRO	**World Bank : Income Group**	Low income
Country:	Equatorial Guinea	**WHO Region :**	AFRO	**World Bank : Income Group**	Upper middle income
Country:	Ethiopia	**WHO Region :**	AFRO	**World Bank : Income Group**	Low income
Country:	Gambia, The	**WHO Region :**	AFRO	**World Bank : Income Group**	Low income
Country:	Eswatini	**WHO Region :**	AFRO	**World Bank : Income Group**	Lower middle income
Country:	Madagascar	**WHO Region :**	AFRO	**World Bank : Income Group**	Low income
Country:	Seychelles	**WHO Region :**	AFRO	**World Bank : Income Group**	High income
Country:	Uganda	**WHO Region :**	AFRO	**World Bank : Income Group**	Low income

Country:	Zambia	**WHO Region :**	AFRO	**World Bank : Income Group**	Lower middle income
Country:	Gabon	**WHO Region :**	AFRO	**World Bank : Income Group**	Upper middle income
Country:	Guinea-Bissau	**WHO Region :**	AFRO	**World Bank : Income Group**	Low income
Country:	Kenya	**WHO Region :**	AFRO	**World Bank : Income Group**	Lower middle income
Country:	Malawi	**WHO Region :**	AFRO	**World Bank : Income Group**	Low income
Country:	Nigeria	**WHO Region :**	AFRO	**World Bank : Income Group**	Lower middle income
Country:	Sierra Leone	**WHO Region :**	AFRO	**World Bank : Income Group**	Low income
Country:	South Sudan	**WHO Region :**	AFRO	**World Bank : Income Group**	Low income
Country:	Mozambique	**WHO Region :**	AFRO	**World Bank : Income Group**	Low income
Country:	Togo	**WHO Region :**	AFRO	**World Bank : Income Group**	Low income
Country:	Tanzania	**WHO Region :**	AFRO	**World Bank : Income Group**	Lower middle income
Country:	Niger	**WHO Region :**	AFRO	**World Bank : Income Group**	Low income
Country:	São Tomé and Principe	**WHO Region :**	AFRO	**World Bank : Income Group**	Lower middle income
Country:	Zimbabwe	**WHO Region :**	AFRO	**World Bank : Income Group**	Lower middle income
Country:	Brazil	**WHO Region :**	AMRO	**World Bank : Income Group**	Upper middle income
Country:	Colombia	**WHO Region :**	AMRO	**World Bank : Income Group**	Upper middle income
Country:	Dominican Republic	**WHO Region :**	AMRO	**World Bank : Income Group**	Upper middle income
Country:	Sri Lanka	**WHO Region :**	SEARO	**World Bank : Income Group**	Upper middle income
Country:	Peru	**WHO Region :**	AMRO	**World Bank : Income Group**	Upper middle income
Country:	Thailand	**WHO Region :**	SEARO	**World Bank : Income Group**	Upper middle income
Country:	Venezuela, RB	**WHO Region :**	AMRO	**World Bank : Income Group**	Upper middle income

Country:	Indonesia	**WHO Region :**	SEARO	**World Bank : Income Group**	Lower middle income
Country:	Malaysia	**WHO Region :**	WPRO	**World Bank : Income Group**	Upper middle income
Country:	Vietnam	**WHO Region :**	WPRO	**World Bank : Income Group**	Lower middle income
Country:	Gambia, The	**WHO Region :**	AFRO	**World Bank : Income Group**	Low income
Country:	Maldives	**WHO Region :**	SEARO	**World Bank : Income Group**	Upper middle income
Country:	India	**WHO Region :**	SEARO	**World Bank : Income Group**	Lower middle income
Country:	Mauritania	**WHO Region :**	AFRO	**World Bank : Income Group**	Lower middle income
Country:	Benin	**WHO Region :**	AFRO	**World Bank : Income Group**	Low income
Country:	Senegal	**WHO Region :**	AFRO	**World Bank : Income Group**	Lower middle income
Country:	Sierra Leone	**WHO Region :**	AFRO	**World Bank : Income Group**	Low income
Country:	Ghana	**WHO Region :**	AFRO	**World Bank : Income Group**	Lower middle income
Country:	Guinea	**WHO Region :**	AFRO	**World Bank : Income Group**	Low income
Country:	Cabo Verde	**WHO Region :**	AFRO	**World Bank : Income Group**	Lower middle income
Country:	Togo	**WHO Region :**	AFRO	**World Bank : Income Group**	Low income
Country:	Liberia	**WHO Region :**	AFRO	**World Bank : Income Group**	Low income
Country:	Niger	**WHO Region :**	AFRO	**World Bank : Income Group**	Low income
Country:	Nigeria	**WHO Region :**	AFRO	**World Bank : Income Group**	Lower middle income
Country:	Mali	**WHO Region :**	AFRO	**World Bank : Income Group**	Low income
Country:	Burkina Faso	**WHO Region :**	AFRO	**World Bank : Income Group**	Low income
Country:	Côte d'Ivoire	**WHO Region :**	AFRO	**World Bank : Income Group**	Lower middle income
Country:	Bangladesh	**WHO Region :**	SEARO	**World Bank : Income Group**	Lower middle income

Country:	Cambodia	**WHO Region :**	WPRO	**World Bank : Income Group**	Lower middle income
Country:	Nepal	**WHO Region :**	SEARO	**World Bank : Income Group**	Lower middle income
Country:	Myanmar	**WHO Region :**	SEARO	**World Bank : Income Group**	Lower middle income

Expected Result: 1.1.4

Title: Country resilience to the threat of drug-resistant infections

Strategic Work Area: Research for implementation **Workstream:** Research for implementation

ER type:	Continuing	**Funding type:**	UD and DF
Start date:	01/01/2018	**End date:**	31/12/2025
ER status:	On Track	**Comment:**	87 research projects completed in 7 countries, 80 published, 78% influenced policy and/or practice; 90% of trainees applying their skills to AMR practice ndicating health system benefit; 33% of trainees became mentors showing capacity built.

WHO region: Global

Partners: 7 WHO country offices, National AMR committees, 73 implementing partners including NGOs, research and academic institutions, relevant MoH departments/programmes, hospitals/clinics in selected countries. Fleming Fund and NIHR (funder)

Diseases: Not Disease-Specific

Review mechanism: Scientific working group + other adhoc or collaboration-based review systems as appropriate

ER manager: Rony ZACHARIAH

Team: Abraham Aseffa, Ekua Johnson, Garry Aslanyan, Corinne Merle, Annette Kuesel, Mohammed Khogali, Michelle Villasol, Maier Mary, Abdul Masoudi, Mariam Otmani del Bario, Kamau Eddy, Terry Robert, Zachariah Rony

Number of people working on projects: 14

FENSA clearance obtained for all Non-State Actors? No

Justification for no FENSA clearance: No

TDR partnership criteria

Add value:	Yes	Use resources:	Yes
Align goals:	Yes	Address knowledge gaps:	Yes
Integrate mandates:	Yes	Build strengths:	Yes
Reduce burden:	Yes	Foster networking:	Yes
Increase visibility:	Yes		

TDR partnership criteria indicators

Objectives aligned:	Yes	Aligned
Roles complimentary:	Yes	WHO country offices and SORT IT partners leverage their local convening power and allow use of their trained and experienced human resources for implementation
Coordination transparent:	Yes	All research subjects and participants are endorsed by national AMR selection committees, data and publications are open access, Phone calls each month with partners, all reports shared widely. SORT IT selection criteria and SOPs established.
Visibility:	Yes	The TDR website is updated every quarter and all reports and training documents include the required Logos. All published studies are open access and disseminated through various channels

Objectives and results chain

Approach to ensure uptake: Early engagement with those expected to use the results, regular updates to stake holders and relevant programmes and active involvement of relevant stakeholders in planning, implementation, consultations,

	policy and issue briefs. A new training module on building capacity for effective research communication for decision makers was developed and integrated into trainings .
Up-take/Use Indicator:	New or updated/improved guidelines, policies, implementation plans and/or practice (as applicable) informed by TDR outputs
Gender and geographic equity:	Beneficiaries: Drug resistance affects both sexes alike. Geographic equity will be dependent on the disease addressed and the target countries which currently include selected countries in Africa, Asia and Latin America. Calls for proposals include the statement that TDR is committed to Equality, Diversity and Inclusivity in science. Researchers are encouraged to apply whatever their gender identity, sexual orientation, ethnicity, religious, cultural and social backgrounds, or (dis)ability status. Collaborators will be those participating in the preparation and submission of the proposal funded by third parties - if applicable.
Publication plan:	Scientific meetings, Open access journals, TDR website, TDR-gateway, Partner websites, published annual reports
Up-take/use indicator target date:	31/12/2025

Sustainable Development Goals

Good Health and Well-being;Quality Education;Gender Equality;Clean Water and Sanitation;Industry, Innovation and Infrastructure;Responsible Consumption and Production;Life Below Water;Life on Land;Partnerships to achieve the Goal

Concept and approach

Rationale:

AMR is a global public health challenge that makes standard treatments ineffective and allows infections to persist and spread. To implement effective plans for containment of /response to emerging drug resistance, countries need support for:

1. Building sustainable local capacity to conduct operational research and for using programme data

2. Improved generation and utilization of data to tackle AMR along the strategic pillars:

a) Strengthen surveillance, monitoring and reporting

b) Reduce incidence of infection (health facilities, community, animal health)

c) Optimize use of antimicrobials (human, veterinary, agriculture)

d) Make sustainable investments in new diagnostics and measuring burden

3. Building sustainable structures and processes for informed decision-making and knowledge management to maximize broader research impact.

Design and methodology:

The approach involves early and multi-disciplinary involvement with those expected to use the results and includes the proven SORT IT approach to generate evidence for informed decision making. Research questions are aligned to country priorities and the training model includes the 3 TDR pillars namely 1) research implementation 2) capacity building and 3) global engagement. A training of trainers programme is embedded in SORT IT to foster sustainability.

Approach to ensure quality:

Selection of countries, partners and trainees are guided by specific criteria, projects and are closely monitored; selection of investigators involve specific eligibility criteria including appropriate expertise through review of their proposals by experienced technical committees complemented by external subject matter experts, and with specific training activities, as applicable.

The SORT IT approach has its own built-in quality and performance standards which are monitored and reported on a quarterly basis

ER Objectives

ERObj-0001 : 1. Support countries in developing practical approaches to implementation of effective strategies for preventing, detecting and containing drug resistant infections.

ERObj-0002 : 2. Build sustainable capacity to conduct operational research using "one health" data and use the generated knowledge for informed-decision making to improve public health

Biennium Budget

Biennium: 2022-2023

Low and Hight Budget Scenario

	Low Budget Scenario	High Budget Scenario
Undesignated funds	USD 200000	USD 400000
Designated funds	USD 3400000	USD 4500000
Total	USD 3600000	USD 4900000

Planned Budget

Undesignated funds	USD 200000
Designated funds	USD 2211000
Total	USD 2411000

Biennium: 2024-2025

Low and Hight Budget Scenario

	Low Budget Scenario	High Budget Scenario
Undesignated funds	USD 300000	USD 500000
Designated funds	USD 200000	USD 700000
Total	USD 500000	USD 1200000

Planned Budget

Undesignated funds	USD 300000
Designated funds	USD 200000
Total	USD 500000

ER Biennium Risks

Biennium: 2022-2023

ERRisk - 0227: Lack of continued engagement from WHO country offices and AMR national committees

Actions To Mitigate Risk: Continue close collaboration with WHO country offices, AMR committees and implementers throughout the project cycle. Provide additional financial, human resources and implementation support to WHO Country offices and AMR committees

Mitigation Status: On Track

Biennium: 2024-2025

ERRisk - 0291: Insufficient funding

Actions To Mitigate Risk: Expand the scope of fund raising activities

Mitigation Status: Planning phase

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ER Biennium Outputs

Biennium: 2022-2023

EROutp-0273: Report to scientific working group (and DF agency, as applicable)

Output Indicator: Strategies for monitoring and responding to potential emergence of drug resistance

Output Target Date: 31/12/2023

Output Progress Status: On Track

Output Progress Description: Of 74 studies completed, 47% were focused on improving monitoring and evaluation systems which is the pillar 2 of the Global AMR action plan. The findings of these studies are currently being moved to action. In 2023/2024, we will formally evaluate the impact of the implemented interventions on improving the monitoring system in countries. We have also completed 21 studies through impact grants and these studies have helped better understand the complexities behind AMR in countries

Biennium: 2024-2025

EROutp-0357: Reports/publications and examples of good practice made available

Output Indicator: Documentation of practical approaches to improve targeted treatment and reduce drug misuse and risk of resistance development and spread

Output Target Date: 31/12/2025

Output Progress Status:

Output Progress Description:

Biennium: 2022-2023

EROutp-0271: Reports/publications made available

Output Indicator: Documentation of practical approaches to improve targeted treatment and reduce drug misuse and risk of resistance development and spread

Output Target Date: 31/12/2023

Output Progress Status: On Track

Output Progress Description: 74 completed studies and evidence briefs. Of the first 36 SORT IT studies from Asia and Africa that were assessed 12 months after completion, 71% influenced policy and/or practice on approaches related to reducing drug misuse and reducing the risk of resistance development and spread. In terms of applying acquired skills from SORT IT, 86% of trainees are applying their skills to AMR practice, 56% to the COVID-19 response and 64% completed a new research study. To date, 25% of those trained became mentors after one training cycle. These figures indicate collateral benefits to the health system and capacity built within the health system to use practical skills that were acquired.

Biennium: 2022-2023

EROutp-0270: Strategies endorsed by stakeholders at relevant levels

Output Indicator: OR/IR strategies for countries to build effective systems for monitoring and responding to emerging drug resistance of all relevant infectious agents

Output Target Date: 31/12/2023

Output Progress Status: On Track

Output Progress Description: 72 operational research studies completed and 65 published. About 50% of all studies are focused on improving surveillance which is the pulse of monitoring and evaluations systems for AMR. The findings of these studies are being moved to action to influence policy and/or practices

Biennium: 2024-2025

EROutp-0358: Strategies and activities endorsed by stakeholders at relevant levels

Output Indicator: OR/IR strategies for countries to build effective systems for monitoring and responding to emerging drug resistance of all relevant infectious agents

Output Target Date: 31/12/2025

Output Progress Status:

Output Progress Description:

Biennium: 2022-2023

EROutp-0043: Strategies endorsed by stakeholders at relevant levels

Output Indicator: OR/IR strategies for countries to build effective systems for monitoring and responding to emerging drug resistance of all relevant infectious agents

Output Target Date: 31/12/2023

Output Progress Status: On Track

Output Progress Description: 87 AMR research projects completed in 7 countries of which 83 were published. Of the first 49 studies assesses for impact on OR/IR strategies 78% had an impact on policy and practice at national. sub-national and health facility level. A special journal issue highlighting impact of research was commissioned with 12 case stories to be included along with an editorial.

Biennium: 2022-2023

EROutp-0095: Reports of evaluations available (publications or other documents)

Output Indicator: Evaluation of practical approaches to improve targeted treatment and reduce drug misuse and risk of resistance

Output Target Date: 31/12/2023

Output Progress Status: On Track

Output Progress Description: 87 AMR research projects completed in 7 countries of which 83 were published. Of the first 49 studies assesses for impact on OR/IR strategies 78% had an impact on policy and practice at national, sub-national and health facility level. A special journal issue highlighting impact of research was commissioned with 12 case stories to be included along with an editorial.

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ER Biennium Outcomes

Biennium: 2022-2023

A total of 235 individuals trained with increasing critical mass of networked and trained OR practitioners (male, female and LMIC first and last authors) on AMR in public health programmes and NGOs being built.

Country-wide studies for informing the five pillars of the AMR global actions plans are ongoing or have been completed in seven countries (Colombia, Ecuador, Ghana, Myanmar, Nepal, Sierra Leone, Uganda). A new regional initiative to tackle AMR is underway in Egypt, Iran, Tunisia and UAE.

Strategic engagement with relevant stakeholders and decision makers underway at national/sub-national level to include them as part of the research team

EROutc-0059: Guidelines, policies or policy implementation plans (as applicable) informed by TDR outputs

Progress made towards outcome : 87 research studies completed, 235 individuals from 7 countries trained. Of the first 49 studies from Asia and Africa that were assessed 12 months after completion, 78% influenced policy and/or practice. In terms of applying acquired skills from SORT IT, 90% of trainees are applying their skills to AMR practice, 63% to tackling emerging infection and 60% completed a new research study. To date, 33% of those trained became mentors after one training cycle. These figures indicate effectiveness of research and training, collateral benefits to the health system, sustainable capacity built and field-level impact.

73 partner institutions joined the TDR led SORT IT global partnership to tackle AMR, highlighting TDRs power to mobilize global engagement.

Biennium: 2022-2023

A total of 235 individuals trained with increasing critical mass of networked and trained OR practitioners (male, female and LMIC first and last authors) on AMR in public health programmes and NGOs being built.

Country-wide studies for informing the five pillars of the AMR global actions plans are ongoing or have been completed in seven countries (Colombia, Ecuador, Ghana, Myanmar, Nepal, Sierra Leone, Uganda). A new regional initiative to tackle AMR is underway in Egypt, Iran, Tunisia and UAE.

Strategic engagement with relevant stakeholders and decision makers underway at national/sub-national level to include them as part of the research team

EROutc-0058: National capacity to tackle antimicrobial resistance built

Progress made towards outcome : 235 individuals from 7 countries trained on implementation research including health workers, agricultural and veterinary and environmental officers, WHO country office staff, academia and former alumni. Of those trained

roughly 90% are applying their acquired skills to tackle AMR and other emerging infections in their country, 60% completed a new research study and 33% of those trained became mentors after one training cycle. These figures indicate capacity built and transversal benefits to the health system.

Biennium: 2024-2025

A total of 235 individuals trained with increasing critical mass of networked and trained OR practitioners (male, female and LMIC first and last authors) on AMR in public health programmes and NGOs being built.

Country-wide studies for informing the five pillars of the AMR global actions plans are ongoing or have been completed in seven countries (Colombia, Ecuador, Ghana, Myanmar, Nepal, Sierra Leone, Uganda). A new regional initiative to tackle AMR is underway in Egypt, Iran, Tunisia and UAE.

Strategic engagement with relevant stakeholders and decision makers underway at national/sub-national level to include them as part of the research team

EROutc-0102: Guidelines, policies or policy implementation plans (as applicable) informed by TDR outputs

Progress made towards outcome : Completed research will be assessed for impact in 2024 and new research studies that are relevant to countries will be started

ER Project Links

Project ID : B80197 **PI Name :** Alexandre Delamou

ER Project Title : Providing senior technical expertise for implementing the Structured Operational Research and Training Initiative (SORT IT) on antimicrobial resistance in Low- and Middle-Income Countries

ER Start Date : 01/01/2018 **ER End Date :** 31/12/2025

Project ID : C00016 **PI Name :** Selma Dar Berger

ER Project Title : APW with the Union for Independent review of ethics considerations for analysis of routine prog for SORT IT courses

ER Start Date : 01/01/2018 **ER End Date :** 31/12/2025

Project ID : P20-00118 **PI Name :** Selma Dar Berger

ER Project Title : Technical support for conducting a "survey to inform rescheduling of upcoming SORT IT courses on Antimicrobial Resistance due to COVID-19

ER Start Date : 01/01/2018 **ER End Date :** 31/12/2025

Project ID : P20-00131 **PI Name :** Katherine Tayler-Smith

ER Project Title : Literature search, categorization and archiving of scientific publications for supporting mod 3 of the Asia & Africa regional and Nepal national SORT IT Programs on tackling AMR

ER Start Date : 01/01/2018 **ER End Date :** 31/12/2025

Project ID : B80173 **PI Name :** Debra Donckel

ER Project Title : Providing senior technical expertise for implementing the Structured Operational Research and Training Initiative (SORT IT) on antimicrobial resistance in Low- and Middle-Income Countries

ER Start Date : 01/01/2018 **ER End Date :** 31/12/2025

Project ID : P21-00220 **PI Name :** Evelina Chapman

ER Project Title : SORT IT module 4 development of training material – how to develop a plain language summary to communicate operational research findings

ER Start Date : 01/01/2018 **ER End Date :** 31/12/2025

Project ID : P20-00139 **PI Name :** Hayk Datvyan

ER Project Title : Providing technical support for v module 3 (manuscript writing) of the Asia regional and Africa regional SORT IT on tackling antimicrobial resistance (AMR) using a virtual SORT IT platform

ER Start Date : 01/01/2018 **ER End Date :** 31/12/2025

Project ID : B80168 **PI Name :** Selma Dar Berger

ER Project Title : Providing senior technical expertise for implementing the Structured Operational Research and Training Initiative (SORT IT) on antimicrobial resistance in Low- and Middle-Income Countries

ER Start Date : 01/01/2018 **ER End Date :** 31/12/2025

Project ID : P20-00123 **PI Name :** Anthony D. Harries

ER Project Title : Senior Knowledge Management trainer: provide technical support and training to participants on SORT IT courses (Sierra Leone and Nepal) on antimicrobial resistance (AMR)

ER Start Date : 01/01/2018 **ER End Date :** 31/12/2025

Project ID : P20-00008 **PI Name :** Alisa Denisiuk

ER Project Title : Provide research assistance in the creation of a COVID-19 Data Platform and Repository/Registry tracking sheet

ER Start Date : 01/01/2018 **ER End Date :** 31/12/2025

Project ID : B80174 **PI Name :** Maria Zolfo

ER Project Title : Providing senior technical expertise for implementing the Structured Operational Research and Training Initiative (SORT IT) on antimicrobial resistance in Low- and Middle-Income Countries

ER Start Date : 01/01/2018 **ER End Date :** 31/12/2025

Project ID : B80196 **PI Name :** Hayk Datvyan

ER Project Title : Providing senior technical expertise for implementing the Structured Operational Research and Training Initiative (SORT IT) on antimicrobial resistance in Low- and Middle-Income Countries

ER Start Date : 01/01/2018 **ER End Date :** 31/12/2025

ER Country Links

Country:	Sierra Leone	**WHO Region :**	AFRO	**World Bank Income Group :**	Low income
Country:	Uganda	**WHO Region :**	AFRO	**World Bank Income Group :**	Low income
Country:	Ghana	**WHO Region :**	AFRO	**World Bank Income Group :**	Lower middle income
Country:	Myanmar	**WHO Region :**	SEARO	**World Bank Income Group :**	Lower middle income

Country:	Nepal	**WHO Region :**	SEARO	**World Bank : Income Group**	Low income
Country:	Ecuador	**WHO Region :**	AMRO	**World Bank : Income Group**	Upper middle income
Country:	Colombia	**WHO Region :**	AMRO	**World Bank : Income Group**	Upper middle income

Expected Result: 1.1.5

Title: Directions for development and accelerated access to new tools and strategies

Strategic Work Area: Research for implementation **Workstream:** Research for implementation

ER type:	Continuing	**Funding type:**	UD
Start date:	01/01/2018	**End date:**	31/12/2025
ER status:	On Track	**Comment:**	For Internal Use: Broader accessibility of the E.R. to whole Unit will be ensured for best utilization of opportunities
WHO region:	Global		
Partners:	TBD		
Diseases:	Not Disease-Specific		

Review mechanism: Scientific working group + other ad hoc or collaboration-based review systems as appropriate

ER manager: Abraham ARMIDIE

Team: Annette Kuesel, Corinne Merle, Florence Fouque, Bernadette Ramirez, Mariam Otmani, Rony Zachariah, Abdul Masoudi, Ekua Johnson, Michelle Villasol, Daniel Hollies

Number of people working on projects:

FENSA clearance obtained for all Non-State Actors? Yes

Justification for no FENSA clearance: No

TDR partnership criteria

Add value:	Yes	Use resources:	Yes
Align goals:	No	Address knowledge gaps:	Yes
Integrate mandates:	No	Build strengths:	Yes
Reduce burden:	No	Foster networking:	Yes
Increase visibility:	Yes		

TDR partnership criteria indicators

Objectives aligned:	Yes	Yes still apply
Roles complimentary:	Yes	Yes still apply
Coordination transparent:	Yes	Yes still apply
Visibility:	Yes	Yes, still apply

Objectives and results chain

Approach to ensure uptake: Quality of work generated and inclusiveness of stakeholders will underpin these activities

Up-take/Use Indicator: Number of: a) projects/initiatives which take into account TDR contributions/directions; and b) researchers, developers, organizations, funders utilizing TDR input/output

Gender and geographic equity: Gender and geographic equity considerations will be included

Publication plan: TBD

Up-take/use indicator target date:	31/12/2023

Sustainable Development Goals

Good Health and Well-being

Concept and approach

Rationale:	Control programme objectives cannot be reached for many poverty-related infectious diseases, especially NTDs, because they lack new effective and safe tools for their diagnosis and treatment, as well as efficient methods for quantifying the effect.
Design and methodology:	Inclusiveness and openness are the guiding principles. The scope of this project covers essential, intertwined elements to develop and assess the right tools that will help achieve control and elimination targets.
Approach to ensure quality:	The entire project will be open to public scrutiny by definition, which will ensure quality.

ER Objectives

ERObj-0003 : 1. Foster innovation to fill gaps in new products for neglected infections

ERObj-0005 : 3. Identify priorities, opportunities

ERObj-0004 : 2. Engage stakeholders

Biennium Budget

Biennium: 2022-2023

Low and Hight Budget Scenario

	Low Budget Scenario	High Budget Scenario
Undesignated funds	USD 160000	USD 280000
Designated funds	USD 0	USD 0
Total	USD 160000	USD 280000

Planned Budget

Undesignated funds	USD 160000
Designated funds	USD 0
Total	USD 160000

Biennium: 2024-2025

Low and Hight Budget Scenario

	Low Budget Scenario	High Budget Scenario
Undesignated funds	USD 160000	USD 300000
Designated funds	USD 0	USD 0
Total	USD 160000	USD 300000

Planned Budget

Undesignated funds	USD 160000
Designated funds	USD 0
Total	USD 160000

ER Biennium Risks

Biennium: 2022-2023

ERRisk - 0219: Resistance to change by key stakeholders unwilling to adopt new solutions

Actions To Mitigate Risk: Achieving critical mass of supporters; showing concrete results

Mitigation Status: On Track

Biennium: 2024-2025

ERRisk - 0282: Resistance to change by key stakeholders unwilling to adopt new solutions

Actions To Mitigate Risk: Achieving critical mass of supporters; showing concrete results

Mitigation Status: Planning phase

ER Biennium Outputs

Biennium: 2022-2023

EROutp-0261: Scientific working group meeting reports and recommendations

Output Indicator: Strategy development, implementation and monitoring

Output Target Date: 31/12/2023

Output Progress Status: On Track

Output Progress Description: Scientific Working Group meeting held in Geneva on 25-26 October 2023 with all members attending in person with virtual joint sessions on 13 Oct and 28 October with the SWG of RCS and STAC (on 28 Oct). (Please see Annual Report of IMP Strategic Work Area and SWG report 2022).

Biennium: 2022-2023

EROutp-0260: Number of R&D initiatives informed by TDR research project output or TDR staff /adviser expertise (at least 4 by 2023)

Output Indicator: Outputs of TDR research projects and TDR staff and adviser expertise used to provide directional perspective for R&D new tools (including advice/support to R&D sponsors) as well as new ways of implementing the tools

Output Target Date: 31/12/2023

Output Progress Status: On Track

Output Progress Description: Progress in 2023:

Output informed by TDR Research Project: Lessons learned from TDR supported implementation research on elimination of visceral leishmaniasis in the Indian subcontinent are proving valuable in the development of a strategic framework for VL elimination in East Africa. (The details are available in the ER 1.2.1)

Ongoing contributions:

1. Technical support to WHO:

Membership to several steering committees (e.g. WHO/NTD, One Heath, PHSM, Guideline Development Groups, etc.) as well as assistance in administrative functions [2023 meetings supported - DH].

2. Other technical support:

Expert advice provided to development of moxidectin for onchocerciasis elimination.

3. Continued review, compilation and publication of unpublished data and experience of the onchocerciasis control programme in west Africa and peer-reviewed literature on the role of the vector in transmission of o. Volvulus, vector-related considerations for criteria for elimination of transmission and diagnostics for post-intervention surveillance:

With the objectives of onchocerciasis endemic countries now being elimination of transmission of the parasite ((https://www.who.int/news/item/30-01-2021-neglected-tropical-diseases-who-launches-new-road-map-to-end-suffering-by-2030, https://www.who.int/publications/i/item/9789240010352) understanding the role of the vector (Simulium spp.) in transmission is becoming critically important to ensure that countries continue interventions as long as but not longer than needed.

While the strategy of the African Programme for Onchocerciasis Control (APOC, 1995-2015) and the Onchocerciasis Elimination Program for the Americas (OEPA, 1991 to date) was based on mass drug administration of ivermectin, the strategy of the Onchocerciasis Control Programme in West Africa (OCP, 1974-2002) was based on vector control. Consequently, a significant amount of understanding of the role of the vector for parasite transmission as well as operational knowledge relevant to e.g. breeding site identification and vector capture was accumulated in the OCP. This knowledge will be valuable to inform onchocerciasis elimination efforts across Africa. Furthermore, the OCP evaluated a number of diagnostics in the context of post-intervention surveillance.

The OCP worked with numerous national and international experts on an ad-hoc basis and as members of its external technical advisory committee, the 'Joint Programme Committee' (JPC) which advised on basic as well as operational research. Furthermore, the JCP reviewed the research and operations outcomes summarized by the OCP in reports.

The vast majority of this work was never published in peer reviewed journals and the results, conclusions and lessons learnt are thus not available to be taken into account by countries, to train new generations of entomologists or for systematic reviews informing WHO guidelines.

Recently, documents generated by the OCP have become publicly available on the WHO Institutional Repository for Information Sharing (WHO iris) (https://apps.who.int/iris/handle/10665/274421) . Search of this collection for 'OCP' shows 2675 documents. The fact that many OCP documents cover numerous topics combined with inaccurate labelling of the documents at the time of uploading into WHO iris and the limitations of the WHO iris search engine and export features, make identification and retrieval of

documents addressing specific topics very time consuming. This restricts the extent to which the documented and expert-reviewed OCP experience can inform todays onchocerciasis elimination efforts.

In 2021, an APW was awarded to the Noguchi Memorial Institute for Medical Research to extract and review all OCP documents, summarize the lessons learnt in peer reviewed publications involving entomologists from different onchocerciasis endemic countries to strengthen their capacity in Simulium entomology.

Progress in 2022/2023: A total of 3091 documents issued from the start of the OCP to its closure in 2002 as well as around 600 documents issued by APOC after OCP closure and until its closure in 2015 were extracted, reviewed and classified by topics/keywords .

The following publications are being prepared (taking also into consideration peer-reviewed publications, please see below)

- A systematic review of traps targeted at Simulium damnosum s.l
- A review of the impact of seasonal changes on human onchocerciasis vectors breeding and species distribution
- Is onchocerciasis elimination mapping necessary for the current disease elimination activities?

Additional publications under consideration are:

- Directory of OCP reports in WHO IRIS
- OCP experience in diagnosing of O. volvulus infections. This will add value towards the WHO efforts to improve diagnosis for NTDs, as evidence by the Diagnostic Technical Advisory Group that the WHO NTD department established (https://www.who.int/neglected_diseases/news/DTAG-sub-group-TOR-June-2020.pdf).

Publications:

Kura K, Milton P, Hamley JID, Walker M, Bakajika DK, Kanza EM, Opoku NO, Howard H, Nigo MM, Asare S, Olipoh G, Attah SK, Mambandu GL, Kennedy KK, Kataliko K, Mumbere M, Halleux CM, Hopkins A, Kuesel AC, Kinrade S, Basáñez MG. Can mass drug administration of moxidectin accelerate onchocerciasis elimination in Africa? Philos Trans R Soc Lond B Biol Sci. 2023 Oct 9;378(1887):20220277. doi: 10.1098/rstb.2022.0277. Epub 2023 Aug 21.

Hedtke SM, Choi YJ, Kode A, Chalasani GC, Sirwani N, Jada SR, Hotterbeekx A, Mandro M, Siewe Fodjo JN, Amambo GN, Abong RA, Wanji S, Kuesel AC, Colebunders R, Mitreva M, Grant WN. Assessing Onchocerca volvulus Intensity of Infection and Genetic Diversity Using Mitochondrial Genome Sequencing of Single Microfilariae Obtained before and after Ivermectin Treatment. Pathogens. 2023 Jul 24;12(7):971. doi: 10.3390/pathogens12070971.

Pfarr KM, Krome AK, Al-Obaidi I, Batchelor H, Vaillant M, Hoerauf A, Opoku NO, Kuesel AC.The pipeline for drugs for control and elimination of neglected tropical diseases: 1. Anti-infective drugs for regulatory registration. Parasit Vectors. 2023 Mar 1;16(1):82. doi: 10.1186/s13071-022-05581-4.

Al-Obaidi I, Krome AK, Wagner KG, Pfarr K, Kuesel AC, Batchelor HK.

Drugs for neglected tropical diseases: availability of age-appropriate oral formulations for young children. Parasit Vectors. 2022 Dec 12;15(1):462. doi: 10.1186/s13071-022-05546-7.

Plans for 2024

Support to Strategy Development (publications, participation in scientific meetings related to past/future activities without current ER)

Biennium: 2022-2023

EROutp-0262: Number of disease control programmes using generic protocols to inform their Implementation Research studies

Output Indicator: Generic protocols to address Implementation Research issues encountered by different disease control programmes

Output Target Date: 31/12/2025

Output Progress Status: On Track

Output Progress Description: Support to generic protocols to address Implementation Research issues encountered by different disease control programmes are described in detail in ER 1.2.6. This ER provides supplementary support.

Biennium: 2024-2025

EROutp-0350: Number of disease control programmes using generic protocols to inform their Implementation Research studies

Output Indicator: Generic protocols to address Implementation Research issues encountered by different disease control programmes

Output Target Date: 31/12/2025

Output Progress Status:

Output Progress Description:

Biennium: 2024-2025

EROutp-0349: Scientific working group meeting reports and recommendations

Output Indicator: Strategy development, implementation and monitoring

Output Target Date: 31/12/2025

Output Progress Status:

Output Progress Description:

Biennium: 2024-2025

EROutp-0348: Number of R&D initiatives informed by TDR research project output or TDR staff /adviser expertise (at least 4 by 2023)

Output Indicator: Outputs of TDR research projects and TDR staff and adviser expertise used to provide directional perspective for R&D new tools (including advice/support to R&D sponsors) as well as new ways of implementing the tools

Output Target Date: 31/12/2025

Output Progress Status:

Output Progress Description:

ER Biennium Outcomes

Biennium: 2022-2023

EROutc-0055: 1. Researchers, developers, funders provided with knowledge available through TDR on specific gaps, needs, opportunities, potential approaches, partners, products and technologies.

2. Knowledge applied by partners resulting in more efficient processes.

Progress made towards outcome : Systematic review completed with IDDO on malaria patient spectrum enrolled in clinical trials alerting to the gaps of representativeness with implications on generalization of clinical trial results

Studies on impact of implementation research on VL elimination programs in Nepal and Bangladesh completed providing lessons to consider in planning similar programs elsewhere

Biennium: 2024-2025

EROutc-0094: 1. Researchers, developers, funders provided with knowledge available through TDR on specific gaps, needs, opportunities, potential approaches, partners, products and technologies.

ER Project Links

ER Country Links

Expected Result: 1.2.1

Title: Strategies to achieve and sustain disease elimination

Strategic Work Area: Research for implementation **Workstream:** Research for implementation

ER type:	Continuing	**Funding type:**	UD and DF
Start date:	01/03/2014	**End date:**	31/12/2025
ER status:	On Track	**Comment:**	
WHO region:	Global		
Partners:	Control programmes and research institutes in countries, Medicines Development for Global Health, Communauté Evangelique au Centre de l'Afrique (CECA20)		
Diseases:	Onchocerciasis;Visceral leishmaniasis		
Review mechanism:	Scientific working group + other ad hoc or collaboration-based review systems as appropriate		

ER manager: Abraham ARMIDIE
Team: Michelle Villasol, Annette Kuesel, Abraham Aseffa
Number of people working on projects: 10

FENSA clearance obtained for all Non-State Actors? Yes
Justification for no FENSA clearance: No

TDR partnership criteria

Add value:	Yes	Use resources:	Yes
Align goals:	Yes	Address knowledge gaps:	Yes
Integrate mandates:	Yes	Build strengths:	Yes
Reduce burden:	No	Foster networking:	Yes
Increase visibility:	Yes		

TDR partnership criteria indicators

Objectives aligned:	Yes	Aligned
Roles complimentary:	Yes	Role complementary
Coordination transparent:	Yes	Coordination transparent
Visibility:	Yes	Visibility of TDR highlighted

Objectives and results chain

Approach to ensure uptake:	Control programmes and researchers from concerned countries, as well as WHO 3 levels are fully engaged in the design and implementation of the research
Up-take/Use Indicator:	TDR outputs considered among evidence informing decision-making at global, regional and national levels
Gender and geographic equity:	Work will target LMICs (for oncho in Africa, for VL Nepal/Bangladesh and Eastern African countries). Whenever possible funding to women investigators will be favoured. Whenever possible results of research will be disaggregated by gender.
Publication plan:	Scientific meetings, Open access journals, TDR website

Up-take/use indicator target date:	31/12/2029

Sustainable Development Goals

Good Health and Well-being;Reduced Inequality;Partnerships to achieve the Goal

Concept and approach

Rationale:	Some diseases are targeted for elimination in certain areas. Research is needed to inform appropriate strategies and practices. While some of these can be broadly applied, others need to be targeted to the disease, and/or the interventions and/or specific epidemiological setting and/or the extent to which prevalence/incidence of infection have been reduced and the elimination goal (elimination as a public health problem or elimination of transmission). TDR has decades long history of research for the tools that have allowed countries targeting VL elimination in the ISC and onchocerciasis elimination where feasible in Africa. TDR has been funding and managing research to support these elimination goals in past biennia and is continuing this work as recommended by the scientific working group, including support to VL control/elimination in Eastern Africa following the recommendations in the new WHO NTD Roadmap 2021-2030.
Design and methodology:	Continuation of collaboration with and between researchers and national/regional or global control programmes. Research will be designed to address specific knowledge gaps and research priorities, and will be conducted by qualified investigators (with appropriate training).
Approach to ensure quality:	Selection of investigators and proposals with appropriate expertise through review of their proposals and progress reports/renewal requests by the scientific working group complemented by external subject matter experts (ad hoc reviewers). Grant proposal review by external reviewers nominated by funders, if applicable.

ER Objectives

ERObj-0011 : Generate evidence to guide programmes on strategies to achieve and sustain elimination, where and when to stop intervention and how to certify elimination

Biennium Budget

Biennium: 2022-2023

Low and Hight Budget Scenario

	Low Budget Scenario	High Budget Scenario
Undesignated funds	USD 740000	USD 1200000
Designated funds	USD 200000	USD 300000
Total	USD 940000	USD 1500000

Planned Budget

Undesignated funds	USD 755000
Designated funds	USD 5000

Total	USD 760000

Biennium: 2024-2025

Low and Hight Budget Scenario

	Low Budget Scenario	High Budget Scenario
Undesignated funds	USD 540000	USD 1300000
Designated funds	USD 100000	USD 300000
Total	USD 640000	USD 1600000

Planned Budget

Undesignated funds	USD 540000
Designated funds	USD 100000
Total	USD 640000

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ER Biennium Risks

Biennium: 2022-2023

ERRisk - 0220: Insufficient funding

Actions To Mitigate Risk: Raise awareness of potential donors; explore alternative ways of supporting work

Mitigation Status: Planning phase

Biennium: 2022-2023

ERRisk - 0221: Research question are not targetting key priorities for programmes

Actions To Mitigate Risk: Ensure large involvement of WHO country/regional/HQ level and of country representatives in discussion to identify priority research questions.

Mitigation Status: On Track

Biennium: 2022-2023

ERRisk - 0269: Impact of requirements for effective preventive measures for COVID-19 on study implementation

Actions To Mitigate Risk: Adaptation of study protocols to requirements for infection prevention (which slows down study implementation), replacement of in-person meetings (e.g. for capacity building) by remote meetings. Other COVID-19 effects such as lock-downs (e.g. no laboratory work possible) and travel restrictions (field work interrupted) cannot be mitigated.

Mitigation Status: On Track

Biennium: 2024-2025

ERRisk - 0277: Insufficient funding

Actions To Mitigate Risk: Raise awareness of potential donors; explore alternative ways of supporting work

Mitigation Status: Planning phase

Biennium: 2024-2025

ERRisk - 0279: Impact of requirements for effective preventive measures for COVID-19 on study implementation

Actions To Mitigate Risk: Adaptation of study protocols to requirements for infection prevention (which slows down study implementation), replacement of in-person meetings (e.g. for capacity building) by remote meetings. Other COVID-19 effects such as lock-downs (e.g. no laboratory work possible) and travel restrictions (field work interrupted) cannot be mitigated.

Mitigation Status: Planning phase

Biennium: 2024-2025

ERRisk - 0280: Research question are not targetting key priorities for programmes

Actions To Mitigate Risk: Ensure large involvement of WHO country/regional/HQ level and of country representatives in discussion to identify priority research questions.

Mitigation Status: Planning phase

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ER Biennium Outputs

Biennium: 2022-2023

EROutp-0263: Report to scientific working group; results delivered to the country control programmes and/or NTD programmes/advisory committees at regional and/or HQ level

Output Indicator: Improved basis for monitoring progress of preventive chemotherapy-based elimination programmes towards elimination and for decisions to stop interventions

Output Target Date: 31/12/2024

Output Progress Status: On Track

Output Progress Description: Reports delivered to SWG at face to face meeting.

This project now focusses on onchocerciasis. One output (notably inclusion of genetic information in the definition of transmission zones) has already been adopted by the Ethiopian Onchocerciasis Control/Elimination Programme. The extent to which this will be extended to other countries and provision of relevant genetic markers will depend on the work over the next year - provided this is endorsed by the SWG/ad hoc reviewers. This also applies to the transmission model which allows for the first time to consider areas of different endemicity. The output relating to identification of genetic markers of suboptimal response of O. volvulus to ivermectin is unlikely to be achieved by 2024 and will require additional investments (as available from leveraged funding).

Biennium: 2022-2023

EROutp-0264: Study reports/publications provided to WHO and countries (directly and/or via ESPEN)

Output Indicator: Data to support WHO guidelines and onchocerciasis endemic country registration and policies on moxidectin for onchocerciasis elimination

Output Target Date: 31/12/2025

Output Progress Status: On Track

Output Progress Description: The timelines will ultimately depend on participant recruitment speed and what data WHO/NTD will consider sufficient to initiate the WHO guidelines process and what data the Guidelines development committee consideres sufficient to inform a guideline on moxidectin for onchocerciasis elimination.

Biennium: 2022-2023

EROutp-0265: Report to scientific working group; results delivered to the country control programmes

Output Indicator: Generate evidence on sustainable strategies for the elimination of VL in the sub-Indian continent

Output Target Date: 31/12/2025

Output Progress Status: On Track

Output Progress Description: VISCERAL LEISHMANIASIS ELIMINATION IN THE INDIAN SUBCONTINENT

Implementation research on VL is a TDR-supported and country-led, long-term project that aims to generate the evidence base for policy uptake and rollout of approaches and interventions deployed by national programmes to promote VL elimination, continually seeking solutions to challenges emerging in the course of progress.

One of the longest and most successful implementation research programmes at TDR, these efforts have contributed to a sharp reduction of cases in all three endemic countries (from over 50 000 cases in 2007 to 1,577 cases in 2021). By the end of 2021, 99% (746/756) of the implementation units (IUs) in the Indian subcontinent (all endemic Upazilas of Bangladesh, 99% of blocks in India and 87% of endemic districts in Nepal) have achieved the elimination target. Bangladesh has sustained the target in all the IUs since 2017.

In Bangladesh and Nepal the VL elimination initiative is moving from the "attack phase" to the consolidation and maintenance phase as its target (case numbers at district and sub-district level of less than 1 case per 10 000 population) has been reached. TDR, in collaboration with WHO, has coordinated and financed implementation research and clinical trials in support of the VL elimination initiative since its initiation. Scientific publications and a large number of documents were developed and the generated evidence has largely been adopted by the national authorities and has shaped Regional Technical Advisory Group (RTAG) recommendations. This is currently being documented and a review has been published recently. India has still quite extensive VL endemic areas but is now receiving large amounts of external funds from different sources (World Bank, DFID, BMGF and others) which will enable the authorities to move faster towards VL elimination. The TDR support is therefore more focused on Bangladesh and Nepal but is keeping the Indian authorities and VL research teams informed.

In our target countries -Bangladesh and Nepal- new challenges are coming up. With the progress towards the elimination goal, more efficient and effective methods of active case detection and vector management which respond to the changing epidemiological profile in the countries are required. In Nepal and Bangladesh new VL cases and foci appearing in previously non-endemic/"non-programme" districts are a matter of concern. The challenge is to detect and treat new cases at an early stage before they can infect the local vector population and initiate the spread of the disease in populations with low or no herd immunity.

Remarkable progress to meet the elimination target has been made possible by new and effective interventions and delivery systems identified through TDR research and deployed by dedicated programmes. However, a vertical programme on VL is not sustainable in the long run, especially when cases are few and far apart. At the same time, a vertical programme cannot cover all potential transmission foci, as shown already in all countries involved in the VL elimination initiative in non-programme areas. The National Kala-azar Elimination Programme (NKEP) has no active sand fly surveillance system for the consolidation and maintenance phases in Bangladesh. This is required for monitoring transmission in endemic and non- endemic villages. TDR is supporting research to identify sustainable, cost-effective approaches to find cases and foci of transmission early in endemic and non-endemic villages that are adapted to the consolidation and maintenance phases of the VL elimination programme which can be applied widely and do not require a vertical program in both Nepal and Bangladesh.

To sustain gains in the last mile of elimination, implementation research remains vital to inform improved strategies and programme efficiency. With further advances, the epidemiological profile in the countries keeps changing. In Nepal and Bangladesh (where TDR support is currently focused because India has other support, but is kept informed) new VL cases and foci are appearing in

previously non-endemic districts. Currently, available tools and case-finding strategies are inadequate to address the disease transmission potential posed by reported cases of post-Kala-azar dermal leishmaniasis (PKDL) and relapse. The role of asymptomatic infections in transmission is unclear. Rk39 has limited use for PKDL and VL-HIV coinfections and does not detect asymptomatic carriers. PKDL treatment is often incomplete because of long duration and hospitalization. The burden of VL-HIV coinfection is not well-known in Nepal and Bangladesh. In vector control, the impact of indoor residual spraying (IRS) on disease incidence Is not well documented. The risk of a shift of government attention to other health challenges as VL case numbers drop further is real.

Progress in 2023

New evidence has been generated and dissemination initiated on priority challenges of VL elimination in the Indian subcontinent.

- Insecticidal wall painting (IWP) showed excellent performance in reducing sand-fly density and increasing sand-fly mortality compared with indoor residual spraying over a two-year period. IWP was also more cost-effective per household protected over a two-year period compared to IRS. IWP is recommended as the best alternative to IRS for programmatic use in vector control
- Initial estimates have indicated that the burden of PKDL is low in both Bangladesh and Nepal. Further research is needed in new VL foci in Nepal to identify the reasons for PKDL occurrence in cases without a past history of VL. (The prevalence of PKDL was 2.23 per 10,000 population in Nepal)
- Successful implementation of the national strategy for follow-up of treated VL cases requires addressing elements related to patients (childhood, awareness, transport, communication) clinicians (compliance) and organization of service delivery (local health worker training and deployment).
- COVID-19 disrupted vector control activities and active case detection. There was no added delay for VL diagnosis but treatment initiation and reporting times increased during COVID.
- Indigenous focal transmission of VL is occurring in new foci in Nepal. In Bangladesh, although no active cases were found among the screened individuals, asymptomatic cases were evident. Since sandfly vectors exist in these areas, the national programmes should consider these areas as VL endemic and initiate control activities as per guidelines.

Ongoing projects in 2023

Decision-making for indoor residual spraying in the post-elimination phase of visceral leishmaniasis in Bangladesh and Nepal

Knowledge gap: Indoor residual spraying (IRS) is considered the key tool in vector control for VL elimination. IRS is recommended twice a year in villages that have reported at least one VL case during the past three years. The effectiveness of IRS on morbidity is, however, debated. IRS relies on the indoor resting habit of the sandfly. Knowledge of susceptibility to the pyrethroid insecticides currently in use is limited.

Methods: The relationship between the frequency of IRS and the occurrence of VL and vectors is being investigated retrospectively (2012-2022). Current data for 2022-2023 is being prospectively collected on IRS, vector density and sandfly infection rate. Insecticide susceptibility will be tested.

Progress: Preliminary analysis of data from Bangladesh suggests that, despite the interruption of IRS due to COVID-19 in 2021 and 2022, the number of cases increased only a little nationwide. The overall socioeconomic situation in endemic communities (mean number of rooms in households rose to 3) had improved in the period of study. A high density of sandflies was associated with disease endemicity. According to data so far, sand fly densities are similar in households that had received IRS and those that have not, suggesting that there is no relationship between IRS and sand fly density.

Micro stratification of Visceral Leishmaniasis (VL) Endemic Areas to Identify Hotspots and Disease Shifting Patterns in Bangladesh and Nepal

Knowledge gap: The epidemiology of VL has been changing in recent years during the consolidation phase with new villages reporting VL and villages with no cases for several years reporting again despite the massive drop in total case numbers nationwide. Although the at-risk population for VL has been defined at the sub-district or district level, VL is a focal disease and is usually more prevalent among the poorest and marginalized communities within the geographic units. VL micro-stratification will provide strategic information on the total area and the actual population at risk of VL at the village level

Methods: Data on disease burden, ecology (receptivity) and vulnerability will be collected for the last 10 years from various sources and analysed stratified by categories (as high, moderate, low or no VL).

Progress: No preliminary analysis has been made so far. Work is progressing despite initial delays related to internal approvals and requested data access

Determination of the seroprevalence of HIV among VL patients in Bangladesh

Knowledge gap: The prevalence of VL-HIV coinfection in Bangladesh is unknown. Coinfected patients could serve as sources for new infections post-elimination. Treatment requires specialized facilities and combinations of drugs. Progress: Of 862 archived samples, 816 had an address, of which 423 could be reached by phone; and 418 agreed to visit the centre, with 298 tested on fresh samples so far and none positive. HIV-VL co-infection rate appears to be very low in Bangladesh.

Further Reading:

Annual Report VL

Publications:

1. Alim A, Huda MM, Ghosh D et al. Long-term efficacy of insecticidal wall painting for controlling visceral leishmaniasis vectors in Bangladesh Am J Trop Med Hyg 2023;1-6 doi:10.4269/ajtmh.22-0809

Our goal was to investigate the longevity of the efficacy of insecticidal wall painting (IWP), a new vector

control tool, compared with a routine indoor residual spraying (IRS) program for reducing the VL vector density in Bangladesh. The IWP showed excellent performance in reducing sand-fly density and increasing sand-fly mortality compared with Program IRS. The effect of IWP for controlling sand flies was statistically significant for up to at least 24 months. The mean female Phlebotomus argentipes density reduction ranged from 256% to 283%, and the P. argentipes sand-fly mortality ranged from 81% to 99.5% during the 24-month follow-up period. Considering the duration of the efficacy of IWP for controlling VL vectors, Bangladesh National Kala-azar Elimination Program may consider IWP as the best alternative to IRS for the subsequent phases of the program.

2. Banjara MR, Joshi AB, Singh VK, Das ML, Gurung CK, Olliaro P, Halleux C, Matlashewski G, Kroeger A. Response to Visceral Leishmaniasis Cases through Active Case Detection and Vector Control in Low-Endemic Hilly Districts of Nepal. Am J Trop Med Hyg. 2022 Jul 5;107(2):349-54. doi: 10.4269/ajtmh.21-0766. Online ahead of print.PMID: 35895401

We conducted early case detection by an index case-based approach and assessed the feasibility, efficacy, and cost of an intervention for sandfly control through indoor residual spraying (IRS) or insecticidal wall painting (IWP) in new and low-endemic districts Palpa and Surkhet. IRS was performed in 236 households and IWP in 178 households. Both IWP and IRS were well accepted, and the percentage reductions in sandfly density after 1, 9, and 12 months of intervention were 90%, 81%, and 75%, respectively, for IWP and 81%, 59%, and 63% respectively for IRS. The cost per household protected per year was USD 10.3 for IRS and 32.8 for IWP, although over a 2-year period, IWP was more cost-effective than IRS.

3. Joshi AB, Banjara MR, Das ML, Ghale P, Pant KR, Parajuli N, et al. Prevalence of post kala-azar dermal leishmaniasis (PKDL) and treatment seeking behavior of PKDL patients in Nepal. PLoS Negl Trop Dis 2023 ;17(2): e0011138. https://doi.org/10.1371/journal.pntd.0011138

The burden of post kala-azar dermal leishmaniasis (PKDL) in Nepal is not known since there is no active case detection of PKDL by the national programme. Household surveys were conducted in 98 VL endemic villages of five districts that reported the highest number of VL cases within 2018–2021. A total of 6,821 households with 40373 individuals were screened for PKDL. Among 147 cases with skin lesions in the sur-vey, 9 (6.12%) were confirmed as PKDL by dermatologists at the hospital. The prevalence of PKDL was 2.23 per 10,000 population. Among these 9 PKDL cases, 5 had a past history of VL and 4 did not. PKDL cases without a past history of VL were detected among the "new foci". PKDL case detection and management should be strengthened in the national programme in the context of the VL elimination initiative.

In conclusion, the burden of PKDL is low in both previously VL endemic and new focal areas of Nepal. Currently used VL treatment regimens could not prevent the development of PKDL. Further research is needed in new VL foci to identify the reasons for PKDL occurrence in cases without past history of VL.

Manuscripts currently under review for publication in journals

Authors	Title	Aim and methods	Findings
Maaruf S et al	Journal of Infection and Public Health (under review)	"Assessment of treatment outcomes of visceral leishmaniasis treated cases and impact of COVID-19 on VL Management and Control Services in Bangladesh"	Aimed at identifying challenges in the follow-up of treated VL patients by interviewing both the treated VL cases and their health service providers. interviews were conducted with the health service providers to assess the impact of COVID-19 on VL services	There was no added delay for VL diagnosis; however, VL treatment initiation and reporting time increased almost two-fold due to COVID-19. Indoor Residual Spraying activity was significantly hampered due to a shortage of insecticides. financial constraints, and distance from the hospitals as the main reasons for missed follow-up visits
Joshi AB, Banjara MR, Das ML et al.	AJTMH (accepted)	"Epidemiological, Serological, and Entomological Investigation of New Visceral Leishmaniasis Foci in Nepal"	Conducted in 11 villages of five districts, which were previously free of VL but reported new cases between 2019-2021. 1288 inhabitants were screened with rK39 tests and investigated the epidemiological and clinical characteristics of 12 recent VL cases.	The prevalence of VL infection was 0.5% and 3.2% among the screened population in 2 districts, while the other 3 districts had no rK39 positive cases. No association was found with travel history. None of the vectors were DNA positive for parasites. The findings suggest indigenous focal transmission of VL. An integrated package of strategic interventions should be implemented by the national VL elimination program in districts with new VL foci.
Ghosh D, Rashid MU, Sagar AK et al	Journal of Infection and Public Health (under review)	"Epidemiological, serological, and entomological aspects of visceral leishmaniasis in suspected new VL foci in Bangladesh"	investigated new visceral leishmaniasis (VL) cases reported between 2019 and 2020 in four sub-districts where we tested 560 members using the rK39 rapid test and conducted vector collections in six neighboring houses of the index to assess sandfly density and distribution, examined sandflies' infection, and determined the spatial relationship with VL infection	

screened 1078 people from 231 households in four upazilas for fever, history of visceral leishmaniasis (VL), and PKDL-like skin lesions. Among upazilas, positivity rate for rK39 rapid test was highest (3.5%) in Savar. Sandflies were present across all areas except in Dharmapasha, but all 21 collected female P. argentipes sandflies were negative for Leishmania parasite DNA. We found one person from Islampur with a history of VL, one from Islampur and another one from Savar had PKDL-like lesions.

The study found no active case in the suspected new foci, but some asymptomatic patients were present. As sandfly vectors exist in these areas, the National Kala-azar Elimination Programme (NKEP) should consider these areas as kala-azar endemic and initiate control activities as per national guidelines.

Joshi AB, Banjara MR, Das ML et al. To be submitted Aug 2023 "Follow-up Assessment of Visceral Leishmaniasis Treated Patients and Assessment of the Impact of COVID-19 in VL Control Services in Nepal"

Follow-up assessment of visceral leishmaniasis (VL) treated cases is important to monitor the long-term effectiveness of treatment regimens. .Clinicians treating VL patients, district focal persons for VL, and patients treated for VL in seven high endemic districts in Nepal were interviewed to collect data on challenges in the follow-up of VL-treated patients as per the national strategy

Follow-up status was poor in two districts with the largest number of reported cases. The majority of cases were children less than 10 years of age (44.2%). Among 104 VL-treated cases interviewed, 60.6% mentioned that clinicians had called them for follow-up but only 37.5% had complied. Among 112 VL-treated cases followed up, 8 (7.14%) had a relapse and 2 (1.8%) had PKDL. Among 66 cases who had VL during the COVID-19 lockdown period, 32 (48.5%) were diagnosed within one week; however, 10 (15.1%) were diagnosed only after four weeks or more time. During the lockdown, there was no active search for VL because of budget constraints and a lack of diagnostic tests, and insecticide spraying was not done.

Successful implementation of the national strategy for follow-up of treated VL cases requires addressing elements related to patients (awareness, transport, communication) clinicians (compliance), and organization of service delivery (local health worker training and deployment).

Joshi AB, Banjara MR, Chuke S et alPLOS NTD Under review "Assessment of the Impact of Implementation Research on the Visceral Leishmaniasis (VL) Elimination Efforts in Nepal" Desk review and a stakeholder workshop was conducted to analyze the relationship between key research outputs, major strategic decisions in the national VL elimination programme and an annual number of reported new cases over time between 2005-2023 The results indicated that the key decisions across the strategic elements, throughout the course of the elimination programme (such as on the most appropriate tools for diagnostics and treatment, and on best strategies for case finding and vector management), were IR-informed. IR itself responded dynamically to changes that resulted from interventions, addressing new questions that emerged from the field. Close collaboration between researchers, programme managers and implementers in priority setting, design, conduct and review of studies facilitated uptake of evidence into policy and programmatic activities.

Although direct attribution of disease decline to research outputs is difficult to establish, the Nepal experience demonstrates that IR can be a critical enabler for disease elimination. The lessons can potentially inform IR strategies in other countries with diseases targeted for elimination

Ongoing projects:

Decision Making for Indoor Residual Spraying in Post Elimination Phase of Visceral Leishmaniasis: Bangladesh and Nepal

Background:

Although IRS is an effective vector control tool, there is no information on when to stop it after VL elimination.

The overall objective of this study is to identify the critical determinants that can inform rational decision-making on the application of IRS in the pre-and post- elimination phase of visceral leishmaniasis. It aims to determine the epidemiological, ecological, entomological, and programmatic determinants that can be used for decision-making for IRS in the VL pre- and post-elimination phase.

Methods:

The study will investigate the relationship between the occurrence of VL and the frequency of IRS applied on VL vector density, infection rate and insecticide susceptibility. IRS activity between 2012-2022 will be retrospectively analyzed and data on the present status prospectively collected (2022-2023). Vector density and sandfly infection rate will be monitored over one year (2022-2023). Insecticide susceptibility will be studied in the year 2022-2023. Ecological investigations will include climate and environmental data. Epidemiological data (records and current year), and programmatic factors will be collected. The study will compare the variables in villages with VL cases against those without VL cases for the last 10 years. The study will be conducted in Sarlah district in Nepal. Four categories of villages have been identified: high, moderate and low-endemic villages and villages without VL in the past 10 years.

Preliminary results:

Preliminary analysis of data from Bangladesh suggested that, despite interruption of IRS in 2021 and 2022 due to the COVID-19 pandemic, the number of cases increased only little nationwide. It was also apparent that the socioeconomic situation had improved (mean number of rooms in households rose to 3. High density of sandflies was associated with endemicity of disease. The investigators noted that households with IRS (moderate endemic areas) and without IRS (high endemic areas) have a similar sand fly density suggesting lack of relation between IRS and sand fly density currently.

Micro stratification of Visceral Leishmaniasis (VL) Endemic Areas to Identify Hotspots and Disease Shifting Pattern in Bangladesh and Nepal

Background:

The number of VL cases has decreased by 90% in Bangladesh, India, and Nepal compared to 2005. Previously, VL cases were confined to some areas, but they have now spread to new areas beyond the previous endemic areas (Banjara et al., 2022). There has been a changing epidemiology of VL in recent years during the consolidation phase. In Bangladesh, in addition to new villages with VL, the villages which were endemic many years back are again coming up with VL cases (Dewan et al., 2017).

Analysis of VL information throughout the years does not support the view that the total population of the sub-district is at the same risk since VL is a focal disease and is usually found among the poorest of the poor and marginalized communities. VL micro-stratification, including georeferencing, will provide insight into VL risk at the village level. This strategic information will be helpful to the National VL Elimination Program to target effective interventions at the community level.

Methods:

Micro-stratification considers three critical factors: a) Disease burden (measured in terms of incidence of confirmed VL cases identified through passive surveillance, not including asymptomatic cases and PKDL) per 10,000 risk population (at the district or upazilas level), during the last 10 years for Bangladesh and 5 years Nepal; b) Receptivity (ecology) is an environment that supports the vectors, vector behavior, and bionomics that define the vector's relative transmission efficiency and transmission duration; and c) Vulnerability measured in terms of population movement, housing characteristics, and availability of bed nets in the house.

This microstratification exercise will be based on secondary data available at the Directorate General of Health Services (DGHS) Bangladesh and at the Epidemiology and Disease Control Division (EDCD) in Nepal. 500 Upazila of Bangladesh and all 77 districts of Nepal will be stratified into high, moderate, low, and no VL risk sub-districts. The last ten-year data will be used for stratification. Each village in the sub-districts will be further stratified as high, moderate, low, and no VL risk. The mapping in Bangladesh will be done at the Upazila level for all endemic Upazila and at the village level for the villages in 06 Upazilas (two Upazilas with high, moderate, and low risk, each).

Progress:

Work is progressing despite initial delays related to internal approvals and requested data access.

Biennium: 2022-2023

EROutp-0266: Report to scientific working group; results delivered to the country control programmes

Output Indicator: Generate evidence to support establishment of programmes towards elimination of VL in Eastern Africa

Output Target Date: 31/12/2030

Output Progress Status: On Track

Output Progress Description: VISCERAL LEISHMANIASIS ELIMINATION IN EASTERN AFRICA

The proportion of reported cases from Eastern Africa, the second biggest focus in the world, increased from 10% to > 50% of the global total in the last 15 years, with a threefold increase in actual numbers in 2018 compared to 2007.

VL-endemic countries in Eastern Africa have requested for WHO support to address the growing problem of VL in the region. TDR is collaborating with WHO and other partners to initiate VL elimination efforts in Eastern Africa.

Progress in 2023

Review of lessons learned from the kala-azar elimination program in the Indian subcontinent

Based on the analysis of data from desk review and stakeholder consultations at dedicated workshops conducted in both Bangladesh and Nepal, investigators concluded that the key decisions across the strategic elements, throughout the course of the elimination programme since 2005 (such as on the most appropriate tools for diagnostics and treatment, and on best strategies for case finding and vector management), were IR evidence-informed. IR itself responded dynamically to changes that resulted from interventions, addressing new questions that emerged from the field. Close collaboration between researchers, programme managers, and implementers in priority setting, design, conduct, and review of studies facilitated the uptake of evidence into policy and programmatic activities.

Although direct attribution of disease decline to research outputs is difficult to establish, the experience of the regional kala-azar elimination program demonstrates that IR can be a critical enabler for disease elimination. The lessons can potentially inform IR strategies in other countries with diseases targeted for elimination. (Ref: Exploring the utility of lessons learned on the Indian Subcontinent for visceral leishmaniasis control/elimination in Eastern Africa. Submitted manuscript)

Stakeholder consultations on the regional VL elimination initiative for Eastern Africa

"The WHO in collaboration with the END Fund and Drugs for Neglected Disease Initiative (DNDi) and with the participation of the Special Programme for Research and Training in Tropical Diseases (TDR), organized a meeting of national programme managers, donors, partners, and stakeholders for the development of a strategic framework for the elimination of visceral leishmaniasis in Eastern Africa, in Nairobi, Kenya from 24-27 January 2023. The meeting was held over four days with over 90 participants including representatives of the Ministries of Health from the eight Member States of Chad, Eritrea, Ethiopia, Kenya, Somalia, South Sudan, Sudan, and Uganda. The main objective of the meeting was- i) to review the current epidemiological situation of visceral leishmaniasis at the global, eastern Africa sub-region, and country levels and, ii) draft a high-level VL elimination strategic framework, 2023-2030, with Eastern African sub-regional and country-level elimination targets; iii) develop a framework on long-term financing mechanisms including sustained procurement and medical supplies (first-line treatment and diagnostic tests); and, iv) develop a call for action or the Nairobi declaration by the Member States and stakeholders attending the meeting. Accordingly, technical sessions were organized; a high-level round table discussion with senior leadership of the Ministries of Health was held, group work and plenaries were conducted with extensive discussions leading to conclusions and recommendations which were agreed upon for action."

- "Successful lessons were presented from the visceral leishmaniasis elimination initiative from the South-East Asia Region. Since the elimination launch in 2005, there is a 97% decline in the incidence of new cases. Among other factors, the key aspect of this achievement was political commitment through the signing of a Memorandum of Understanding among endemic countries of the region. "

- There was “unanimous recommendation by the participants to launch the visceral leishmaniasis elimination initiative as a public health problem in Eastern Africa sub-region to reduce neglect, inequalities, and social and economic impact.”

- “National Programme Managers and stakeholders launched the Nairobi Declaration on visceral leishmaniasis elimination in Eastern Africa. This declaration highlights the key focus areas on the path of elimination.“

- “A major outcome of the high-level round table discussions with the senior leadership of the Ministry of Health was an agreement to sign a Memorandum of Understanding among the 8 countries to reflect a political commitment.”

- “WHO was requested to constitute an Eastern Africa (WHO Regions of Africa and Eastern Mediterranean) technical advisory group to review progress and provide strategic directions for implementing the WHO Eastern Africa visceral leishmaniasis elimination strategy in endemic countries.”

(Quoted from Draft Meeting Report - WHO 2023. Elimination of visceral leishmaniasis in Eastern Africa: report of stakeholders’ meeting for the development of a strategic plan for the elimination of visceral leishmaniasis in Eastern Africa, Nairobi, Kenya, 24-27 January 2023.)

Ongoing projects in 2023

Assessing programme capacities in VL-endemic countries in East Africa to implement an elimination initiative

Knowledge gap: The status of the health system capacity of some high-burden countries in East Africa is unknown. Programme capacity assessment is essential for proper planning of the preparatory phase for VL elimination

Progress: A joint call for applications was issued with WHO-NTD to support the assessment of programme capacities, initially in three VL-endemic countries, Eritrea, South Sudan, and Sudan. A team of investigators from East Africa was selected to conduct the review which will be coordinated across the three countries, using a common methodology, working in collaboration with the respective national VL or NTD programmes and local researchers. The expected outcome of the investigation is to understand the health system elements/challenges in the implementation of the WHO VL recommendations in the selected countries and to identify the needs and opportunities for capacity strengthening. The review will contribute to the evidence base informing recommendations and action plans in support of VL elimination in the East African region.

The team has received conditional approval from the WHO-Ethics Review Committee, has developed study instruments and is in consultation with national programmes in Eritrea and S Sudan to proceed with assessment. Work is suspended for Sudan.

Evaluation of in vitro rapid diagnostic test kits for the East African setting

Knowledge gap: An important priority for the elimination effort is to identify the best rapid detection test for the E. African focus. . IT-LEISH (Bio-Rad), which has the highest performance for rapid diagnosis of VL among all available commercial brands in the E. African setting, will now be produced by a new manufacturer (Global Access Diagnostics, GADx) which has acquired the manufacturing rights for the IT-LEISH RDT from Bio-Rad. Several other rk39-based RDTs are also available on the market for WHO procurement. WHO/NTD has requested TDR to collaborate on the laboratory evaluation of the rK39 rapid tests for VL diagnosis in Eastern Africa.

Progress in 2024: TDR and WHO/NTD are working with the International Diagnostic Centre (IDC) Network (LSTMH) and its partners (the Global Health Impact Group, USA and Africa CDC) to plan and finalize preparations for the comparative evaluation of the performance of commercially available rk39 RDTs in the diagnosis of visceral leishmaniasis in Eastern Africa. This will include developing a common evaluation protocol for use at all evaluation sites, selecting and preparing the evaluation sites with necessary approvals and contracts in place, and completing evaluation plans to be followed in 2024.

Proposed activities in 2024–2025:

- Support the programme capacity assessment in endemic countries
- Support the comparative evaluation of the performance of commercially available rk39 RDTs in the diagnosis of visceral leishmaniasis in Eastern Africa

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Further details on ongoing projects, 2023

Programme assessment

For the first time in 2016, VL-endemic countries in East Africa (Ethiopia, Kenya, Somalia, Sudan, South Sudan, and Uganda) surpassed their South Asian counterparts in becoming the highest disease burden foci in the world. This trend has continued, along with newer countries reporting a high number of VL cases to WHO (Eritrea) and confirming the presence of the disease (Chad). In support of controlling and eliminating key NTDs, in 2021 WHO launched the new NTD roadmap 2021–2030: 'Ending the neglect to attain the Sustainable Development Goals', with ambitious goals and targets. A new elimination target for visceral leishmaniasis is proposed as achieving a <1% case fatality rate (CFR) among primary VL cases.

VL treatment requires in-patient services in East Africa where the first line regimen is the combination of two injections of sodium stibogluconate and paromomycin for a minimum of 17 days. In the same setting, almost half of VL patients are children (<15 years of age), requiring additional nutritional care and supplements. In 2020, seven high burden countries from East Africa reported 57% of the global burden of VL. A substantial number of cases remain unreported and the ratio of underreported cases and the estimate of disease burden is not known. Some high-burden countries (Ethiopia) are facing a dual challenge of high rates of HIV (6–10%) among VL patients, whereas in other countries routine screening of HIV among VL cases is sub-optimal. The new treatment recommendation for HIV-VL patients in East Africa is twofold: the combination of liposomal amphotericin B plus miltefosine for the first episode of VL in HIV coinfected patients and pentamidine as secondary prophylaxis after the cure from the first episode of VL. Currently, most of these countries also have >1% CFR among total VL cases reported to WHO.

A joint Call for Applications was issued by WHO/NTD and TDR to ascertain the capacities of the health systems in three countries of East Africa (Eritrea, South Sudan and Sudan) in the application of the WHO guidelines for the management of VL towards meeting the 2021–2030 NTD Roadmap and the VL elimination target <1% case fatality rate among primary VL cases. The study will determine the status of management services offered to VL patients (suspect referral, diagnosis, treatment, and follow-up services up to the standard recommended follow-up period) within the broad health system context of the country; HIV screening among VL cases and treatment services (antiretroviral therapy, VL treatment, secondary prophylaxis and follow-up) as per WHO guidelines and country-specific HIV and VL protocols; and community engagement and mobilization to support VL programme implementation.

A team led by the University of Gondar was awarded the grant and the protocol has been conditionally approved by the WHO ethical review committee. The team started work in August 2023.

Diagnostic evaluation

TDR is collaborating with WHO/NTD to support the launch of a VL elimination programme in Eastern Africa with lessons drawn from the successful experience of the Kala Azar Elimination Program in the Indian subcontinent. Although the epidemiology of VL in the region poses more challenges for elimination than in South East Asia, recent WHO-convened key stakeholders meeting in Nairobi (with high-level representatives from countries, global and African partners, the African Union Commission and delegates from WHO/HQ, AFRO, EMRO, and six WHO country offices) concluded that elimination of VL from the eastern African focus is both feasible and timely. A Call for Action (the "Nairobi Declaration") was issued and a draft Strategic Plan has been developed.

An important priority for the elimination effort is to identify the best rapid detection test for the E. African focus. IT-LEISH (Bio-Rad), which has the highest performance for rapid diagnosis of VL among all available commercial brands in the E. African setting, will now be produced by a new manufacturer (Global Access Diagnostics, GADx) which has acquired the manufacturing rights for the IT-LEISH RDT from Bio-Rad. Several other rk39-based RDTs are also available on the market for WHO procurement.

WHO/NTD has requested TDR to collaborate on the laboratory evaluation of the rK39 rapid tests for VL diagnosis in Eastern Africa. TDR and WHO/NTD are working with the International Diagnostic Centre (IDC) Network (LSTMH) and its partners (the Global Health Impact Group, USA and Africa CDC) to plan and finalize preparations for the comparative evaluation of the performance of commercially available rk39 RDTs in the diagnosis of visceral leishmaniasis in Eastern Africa. This will include developing a common evaluation protocol for use at all evaluation sites, selecting and preparing the evaluation sites with necessary approvals and contracts in place, and completing evaluation plans to be followed in 2024.

Manuscripts

Prospects of visceral leishmaniasis elimination in Eastern Africa: applicable lessons drawn from Southeast Asia elimination initiative

Biennium: 2024-2025

EROutp-0344: Report to scientific working group; results delivered to the country control programmes and/or NTD programmes/advisory committees at regional and/or HQ level

Output Indicator: Improved basis for monitoring progress of preventive chemotherapy-based elimination programmes towards elimination and for decisions to stop interventions

Output Target Date: 31/12/2025

Output Progress Status:

Output Progress Description: TBD whether TDR will continue to support this output

Biennium: 2024-2025

EROutp-0347: Report to scientific working group; results delivered to the country control programmes

Output Indicator: Generate evidence to support establishment of programmes towards elimination of VL in Eastern Africa

Output Target Date: 31/12/2030

Output Progress Status:

Output Progress Description: Planning phase

Biennium: 2024-2025

EROutp-0345: Study reports/publications provided to WHO and countries (directly and/or via ESPEN)

Output Indicator: Data to support WHO guidelines and onchocerciasis endemic country registration and policies on moxidectin for onchocerciasis elimination

Output Target Date: 31/12/2025

Output Progress Status:

Output Progress Description:

Biennium: 2024-2025

EROutp-0346: Report to scientific working group; results delivered to the country control programmes

Output Indicator: Generate evidence on sustainable strategies for the elimination of VL in the Indian sub-continent

Output Target Date: 31/12/2025

Output Progress Status:

Output Progress Description: Planning phase

ER Biennium Outcomes

Biennium: 2022-2023

EROutc-0056: Guidelines, policy decisions and or practice informed by TDR outputs

Progress made towards outcome : ▫ Evidence generated for alternative vector control strategies to indoor residual spraying (IRS) presented to country programmes and regional technical advisory groups; a bi-regional VL elimination strategic plan under discussion for Eastern African foci

▫ Progress to date on the diverse (though research synergistic) tools suggests that ≥1 will be available for large-scale piloting by onchocerciasis control (elimination) programmes (OCPs) by the end of 2023

Biennium: 2024-2025

EROutc-0093: Guidelines, policy decisions and or practice informed by TDR outputs

Progress made towards outcome :

ER Project Links

Project ID : B80043 **PI Name :** Anand B. Joshi

ER Project Title : Research Support for the Consolidation and Maintenance Phase of the Visceral Leishmaniasis Elimination Program in Nepal

ER Start Date : 01/03/2014 **ER End Date :** 31/12/2025

Project ID : P23-01098 **PI Name :** Annette Kuesel

ER Project Title : Conducting TDR project activities specified in the MDGH-WHO Donor Agreement

ER Start Date : 01/03/2014 **ER End Date :** 31/12/2025

Project ID : P20-00141 **PI Name :** Dr Shomik Maruf

ER Project Title : Follow up Assessment of Visceral Leishmaniasis (VL) Treated Patients and Assessment of Impact of COVID-19 in VL Control Services in Bangladesh

ER Start Date : 01/03/2014 **ER End Date :** 31/12/2025

Project ID : P20-00142 **PI Name :** Debashis Ghosh

ER Project Title : Determination of Prevalence of Post Kala-azar Dermal Leishmaniasis (PKDL) and Assessment of Treatment Seeking Behaviour of PKDL Patients in Bangladesh

ER Start Date : 01/03/2014 **ER End Date :** 31/12/2025

Project ID : P20-00145 **PI Name :** Anand Ballabh Joshi

ER Project Title : Determination of Prevalence of Post Kala-azar Dermal Leishmaniasis (PKDL) and Assessment of Treatment Seeking Behaviour of PKDL Patients in Nepal

ER Start Date : 01/03/2014 **ER End Date :** 31/12/2025

Project ID : P20-00143 **PI Name :** Anand Ballabh Joshi

ER Project Title : Epidemiological, Serological and Entomological Investigation of New Visceral Leishmaniasis (VL) Foci in Nepal

ER Start Date : 01/03/2014 **ER End Date :** 31/12/2025

Project ID : P20-00144 **PI Name :** Anand Ballabh Joshi

ER Project Title : Follow up Assessment of Visceral Leishmaniasis (VL) Treated Patients and Assessment of Impact of COVID-19 in VL Control Services in Nepal

ER Start Date : 01/03/2014 **ER End Date :** 31/12/2025

Project ID : B80076 **PI Name :** Debashis Ghosh

ER Project Title : Research to Support Visceral Leishmaniasis Program in Indian Sub-Continent

ER Start Date : 01/03/2014 **ER End Date :** 31/12/2025

Project ID : B70123 **PI Name :** Dinesh Mondal

ER Project Title : Embedding Diagnostics for VL into the Secondary Health Care System in Bangladesh

ER Start Date : 01/03/2014 **ER End Date :** 31/12/2025

Project ID : B80311 **PI Name :** Faria Hossain

ER Project Title : Review of HIV seroprevalence in VL patients in Bangladesh

ER Start Date : 01/03/2014 **ER End Date :** 31/12/2025

Project ID : B80309 **PI Name :** Emily Adams

ER Project Title : Technical Support for Studies on VL Diagnosis in Secondary Health Structures.

ER Start Date : 01/03/2014 **ER End Date :** 31/12/2025

Project ID : B80180 **PI Name :** Ursula Wittwer Backofen

ER Project Title : Organization of a TDR expert meeting on 'Research support for the post- Visceral Leishmaniasis (VL) elimination phase in

ER Start Date : 01/03/2014 **ER End Date :** 31/12/2025

Project ID : B70048 **PI Name :** Ursula Wittwer Backofen

ER Project Title : Organization of a TDR-WHO expert meeting on 'Research support for the post- Visceral Leishmaniasis (VL) elimination....

ER Start Date : 01/03/2014 **ER End Date :** 31/12/2025

Project ID : B70122 **PI Name :** Pradeep Das

ER Project Title : Embedding Diagnostics and Surveillance of Visceral Leishmaniasis into non-specialised VL centres in the health care...

ER Start Date : 01/03/2014 **ER End Date :** 31/12/2025

Project ID : P21-00357 **PI Name :** Anand Ballabh Joshi

ER Project Title : Assessment of the Impact of Implementation Research on the Visceral Leishmaniasis (VL) Elimination Efforts in Nepal: the National Perspective

ER Start Date : 01/03/2014 **ER End Date :** 31/12/2025

Project ID : P21-00397 **PI Name :**

ER Project Title : Payment for Publication fees

ER Start Date : 01/03/2014 **ER End Date :** 31/12/2025

Project ID : P21-00374 **PI Name :** Daniel Boakye

ER Project Title : Review, compilation and publication of unpublished data and experience of the Onchocerciasis Control Programme in West Africa and peer-reviewed literature on the role of the vector in transmission of O. volvulus, vector-related considerations for criteria

ER Start Date : 01/03/2014 **ER End Date :** 31/12/2025

Project ID : B80149 **PI Name :** Warwick Norman Grant

ER Project Title : Tools for onchocerciasis control programs to determine transmission zones and to monitor parasite response to ivermectin

ER Start Date : 01/03/2014 **ER End Date :** 31/12/2025

Project ID : P21-00481 **PI Name :** Shannon Hedtke

ER Project Title : Population genetic tools for onchocerciasis control programmes to determine transmission zones: Utility of vector nuclear vs mitochondrial DNA and testing of different methods for single microfilariae analysis

ER Start Date : 01/03/2014 **ER End Date :** 31/12/2025

Project ID : P21-00358 **PI Name :** Dinesh Mondal

ER Project Title : Assessment of the Impact of Implementation Research on the Visceral Leishmaniasis (VL) Elimina-tion Efforts in Bangladesh: the National Perspective

ER Start Date : 01/03/2014 **ER End Date :** 31/12/2025

Project ID : P21-00229 **PI Name :** Faria Hossain

ER Project Title : Determination of the sero-prevalence of HIV among VL patients in Bangladesh

ER Start Date : 01/03/2014 **ER End Date :** 31/12/2025

Project ID : P22-00690 **PI Name :**

ER Project Title : Open Access Publication: American Society of Tropical Medicine and Hygiene - American Journal of Tropical Medicine and Hygiene Article: Response to Visceral Leishmaniasis Cases through Active Case Detection and Vector Control i n Low Endemic Hilly Distric

ER Start Date : 01/03/2014 **ER End Date :** 31/12/2025

Project ID : P22-00763 **PI Name :** Anand Ballabh Joshi

ER Project Title : Decision Making for Indoor Residual Spraying in Post Elimination Phase of Visceral Leishmaniasis in Nepal

ER Start Date : 01/03/2014 **ER End Date :** 31/12/2025

Project ID : P22-00745 **PI Name :** Hajo Grundmann

ER Project Title : Support to research for Improved VL Surveillance, Case Detection and Vector Control in the scope of VL elimination Initiative in Bangladesh and Nepal

ER Start Date : 01/03/2014 **ER End Date :** 31/12/2025

Project ID : B80297 **PI Name :** Kwadwo Kyereme Frempong

ER Project Title : Population genetic simulations for tools for onchocerciasis control programmes to determine transmission zones: Part 2 Ghana Epidemiological and entomological data

ER Start Date : 01/03/2014 **ER End Date :** 31/12/2025

Project ID : P23-00990 **PI Name :** Benjamin Collins

ER Project Title : Evaluation of rapid diagnostics for Visceral Leishmaniasis (VL) control and elimination: planning and preparatory phase

ER Start Date : 01/03/2014 **ER End Date :** 31/12/2025

Project ID : P23-00961 **PI Name :**

ER Project Title : To be used for a new project

ER Start Date : 01/03/2014 **ER End Date :** 31/12/2025

Project ID : P22-00851 **PI Name :** Anand Ballabh Joshi

ER Project Title : Micro stratification of Visceral Leishmaniasis (VL) Endemic Areas to Identify Hotspots and Disease Shifting Pattern in Nepal

ER Start Date : 01/03/2014 **ER End Date :** 31/12/2025

Project ID : P22-00719 **PI Name :** Debashis Ghosh

ER Project Title : Decision Making for Indoor Residual Spraying in Post Elimination Phase of Visceral Leishmaniasis in Bangladesh

ER Start Date : 01/03/2014 **ER End Date :** 31/12/2025

Project ID : P22-00720 **PI Name :** Anand Ballabh Joshi

ER Project Title : Decision Making for Indoor Residual Spraying in Post Elimination Phase of Visceral Leishmaniasis in Nepal

ER Start Date : 01/03/2014 **ER End Date :** 31/12/2025

Project ID : P23-00951 **PI Name :** Asrat Mekuria

ER Project Title : Assessing programme capacities in visceral leishmaniasis-endemic countries in East Africa to implement WHO's treatment recommendations towards achieving universal health coverage and NTD roadmap targets

ER Start Date : 01/03/2014 **ER End Date :** 31/12/2025

Project ID : P22-00865 **PI Name :** Dr Shomik Maruf

ER Project Title : Micro stratification of Visceral Leishmaniasis (VL) Endemic Areas to Identify Hotspots and Disease Shifting Pattern in Bangladesh

ER Start Date : 01/03/2014 **ER End Date :** 31/12/2025

Project ID : B40122 **PI Name :** Mike Osei-Atweneboana

ER Project Title : Development of diagnostic genetic markers to detect sub-optimal response to ivermectin treatment.

ER Start Date : 01/03/2014 **ER End Date :** 31/12/2025

Project ID : B40123 **PI Name :** Samuel Wanji

ER Project Title : Research for genetic markers of O. volvulus resp. to ivermectin & development of an oncho contol programme surveillance

ER Start Date : 01/03/2014 **ER End Date :** 31/12/2025

Project ID : B40126 **PI Name :** S. J. De Vlas

ER Project Title : Simulating scenarios for development & spread of anthelminthic resistance as a consequence of large scale mass drug admin

ER Start Date : 01/03/2014 **ER End Date :** 31/12/2025

Project ID : B40124 **PI Name :** Mike Osei-Atweneboana

ER Project Title : Developing molecular tools to define Onchocerca volvulus transmission zones & estimate transmission risks between zones

ER Start Date : 01/03/2014 **ER End Date :** 31/12/2025

Project ID : B40127 **PI Name :** Warwick Norman Grant

ER Project Title : A population genetic model for the selection and transmission of ivermectin sub-optimal response genotypes

ER Start Date : 01/03/2014 **ER End Date :** 31/12/2025

Project ID : B40131 **PI Name :** Warwick Norman Grant

ER Project Title : Study design & genetic analyses: Development of diagnostic genetic markers to detect sub optimal response to ivermectin

ER Start Date : 01/03/2014 **ER End Date :** 31/12/2025

Project ID : P20-00140 **PI Name :** Debashis Ghosh

ER Project Title : Epidemiological, Serological and Entomological Investigation of New Visceral Leishmaniasis (VL) Foci in Bangladesh

ER Start Date : 01/03/2014 **ER End Date :** 31/12/2025

ER Country Links

Country:	Ghana	**WHO Region :**	AFRO	**World Bank : Income Group**	Lower middle income
Country:	Australia	**WHO Region :**	WPRO	**World Bank : Income Group**	High income
Country:	Côte d'Ivoire	**WHO Region :**	AFRO	**World Bank : Income Group**	Lower middle income
Country:	Bangladesh	**WHO Region :**	SEARO	**World Bank : Income Group**	Lower middle income
Country:	Nepal	**WHO Region :**	SEARO	**World Bank : Income Group**	Lower middle income
Country:	Congo, Dem. Rep.	**WHO Region :**	AFRO	**World Bank : Income Group**	Low income

Expected Result: 1.3.15

Title: VBD prevention and control for vulnerable and hard to reach population

Strategic Work Area: Research for implementation **Workstream:** Research for integrated approaches

ER type:	New	**Funding type:**	UD and DF
Start date:	01/01/2024	**End date:**	31/12/2025
ER status:	On Track	**Comment:**	Activities started in 2022 through Strategic Development Funds in 2022
WHO region:	Global		
Partners:			
Diseases:	Arboviral diseases;Malaria;Vector-borne diseases		
Review mechanism:	Through Ad Hoc Committee of experts and TDR SWG		

ER manager: Florence FOUQUE
Team: Admin Officer
Number of people working on projects: 2

FENSA clearance obtained for all Non-State Actors? No
Justification for no FENSA clearance: No

TDR partnership criteria

Add value:	Yes	Use resources:	No
Align goals:	Yes	Address knowledge gaps:	Yes
Integrate mandates:	No	Build strengths:	Yes
Reduce burden:	Yes	Foster networking:	Yes
Increase visibility:	Yes		

TDR partnership criteria indicators

Objectives aligned:	Yes	Partnership not fully established yet
Roles complimentary:	Yes	Partners will be complementary to TDR competencies
Coordination transparent:	Yes	Coordination transparent through shared Teams folders
Visibility:	Yes	No progress on visibility yet

Objectives and results chain

Approach to ensure uptake:	To ensure uptake of findings for more adequate tools and better access of the vulnerable populations to VBDs prevention and control, partnership will be established with stakeholders and communities and research and capacity building activities will be essential component of the ER.
Up-take/Use Indicator:	Document published on definition and factors of vulnerability. Number of countries hosting vulnerable populations having better information and access to VBDs prevention and control.
Gender and geographic equity:	Gender equity will be sought but geographical equity will be based on vulnerabilities according to the geographical location.
Publication plan:	Documents on relationship between poverty and VBDs (on track).

Document on vulnerabilities (definition and factors).

Scientific publications

Up-take/use indicator target date: 31/12/2025

Sustainable Development Goals

No Poverty;Good Health and Well-being;Clean Water and Sanitation;Reduced Inequality;Partnerships to achieve the Goal

Concept and approach

Rationale:

Although there has been tremendous progress in the control of vector-borne diseases (VBDs), these diseases together with other infectious diseases are still causing enormous burden, especially to vulnerable populations already facing several challenges such as poverty and displacements. The complex interconnection between different socio-economic aspects and the determinants of health and vulnerability to VBDs require further extensive attention.

The proposed activity would thus address the challenges in VBD prevention and control linked to vulnerabilities. A landscape analysis conducted on the relationships between VBDs and poverty and a case study on hard to reach population in malaria control provided better understanding of "who", "where", "why" and "how" VBDs are interacting with vulnerabilities in a vicious cycle. The rationale of this expected result is to address vulnerabilities through effective intervention and strategies that can reach the underserved populations in LMICs in order to accelerate universal health coverage. The project will develop a knowledge and skills base and demonstrate how to extend health care access to hard-to-reach and underserved populations in LMIC in order to accelerate universal health coverage.

Design and methodology:

The first phase of the expected results will look at definitions and factors of vulnerabilities in a range of different situation including but not limited to hard to reach populations, migrants, displaced population either for political unrest or climatic changes. Based on the findings, the project will convey group(s) of experts to develop strategies to increase health care access and improve health outcomes according to context and specificities of the populations.

In a second phase of the project, approaches and strategies will be tested through case studies. The lessons learned from these interventions will then provide the basis for a good practice document for reaching the more vulnerable population and giving them better access to health.

Ultimately, the project will engage and empower communities, develop implementation research leadership capacity in local institutions and promote uptake of research findings into policy and practice in countries.

Approach to ensure quality:

Quality of the activities and project will be ensure through regular review process of activities, documentation and implementation.

The review will be performed at different level of the project and of the TDR structure by external experts, committees and representatives of Member States.

ER Objectives

ERObj-0065 : Document the definition and factors of vulnerabilities to deploy the adequate intervention for prevention and control of VBDs.

Biennium Budget

Biennium: 2024-2025

Low and Hight Budget Scenario

	Low Budget Scenario	High Budget Scenario
Undesignated funds	USD 200000	USD 500000
Designated funds	USD 200000	USD 200000
Total	USD 400000	USD 700000

Planned Budget

Undesignated funds	USD 200000
Designated funds	USD 200000
Total	USD 400000

ER Biennium Risks

Biennium: 2024-2025

ERRisk - 0318: Funding not raised for full activities

Actions To Mitigate Risk: Engagement with funders having specific targets on vulnerabilities

Mitigation Status: On Track

Biennium: 2024-2025

ERRisk - 0319: Delays in the implementation of the activities

Actions To Mitigate Risk: Close follow up of the activities

Mitigation Status: On Track

ER Biennium Outputs

Biennium: 2024-2025

EROutp-0391: Description of the factors with qualitative and quantitative analysis

Output Indicator: Better knowledge of the factors of vulnerability in prevention and control of VBDs

Output Target Date: 31/12/2024

Output Progress Status: On Track

Output Progress Description: Not started yet

Biennium: 2024-2025

EROutp-0392: Number of case studies where vulnerable populations have an improved access to VBDs prevention and control

Output Indicator: Plan for setting up research activities and case studies

Output Target Date: 31/12/2025

Output Progress Status: On Track

Output Progress Description: Not started yet

ER Biennium Outcomes

Biennium: 2024-2025

EROutc-0121: Guidance document on factors of vulnerabilities and handling/strategies to mitigate them on prevention and control of VBDs.

Progress made towards outcome : Not started yet.

Biennium: 2024-2025

EROutc-0122: Proceeding of a workshop and publication of scientific articles on vulnerabilities against VBDs.

Progress made towards outcome : Not started yet.

ER Project Links

ER Country Links